

# BHP

## Mt Arthur Coal

### Annual Review FY25



25 September 2025

**Table of Contents**

<b>1</b>	<b>Statement of Compliance .....</b>	<b>7</b>
<b>2</b>	<b>Introduction .....</b>	<b>10</b>
<b>3</b>	<b>Approvals.....</b>	<b>13</b>
<b>4</b>	<b>Operations Summary .....</b>	<b>14</b>
4.1	Mining Operations.....	14
4.2	Other Operations .....	14
4.3	Employment Details.....	15
4.4	Next Reporting Period .....	15
<b>5</b>	<b>Actions Required from Previous Annual Review .....</b>	<b>16</b>
<b>6</b>	<b>Environmental Performance.....</b>	<b>17</b>
6.1	Noise.....	17
6.2	Blasting.....	21
6.3	Meteorological Data.....	23
6.4	Air Quality.....	23
6.5	Biodiversity.....	28
6.6	Visual Amenity and Lighting .....	36
6.7	Aboriginal Cultural Heritage .....	37
6.8	European Cultural Heritage.....	38
6.9	Contaminated Land and Hydrocarbon Contamination .....	39
6.10	Spontaneous Combustion .....	39
6.11	Bushfire .....	41
6.12	Greenhouse Gas and Energy .....	41
6.13	Waste Management .....	43
6.14	Public Safety.....	44
<b>7</b>	<b>Water Management.....</b>	<b>45</b>
7.1	Water Balance.....	45
7.2	Erosion and Sediment.....	46
7.3	Surface Water.....	50
7.4	Ground Water.....	53
<b>8</b>	<b>Rehabilitation .....</b>	<b>58</b>

8.1	Surface Disturbance Activities .....	58
8.2	Monitoring .....	66
8.3	Maintenance .....	68
8.4	Performance against rehabilitation objectives and rehabilitation completion criteria .....	69
8.5	Rehabilitation Improvements.....	71
8.6	Rehabilitation Activities for Next Reporting Period .....	71
<b>9</b>	<b>Community .....</b>	<b>73</b>
9.1	Community Engagement .....	73
9.2	Community Investment .....	75
<b>10</b>	<b>Independent Audit .....</b>	<b>76</b>
<b>11</b>	<b>Incidents and Non-compliances .....</b>	<b>91</b>
<b>12</b>	<b>Activities during Next Reporting Period.....</b>	<b>94</b>
<b>Appendix 1 Surface Water Quality Monitoring Results .....</b>		<b>96</b>
<b>Appendix 2 Ground Water Monitoring Results and Groundwater Level Drawdown Analysis .....</b>		<b>99</b>
<b>Appendix 3 Community Complaints .....</b>		<b>100</b>
<b>Appendix 4 Annual Coal Transport Report FY25.....</b>		<b>101</b>
<b>Appendix 5 Rehabilitation Plan.....</b>		<b>106</b>

## List of Figures

Figure 1: Mt Arthur Coal mining leases, approved disturbance boundary and offset areas .....	11
Figure 2: Mt Arthur Coal locality plan .....	12
Figure 3: Air quality, blasting, noise and meteorological monitoring locations .....	20
Figure 4: Waste disposal Mt Arthur Coal FY25 (tonnes).....	44
Figure 5 Riparian Vegetation and Channel Stability Monitoring Locations .....	49
Figure 6: Groundwater and surface water monitoring locations .....	51
Figure 7 FY25 pasture rehabilitation in the OPD emplacement .....	59
Figure 8 Harrowing of FY25 pasture rehabilitation in the OPD emplacement .....	59
Figure 9 Constructed drains in FY23-24 pasture rehabilitation in the OPD emplacement .....	60
Figure 10 Drain construction in FY23-24 pasture rehabilitation in the OPD emplacement.....	60
Figure 11 FY25 woodland rehabilitation in the Saddlers North emplacement .....	61
Figure 12 FY25 woodland rehabilitation (foreground) with habitat features and FY25 pasture (background) in the OPD emplacement .....	61

Figure 13 FY25 box woodland supplementary tubestock planting area showing rip lines.....	69
Figure 14 Rehabilitation Area Nomenclature.....	70
Figure 15: Comparison of complaints received during current and previous financial years .....	74

**List of Tables**

Table 1: Annual Review title block.....	6
Table 2: Statement of compliance .....	7
Table 3: Non-compliance summary .....	7
Table 4: Mt Arthur Coal management contact details .....	10
Table 5: Mt Arthur Coal's existing statutory approvals as of 30 June 2025 .....	13
Table 6: Production summary .....	14
Table 7: Actions required from FY24 Annual Review and additional requirements for FY25 Annual Review .....	16
Table 8: Monthly attended night-time noise monitoring results in decibels .....	17
Table 9: Attended noise monitoring results in decibels in comparison to previous years .....	18
Table 10: Summary of blast monitoring results .....	22
Table 11: Comparison of annual average deposited dust results .....	24
Table 12: Summary of TEOM PM <sub>10</sub> monitoring results using validated data .....	26
Table 13: 24-hour PM <sub>10</sub> exceedances and calculated Mt Arthur Coal incremental impact for statutory TEOMs .....	27
Table 14: Summary of total suspended particulate results .....	28
Table 15 FY25 rehabilitation monitoring sites .....	30
Table 16: Summary of native and introduced flora species within 20 x 20 m plots and condition scores across FY25 sites.....	30
Table 17 MS1: Comparison between reference site and benchmark values .....	31
Table 18 VB4: Comparison between historic data, reference site and benchmark values .....	32
Table 19 VB5: Comparison between historic data, reference site and benchmark values .....	32
Table 20 VB6: Comparison between historic data, reference site and benchmark values .....	33
Table 21 Pest animal control program results for FY25 .....	34
Table 22 Status of Long-Term Security Agreements .....	35
Table 23: Summary of spontaneous combustion at Mt Arthur Coal in FY25 (July 24 - June 25) .....	40
Table 24 Annual GHG Emissions (Scope 1 & 2).....	42
Table 25: Water take for FY25.....	45

Table 26: Riparian vegetation assessment – FY24 RARC and CSIRO Assessment Results .....	47
Table 27: Summary of statutory surface water quality monitoring results .....	52
Table 28: Reportable Groundwater Level Trigger Exceedances .....	56
Table 29: Reportable Groundwater Quality Trigger Exceedances .....	57
Table 30: Mt Arthur Coal rehabilitation claimed for FY25.....	62
Table 31: Mt Arthur Coal rehabilitation and disturbance summary .....	62
Table 32: Mt Arthur Coal FY25 pasture seed mix .....	63
Table 33: Mt Arthur Coal FY25 woodland seed mix .....	63
Table 34: Key material production .....	65
Table 35: Summary of key pasture vegetation criteria .....	67
Table 36: Diversity Tubestock mix used on VD5 .....	68
Table 37: Summary of IEA Non-Compliances and Recommendations.....	76
Table 38: 2023 Independent Environmental Audit Non-compliance Recommendations and Actions .....	77
Table 39: Mt Arthur Coal's performance against targets for FY25 .....	94
Table 40. Daily train movements FY25 .....	102

**Table 1: Annual Review title block**

<b>Document Details</b>	
Name of Operation	Mt Arthur Coal
Name of Operator	Hunter Valley Energy Coal Pty Ltd
Project Approvals	PA 09_0062 (MOD 2) – From 16 April 2025 PA 09_0062 (MOD 1) PA 06_0091
Name of holder of project approvals	Hunter Valley Energy Coal Pty Ltd
Mining Leases	CCL 744, CL 396, ML 1358, ML 1487, ML 1548, ML1593, ML1655, ML 1739, ML 1757, MPL 263, EL 5965
Name of holder of mining leases	Hunter Valley Energy Coal Pty Ltd; Mt Arthur Coal Pty Limited
Water Licences	WAL 917, WAL 918, WAL 1296, WAL 18141, WAL 18247, WAL 41495, WAL 41556, WAL 41557, WAL 18175
Name of holder of water licences	Hunter Valley Energy Coal Pty Ltd
Forward Program Commencement Date	1 July 2024
Forward Program Completion Date	30 June 2027
Annual Review Commencement Date	1 July 2024
Annual Review Completion Date	30 June 2025
<b>I, Ben Coleman, certify that this audit report is a true and accurate record of the compliance status of Mt Arthur Coal for the period 1 July 2024 to 30 June 2025 and that I am authorised to make this statement on behalf of Hunter Valley Energy Coal Pty Ltd.</b>	
Note.	
<ul style="list-style-type: none"> <li>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</li> <li>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</li> </ul>	
Name of authorised reporting officer	Ben Coleman
Title of authorised reporting officer	Manager Closure Planning and Environment – Mt Arthur Coal
Signature of authorised reporting officer	
Date	25/09/2025

## 1 Statement of Compliance

A statement of Mt Arthur Coal's compliance with its project approvals and mining leases is presented in Table 2 with four identified non-compliances during the reporting period being discussed in Table 3.

**Table 2: Statement of compliance**

Were all conditions of the relevant approval(s) complied with?	
PA 09_0062	NO
EPL 11457	NO
EPBC 2011/5866	YES
EPBC 2014/7377	YES
Mining Lease	YES

**Table 3: Non-compliance summary**

Relevant approval	Condition*	Description Summary	Compliance Status	Comment	Report reference
PA 09_0062 & EPL 11457	11 (Schedule 3) & L6.1	Blast incident exceeded 5pm	Non-compliant (Low)	An initiated blast took place at 5:04:32pm on 6 January 2025. The DPHI issued a formal Warning Letter and a non-compliance was reported as per the EPL.	Section 11
PA 09_0062 & EPL 11457	11 (Schedule 3) & L6.1	Blast incident exceeded 5pm	Non-compliant (Low)	An initiated blast took place at 5:01:26pm on 26 March 2025. The DPHI issued a formal Warning Letter and a non-compliance was reported as per the EPL.	Section 11
PA 09_0062 & EPL 11457	2 (Schedule 3) & L5.1	Noise exceedance	Non-compliant (Low)	An exceedance of the noise criteria was triggered, and operational changes were made as per the NMP. The exceedance was reported, and no further action was required.	Section 11
EPL 11457	R2	Noise exceedance not reported to EPA	Non-compliant (Administrative)	A noise exceedance recorded on 17 July 2024 as part of routine attended monitoring was notified to EPA one week after the exceedance occurred.	Section 11
PA 09_0062 & EPL 11457	2 (Schedule 3) & L5.1	Noise exceedance	Non-compliant (Low)	An exceedance of the noise criteria was triggered, and operational changes were made as per the NMP. The exceedance was reported, and no further action was required.	Section 11

\* Condition Number aligns with applicable EPL instead of current EPL

**Note: Compliance Risk Level guidance for Table 3**

Risk Level	Colour code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>➢ potential for serious environmental consequences, but is unlikely to occur; or</li> <li>➢ potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>➢ potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>➢ potential for low environmental consequences, but is unlikely to occur</li> </ul>
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

## Acronyms

Acronyms	
AHMP	Aboriginal Heritage Management Plan
AQMP	Air Quality Management Plan
BC	<i>Biodiversity Conservation Act 2016</i>
BioMP	Biodiversity Management Plan
BMP	Blast Management Plan
CCC	Community Consultative Committee
CCL	Consolidated coal lease
CHPP	Coal handling and preparation plant
CO <sub>2</sub> -e	Carbon dioxide equivalent
CL	Coal lease
DCS	Dust Control System
DPHI	Department of Planning, Housing and Infrastructure
DPIE	Former NSW Department of Planning, Industry and Environment, superseded by DPHI
DPE	Former NSW Department of Planning and Environment, superseded by DPIE, then superseded by DPHI
DRG	Former Division of Resources and Geoscience
EA	Environmental assessment
EIS	Environmental impact statement
EL	Exploration licence
EPA	NSW Environment Protection Authority
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment Protection Licence
FY	Financial year
HRSTS	Hunter River Salinity Trading Scheme
HVEC	Hunter Valley Energy Coal (Mt Arthur Coal)
MAC	Mt Arthur Coal
ML	Mining lease
NGER	<i>National Greenhouse and Energy Reporting Act 2007</i>
NMP	Noise Management Plan

<b>Acronyms</b>	
NRAR	Natural Resources Access Regulator
NSW	New South Wales
PA	Project Approval
PCT	Plant community types
PM <sub>10</sub>	Particulate Matter with a diameter of 10 micrometres or less
RAP	Registered Aboriginal Party
RR	NSW Resources Regulator
TARP	Trigger Action Response Plan
TEOM	Tapered element oscillating microbalance samplers
TSF	Tailings storage facility
TSP	Total suspended particulate
VPA	Voluntary Planning Agreement
VWP	Vibrating wire piezometers
WAL	Water Access Licence

## 2 Introduction

The Mt Arthur Coal Complex is located approximately five kilometres southwest of Muswellbrook in the Upper Hunter Valley in New South Wales (NSW) and includes the Mt Arthur Coal Open Cut, the Mt Arthur Coal Underground Project (no underground operations are currently taking place), Coal Handling and Preparation Plant (CHPP), rail loop and rail load out. The Mt Arthur Coal Complex (including biodiversity offset areas) and surrounding region is shown in Figure 1 and Figure 2.

This Annual Review details the environmental and community performance for the period from 1 July 2024 to 30 June 2025 for operations at the Mt Arthur Coal Complex.

This document has been prepared in accordance with the Annual Review guidelines issued by the NSW Department of Planning and Environment in October 2015 and fulfils statutory reporting requirements required in mining leases and Schedule 5 Condition 3 of the Mt Arthur Coal Mine Open Cut Consolidation Project Approval Modification 1 (09\_0062 MOD 1 & MOD2 from 16 April 2025).

This report was prepared in consultation with the NSW Resources Regulator (RR), the Department of Planning, Housing and Infrastructure (DPHI), NSW Environment Protection Authority (EPA) and the Natural Resources Access Regulator (NRAR). The report is distributed to a range of external stakeholders and is available on the BHP website at <https://www.bhp.com/sustainability/environment/regulatory-information/>.

Contact details for personnel associated with environmental management at Mt Arthur Coal can be found in Table 4.

**Table 4: Mt Arthur Coal management contact details**

Name and role	Phone contact details
Darryl Messenger - General Manager, BHP Mt Arthur Coal	(02) 6544 5800
Ben Coleman - Manager Closure Planning and Environment, BHP Mt Arthur Coal	(02) 6544 5800

**BHP**

Geospatial Team

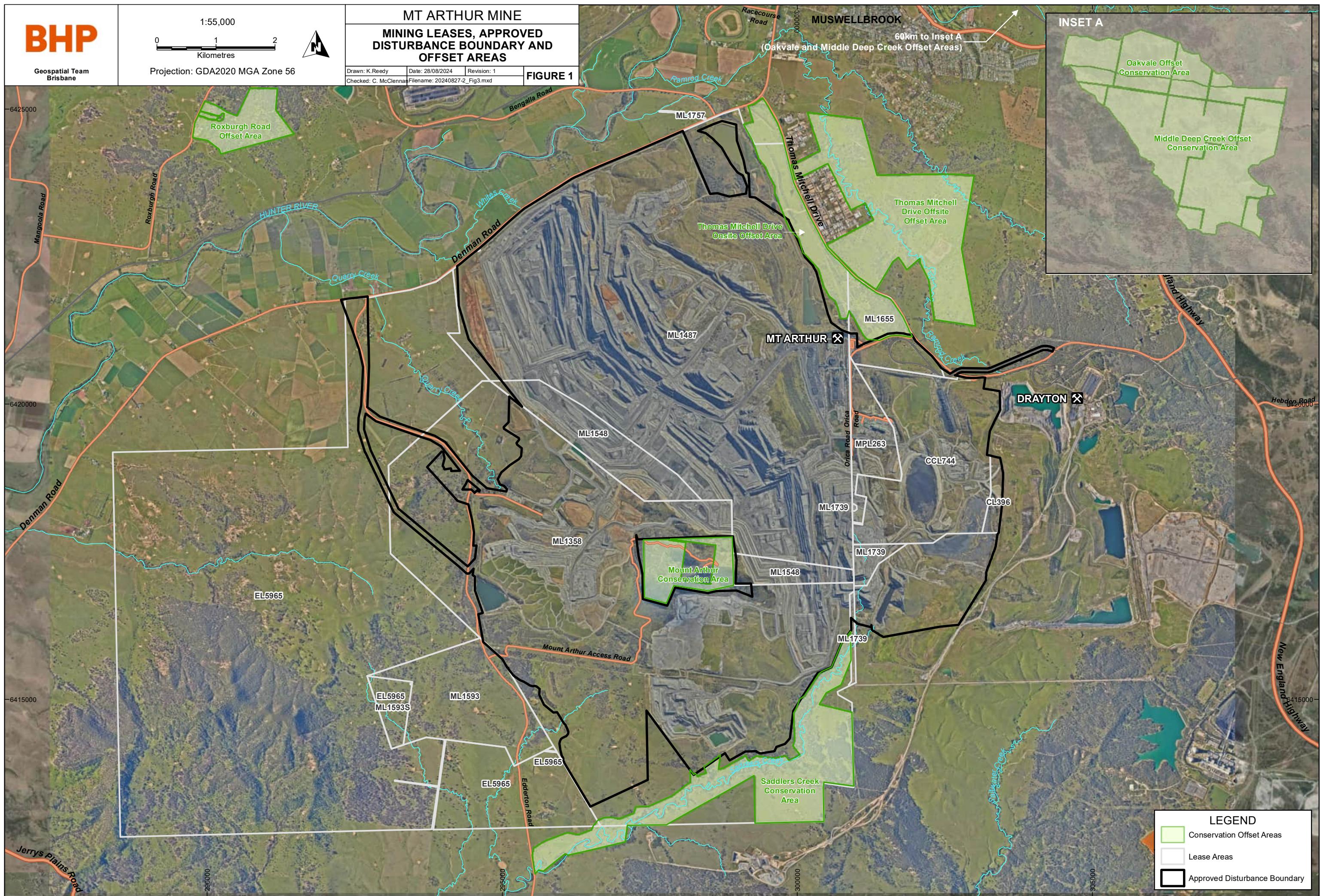
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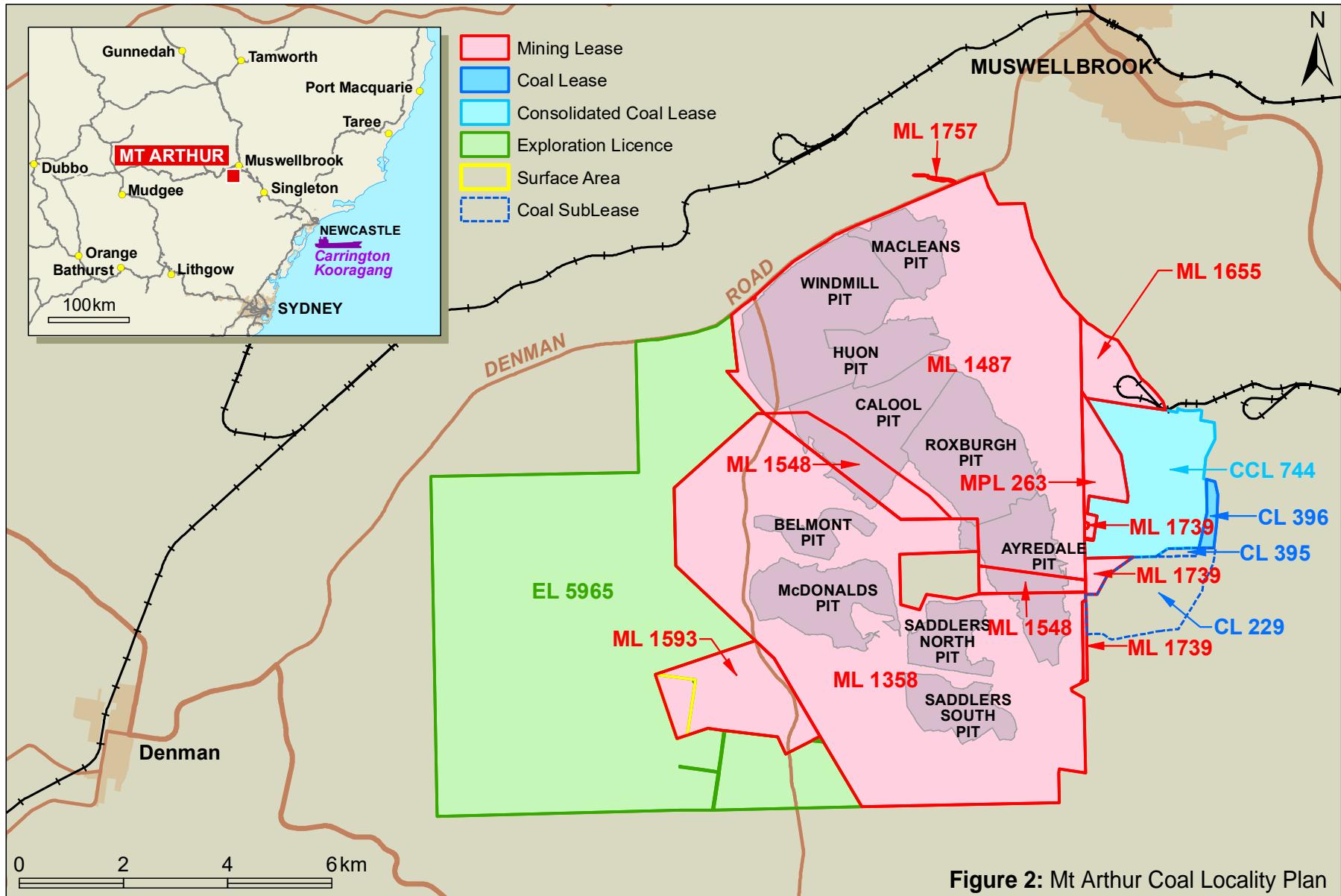
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0 1 2 Kilometres  
Projection: GDA2020 MGA Zone 56

**MT ARTHUR MINE**  
**MINING LEASES, APPROVED DISTURBANCE BOUNDARY AND OFFSET AREAS**

Drawn: K.Reedy Date: 28/08/2024 Revision: 1

Checked: C. McCleman File: 20240827-2, Fig3.mxd

**FIGURE 1**



### 3 Approvals

Mt Arthur Coal has several statutory approvals, leases and licences that regulate activities on site.

Table 5 shows Mt Arthur Coal's existing statutory approvals as of 30 June 2025.

**Table 5: Mt Arthur Coal's existing statutory approvals as of 30 June 2025**

Description	Issue date	Expiry date
<b>Project approvals issued by the DPHI</b>		
Mt Arthur Coal Mine Open Cut Consolidation Project Modification 1 (09_0062 MOD 2)	16/04/2025	30/06/2030
Mt Arthur Coal Mine Open Cut Consolidation Project Modification 1 (09_0062 MOD 1)	26/09/2014	30/06/2026
Mt Arthur Coal Mine Underground Project (06_0091)	02/12/2008	31/12/2030
<b>Mining leases and exploration licences issued by the DRG</b>		
CCL 744	03/07/1989	21/01/2028
CL 396	23/06/1992	03/02/2045
ML 1358	21/09/1994	21/09/2036
ML 1487	13/06/2001	12/06/2043
ML 1548	31/05/2004	30/05/2035
ML 1593	30/04/2007	29/04/2028
ML 1655	03/03/2011	03/03/2032
ML 1739	25/07/2016	25/07/2037
ML1757	07/07/2017	07/07/2038
MPL 263	17/10/1990	17/10/2032
EL 5965	14/07/2007	15/07/2026
Drayton sublease CL 395	13/04/2006 (registered 14/06/2013)	21/01/2029
Drayton sublease CL 229	13/04/2006 (registered 14/06/2013)	02/02/2045
<b>EPL issued by the EPA</b>		
EPL11457	09/10/2001 (varied on 24/07/2025)	Not specified
<b>EPBC approval issued by the DAWE</b>		
EPBC 2011/5866	30/04/2012 (varied on 29/06/2017)	30/06/2026
EPBC 2014/7377	05/12/2016	30/06/2026

## 4 Operations Summary

### 4.1 Mining Operations

Mining and processing operations at Mt Arthur Coal continued 24 hours a day, seven days a week during the reporting period. Mining continued within the Ayredale, Calool, Roxburgh, Saddlers Central and Windmill open cut pits. Thiess, a subsidiary of the CIMIC Group, operates under a total services contract to mine the Roxburgh south, Saddlers and Ayredale pits, located in the southern areas of the Mt Arthur Coal mine. Overburden and interburden material was removed by excavator and transported via rear dump truck to overburden emplacements areas, including visual dumps 5 (VD5), contingency dumps 1 to 5 (CD1 to CD5), Out of Pit Dump North (OP1N), conveyor corridor dump (CC1) and Saddler's dump. Raw coal was extracted by excavator and transported to the CHPP by rear dump truck.

Raw coal was processed at the CHPP, with approximately 15 million tonnes of product coal being railed to the port of Newcastle for export. Coarse coal waste (rejects) was co-disposed within overburden emplacements and fine coal waste (tailings) was pumped to the tailing's storage facility. Production figures for raw, product and waste materials produced during the reporting period are summarised in Table 6.

**Table 6: Production summary**

Material	Unit	Approved limit	Previous reporting period (actual FY24)	This reporting period (actual FY25)	Next reporting period (FY26 estimate)
<b>Overburden</b>	bank cubic meters	N/A	140,328,460	132,842,367	127,563,909
<b>Run-of-mine coal</b>	tonnes	32,000,000	22,334,755	20,319,203	23,183,796
<b>Coarse and fine reject</b>	tonnes	N/A	4,483,968	4,653,445	4,995,508
<b>Tailings</b>	tonnes (dry)	N/A	1,714,182	1,978,020	1,945,115
<b>Product (saleable) coal</b>	tonnes	27,000,000 (by rail)	15,367,907	15,035,935	16,041,798

### 4.2 Other Operations

Other operations at Mt Arthur Coal during the reporting period included:

- Land Preparation: During the reporting period approximately 376,390 bcm of topsoil was recovered from 141.1 hectares of clearing ahead of mining and for additional dump space using excavators, dozers and trucks. Material was either stockpiled or placed directly onto reshaped areas to be rehabilitated where able to. The remaining topsoil was placed in stockpiles. Between 150 to 300 millimetres of topsoil was recovered during stripping.
- Infrastructure Construction and Management: The following major projects that were commenced, progressed, or completed during the reporting period are presented below.
  - Complete design and commence installation of the second phase of the tailings flocculation system to support tailing storage facilities (TSF) closure and sustain tailings capacity for the remaining mine life.
  - Ongoing study for the potential of the Stage 3 – Tailings lifts to raise the wall height of the active TSF.
  - Ongoing study of the potential for tailings transfer to Malabar.
  - Ongoing installation of monitoring instrumentation at West Cut Void TSF Dam walls.
  - Installation of additional water and sediment infrastructure to support water management strategies.
  - Geotechnical piezometer and Survey system install at Environmental Dam.
  - New Bio-remediation pad.

- Rehabilitation works, comprising of:
  - ✓ Bulk pushing of overburden to shape the landform
  - ✓ Topsoil placement, seeding and land use establishment
  - ✓ Pest management such as dog and pig control programs
  - ✓ Weed management program
  - ✓ Establishment of rock crushing operations for rehabilitation.

During the reporting period there were no variations from the current Forward Plan related to construction works on site.

### 4.3 Employment Details

As of 30 June 2025, Mt Arthur Coal employed approximately 1450 permanent and fixed-term contract employees, and 750 service contractors on a full-time equivalent basis. Approximately 65 per cent of Mt Arthur Coal's employees resided in the local community areas of Muswellbrook, Denman, Aberdeen, Scone and Singleton as of 30 June 2025.

### 4.4 Next Reporting Period

Forecast operations for the next reporting period, in particular significant changes in the mine, include:

- Continue installing additional water pipelines and associated pumps to support ongoing water management strategies.
- Begin the final highwall strip, which is required prior to site closure in 2030.
- Upgrade the environmental dam consequence category by modifying the spillway inlet
- Implement long-term secondary flocculation improvements by installing additional spigot points.
- Progress approvals and a project planning to facilitate transfer of tailings to the Malabar void.
- Deliver a number of external property upgrades.
- Continued focus on completing rehabilitation at the mine

## 5 Actions Required from Previous Annual Review

The DPHI notified HVEC by letter dated 10 January 2025 that the FY24 Annual Review was considered by the Department to satisfy the requirements of the Project Approval and the Department's Annual Review Guideline, October 2015.

Regulator feedback following review of the FY24 Annual Review is summarised in Table 7. Regulator feedback on additional requirements to be considered during the preparation of the FY25 Annual Review is also summarised in Table 7.

**Table 7: Actions required from FY24 Annual Review and additional requirements for FY25 Annual Review**

Action required	Requested by	Action taken by HVEC	FY24 Annual Review section
<b>Regulator feedback from FY24 Annual Review</b>			
No specific feedback from FY24 has been provided for consideration in the development of the FY25 Annual Review.	DPHI, EPA, RR and NRAR	N/A	N/A
<b>No Regulator feedback on additional requirements for the FY25 Annual Review was received in line with the Annual Review Guideline, October 2015.</b>			

## 6 Environmental Performance

### 6.1 Noise

#### 6.1.1 Environmental Management

Noise management at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-032 Noise Management Plan; and
- MAC-ENC-PRO-056 Noise Management Procedure.

The Noise Management Plan (NMP) was prepared to fulfil the requirements of the Project Approval, meet the conditions of Environmental Protection Licence (EPL) 11457, as well as manage and minimise mine noise impact on the community and environment. The last NMP update was approved by DPHI on the 28 April 2023.

Mt Arthur Coal has eight statutory monitoring locations as detailed in the NMP, and four real-time monitoring locations utilised for internal use. Noise monitoring locations are shown in Figure 3.

#### 6.1.2 Environmental Performance

An analysis of monthly attended noise monitoring results indicates Mt Arthur Coal's operations did not exceed the  $L_{Aeq(15min)}$  or the  $L_{A1(1min)}$  limits during the reporting period. A summary of results from Mt Arthur Coal's attended noise monitoring in the reporting period is provided in Table 8. Where a remeasure was required on the same night to determine the sustained noise level, only the remeasure result has been used to calculate tabulated results. Data capture was 100 per cent at all attended noise monitoring sites.

$L_{Aeq(15min)}$  noise level predictions modelled for 2026 in the 2013 noise impact assessment were used for comparison with monitoring results for this reporting period, as shown in Table 8. Maximum  $L_{Aeq(15min)}$  noise results are below modelled predictions from all noise monitoring sites.

**Table 8: Monthly attended night-time noise monitoring results in decibels**

Noise Monitoring Location	$L_{Aeq(15min)}$ dB			$L_{A1(1min)}$ dB		Trend / key management implications	Implemented / proposed management actions
	Approval criteria	2026 prediction	Reporting period performance (min/ log Ave/ max <sup>^</sup> )	Approval criteria	Reporting period performance (min/ log ave/max <sup>^</sup> )		
NP04	38	38	33*/35/37*	45	35*/40/43*	Two exceedances occurred on 17 July and 15 April 2025. Further information provided in Section 11.	Continuation of management and monitoring in accordance with Noise Management Plan
NP07	39	37	36*/36/36*	45	36*/38/39*		
NP10	39	36	31*/36/34	45	35*/37/40*		
NP12	39	40	32*/36/34	45	35*/38/41*		
NP13	35	N/A	22*/29/27	45	24*/30/34		
NP14	35	35	30*/34/32*	45	33/42/45		
NP15	35	36	25*/34/32*	45	28*/38/42		
NP16	37	37	33/34/34*	45	35/38/42*		

<sup>^</sup> Measurable noise levels only – does not include *inaudible* or *not measurable* results

\* Noise emission limits do not apply due to winds greater than three metres per second (at a height of 10 metres), or temperature inversion conditions greater than or equal to four degrees Celsius per 100 metres.

## ANNUAL REVIEW FY25

A comparison of FY25 noise monitoring results to previous reporting years is assessed and presented in Table 9.

Overall, in FY25  $L_{Aeq(15min)}$  noise levels were generally lower than FY24 results, with a maximum decrease of 3dB. A slight increase in the noise levels was observed at two noise monitoring locations, NP13 and NP14.

The additional impact of low frequency noise was assessed during the monthly noise monitoring in accordance with the EPA's 2017 Noise Policy for Industry.

**Table 9: Attended noise monitoring results in decibels in comparison to previous years**

Noise Monitoring Location	FY25		FY24		FY23	
	Min	Max	Min	Max	Min	Max
<b><math>L_{Aeq(15\ min)}</math> dB</b>						
NP04	IA	37*	20	38*	IA	37
NP07	IA	36*	25	37*	IA	34
NP10	IA	36	31	38*	IA	34*
NP12	IA	36	30*	36*	IA	37
NP13	IA	29	20	27*	IA	30*
NP14	IA	34*	25	32*	IA	30*
NP15	IA	34*	25*	34*	IA	35
NP16	IA	34*	30	37*	IA	35
<b><math>L_{Aeq(1\ min)}</math> dB</b>						
NP04	IA	43*	25	46*	IA	42
NP07	IA	39*	30	40*	IA	39
NP10	IA	40*	32	45*	IA	37*
NP12	IA	41*	30*	40*	IA	39
NP13	IA	34	20	30*	IA	35*
NP14	IA	45	25	37*	IA	35*
NP15	IA	42	25	39*	IA	40
NP16	IA	42*	33	41*	IA	37

\* Noise emission limits do not apply due to winds greater than three metres per second (at a height of 10 metres), or temperature inversion conditions greater than or equal to four degrees Celsius per 100 metres.

IA – Mt Arthur Coal's operations were inaudible.

### 6.1.3 Complaints and Reportable Incidents

No noise complaints were received in FY25 indicating that Mt Arthur Coal successfully minimised noise during its operations throughout the reporting period. Further discussion on complaints is provided in Section 0.

### 6.1.4 Proposed Improvements

Mt Arthur Coal has consistently upgraded the Dust Control System (DCS) to maximise efficiency and enhance operational dust and noise management. As proposed in the last reporting period, fleet data has been integrated into the DCS, and Mt Arthur Coal is planning to use this functionality to assess noise emission risks based on fleet positions.

## ANNUAL REVIEW FY25

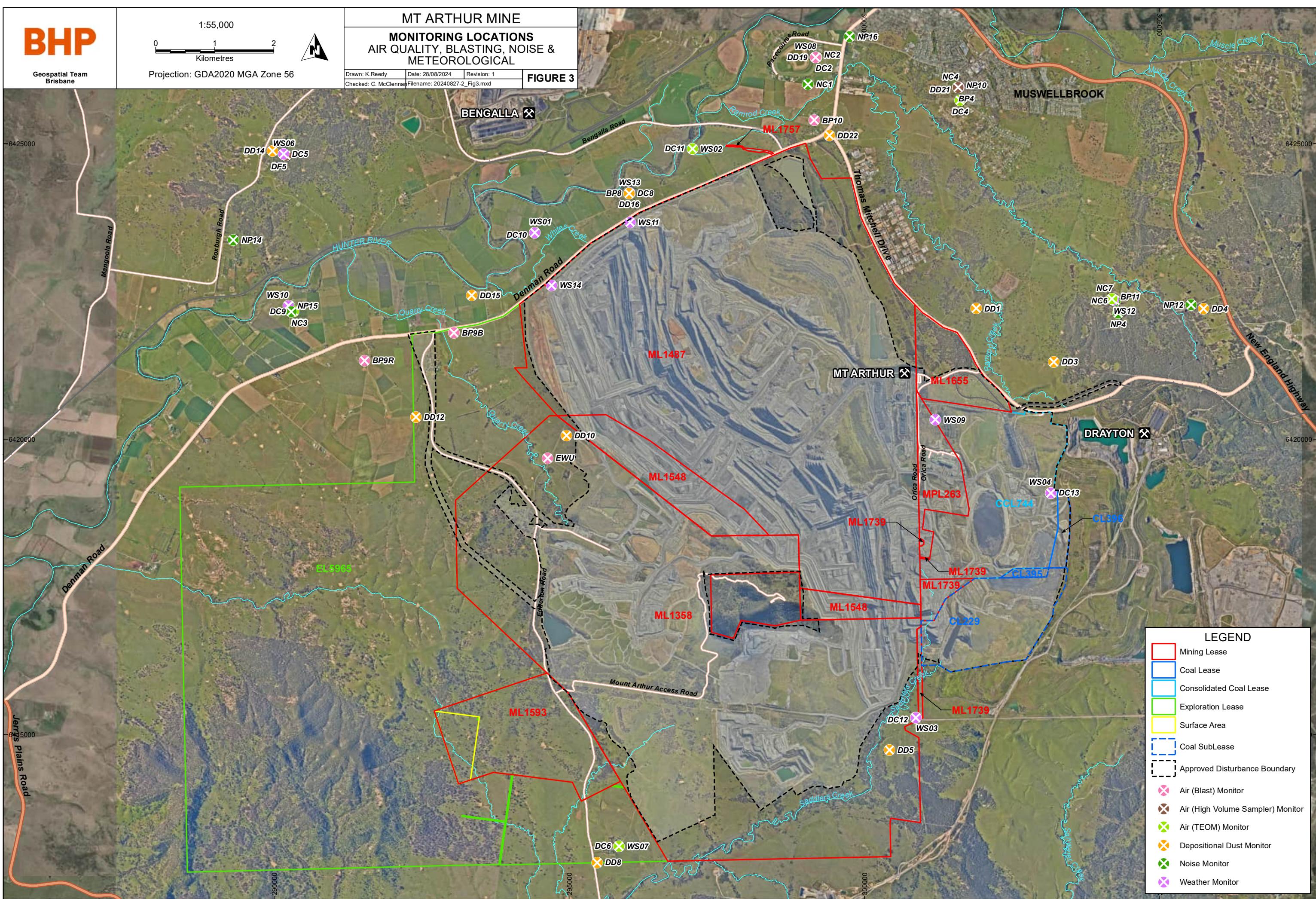
For FY26, Mt Arthur Coal is also investigating the potential to combine real-time fleet, meteorological and noise monitoring data to develop short-term noise forecasting. This could support more effective reactive controls and reduce dust emissions. In line with the continuous improvement principles integral to the site Environmental Management System, Mt Arthur Coal will continue to review the site systems and implement improvement opportunities as they arise.

**BHP**Geospatial Team  
Brisbane

1:55,000  
0 1 Kilometres  
Projection: GDA2020 MGA Zone 56

**MT ARTHUR MINE**  
**MONITORING LOCATIONS**  
AIR QUALITY, BLASTING, NOISE &  
METEOROLOGICAL

Drawn: K.Reedy Date: 28/08/2024 Revision: 1  
Checked: C. McClellan File: 20240827-2, Fig3.mxd

**FIGURE 3**

## 6.2 Blasting

### 6.2.1 Environmental Management

Blasting at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-015 Blast Management Plan.
- MAC-PRD-PRO-106 Pre-Blasting Approval Procedure

The Blast Management Plan details the relevant blast overpressure and vibration impact assessment criteria and compliance procedures and controls related to open cut blasting activities. It includes the blast monitoring program, as well as public infrastructure monitoring requirements, and road closures. It also includes the blast fume management strategy, which aims to minimise visible blast fume and reduce potential for offsite fume migration.

Mt Arthur Coal has five statutory blast monitors:

- BP04 (South Muswellbrook);
- BP07 (Sheppard Avenue);
- BP09R (Denman Road West);
- BP10 (Yammanie North); and
- BP11 (Balmoral Road).

One monitor (BP08, Edinglassie) is used for internal purposes, data from this monitor is included in this report.

Blast monitoring locations are shown in Figure 3.

The modification project approval states a ground vibration limit for public infrastructure of 50 millimetres per second (mm/s) unless Mt Arthur Coal has a written agreement with the relevant owner of the public infrastructure to exceed these criteria and advised the former DPIE in writing of the terms of the agreement. Written agreements with Roads and Maritime Services (RMS), Telstra and Ausgrid are in place allowing increases in the ground vibration blast impact assessment criteria as follows:

- 150 mm/s with no allowable exceedances (RMS, Ausgrid); and
- 10 per cent (%) of the total number of blasts over a period of 12 months are allowed to exceed 100 mm/s (Telstra, Ausgrid); and
- Notification prior to blasting for blasts predicted to exceed 100 mm/s at Denman Road (RMS) and Mt Arthur Ausgrid lines (Ausgrid).

### 6.2.2 Environmental Performance

During the reporting period 173 blasts were undertaken. Blast data capture rates for the reporting period were 100 per cent (%) at all statutory sites. Blasting was undertaken on Monday to Saturday, with no blasts being undertaken on Sundays or public holidays.

Of the 173 blast events fired during the reporting period:

- Two blasts initiated outside of the allowable blast times of 8am-5pm on the 6 January 2025 (5:04pm) and 26 March 2025 (5:01pm);
- No blasts recorded ground vibration above the maximum of 10 mm/s;
- One blast (0.6%) resulted in an exceedance of the ground vibration lower limit of 5mm/s at the BP09R, Denman Rd West monitor (6.06 mm/s on 21 June 2025 at 11:40am) remaining below the 5% allowable exceedance limit;
- One blast recorded a valid airblast overpressure result above the 120 dB limit at BP08, Edinglassie (125.8 dB) noting that this location is utilised for monitoring impacts to heritage sites, subsequent investigation reported no damage to the heritage buildings as a result of the blast.
- An additional blast also recorded a result above the 120dB upper limit, (121.3 dB at BP07 Sheppard Ave monitor on 2 January 2025 at 3:25pm). However, investigation by third party consultants indicated the results

were wind affected and not representative of blast impact. The investigation reported the actual level from the blast impact (107.5 dBBL) was below both the upper and lower limits (120 dBBL and 115 dBBL, respectively);

- Six blasts (3.5 %) resulted in a valid exceedance of the 115 dBBL lower limit remaining below the 5% allowable exceedance limit including the following: and
  - BP09R, Denman Road West (116.6 dBBL) on 11 July 2024 at 1:26pm
  - BP09R, Denman Road West (119.0 dBBL) on 20 July 2024 at 11:01am;
  - BP08, Edinglassie (125.8 dBBL) on 7 December 2024 at 11:41am;
  - BP09R, Denman Road West (118.7 dBBL) on 23 December 2024 at 11:29am;
  - BP08, Edinglassie (115.2 dBBL) on 17 January 2025 at 1:47pm; and
  - BP04, South Muswellbrook (116 dBBL) on 21 June 2025 at 11:40am.
- An additional six blast results were recorded above the 115 dBBL lower limit, however investigation by third party consultants indicated the results were wind affected and not representative of blast impact. The investigation reported actual levels from blast impact were below the limit. Initial and actual results are summarised below:
  - North Yammanie (BP10) on 24 January 2025 (4:23pm) initially reported 119.2 dBBL, actual blast result was 108.0 dBBL;
  - Shppard Ave (BP07) on 24 January 2025 (4:23pm) initially reported 117.3 dBBL, actual blast result was 109.7 dBBL;
  - Denman Rd West (BP09R) on 3 March 2025 (2:56pm) initially reported 115.4 dBBL, actual blast result was 88.5 dBBL;
  - Sheppard Ave (BP07) on 5 March 2025 (4:56pm) initially reported 116.8 dBBL, actual blast result was 105.5 dBBL;
  - Denman Rd West (BP09R) on 4 March 2025 (3:05pm) initially reported 115.5 dBBL, actual blast result was 101.5 dBBL; and
  - North Yammanie (BP10) on 17 March 2025 (3:34pm) initially reported 116.0 dBBL, actual blast result was 96.5 dBBL;

Results reflect predictions made in the 2014 modification environmental assessment and generally do not show a significant difference in average or maximum results compared to previous reporting periods. A summary of the results and comparison of FY25 blast monitoring results with previous years is provided in Table 10.

During the reporting period, conditions of public infrastructure agreements were met in accordance with the Blast Management Plan. There were no exceedances of the upper or lower criteria limits for public infrastructure.

**Table 10: Summary of blast monitoring results**

Parameter	Statistic	FY25	FY24	FY23
Ground vibration (mm/s)	Average	0.18	0.17	0.20
	Maximum valid result	6.06(BP09R)	3.63 (BP09B)	4.78 (BP09B)
	Valid blasts above 5 mm/s threshold	1	0	0
Airblast overpressure (dBBL)	Average	94.9	94.1	95.67
	Maximum valid result	125.8 (BP08)	119.4 (BP08)	117.1 (BP08)
	Valid blasts above 115 dBBL threshold	5	1	3

### 6.2.3 Complaints and Reportable Incidents

Mt Arthur Coal did not receive any complaints related to blast activities, which is a significant decrease from the 6 blast complaints recorded in FY24.

Reportable blast incidents recorded during the reporting period are further discussed in Section 11.

### **6.2.4 Proposed Improvements**

HVEC will investigate the potential to connect one of the blast monitors (BP04, South Muswellbrook) to mains power or increase solar battery capacity to improve reliability of the monitor during winter.

In line with the continuous improvement principles integral to the site Environmental Management System, Mt Arthur Coal will continue to review the site systems and implement improvement opportunities as they arise.

## **6.3 Meteorological Data**

### **6.3.1 Environmental Management**

Meteorological monitoring at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-040 Air Quality Management Plan.
- MAC-ENC-PRO-083 Air Quality Data Validation Procedure

Mt Arthur Coal's primary statutory real-time meteorological station located at the mine's industrial area (WS09) is an essential component of the operation's environmental monitoring system. Wind speed, wind direction, temperature, rainfall, solar radiation and humidity data is collected at 15-minute intervals and relayed using radio telemetry.

A secondary statutory real-time meteorological station, located off site to the north-west of the mine at Wellbrook (WS10), also provides representative weather data for the mine site, including prevailing wind conditions, and is used in conjunction with WS09 to determine the presence and strength of temperature inversions in the local atmosphere as part of the pre-blast environmental assessment and for noise compliance monitoring. These meteorological stations are shown on Figure 3.

Both statutory meteorological stations comply with the Australian Standard 2923-1987 *Ambient Air – Guide for measurement of horizontal wind for air quality applications* and the EPA's 2017 Noise Policy for Industry.

### **6.3.2 Environmental Performance**

Meteorological data capture rate for the reporting period was 99.58 per cent at WS09 and 99.46 percent at WS10.

Total rainfall for the reporting period was around 658.8 mm, which is approximately 6 per cent higher than the long-term average of 619 mm. Wind direction at Mt Arthur Coal (WS09) during the reporting period was predominantly from North-Northwest during winter/spring seasons; and from South-Southeast during summer/autumn.

### **6.3.3 Proposed Improvements**

Mt Arthur Coal will continue to record and utilise meteorological data from its two statutory monitors (WS09 and WS10) during the next reporting period. In line with the continuous improvement principles integral to the site Environmental Management System, Mt Arthur Coal will continue to review the site systems and implement improvement opportunities as they arise.

## **6.4 Air Quality**

### **6.4.1 Environmental Management**

Air quality at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-040 Air Quality Management Plan.

Mt Arthur Coal operates an air quality monitoring network consisting of:

- Two statutory dust deposition gauges recording dust deposition, which are derived from mining and non-mining activities. These provide a measure of changing air quality;

- Six statutory real-time dust monitors, referred to as tapered element oscillating microbalance samplers (TEOMs), which record PM<sub>10</sub> levels on a continuous basis;
- Five additional TEOMs, which also record continuous PM<sub>10</sub> levels are included in the monitoring network. These are non-statutory and are used for proactive internal management purposes; and
- A Dust Control System (DCS) is monitored 24 hours a day, seven days a week by the onsite Dispatch Team and the Open Cut Examiner (OCE). When dust trigger levels are exceeded, the OCE monitor conditions and activate the Dust Trigger Action Response Plan (TARP). Operational responses are recorded in the DCS.

Air Quality monitoring locations are shown in Figure 3.

Mt Arthur Coal utilises a predictive dust model that predicts meteorological conditions and PM<sub>10</sub> concentrations up to 72 hours in advance. This tool is used for operational dust management planning and notification of mining supervisors when adverse weather conditions are predicted.

#### 6.4.2 Environmental Performance

Air dispersion modelling completed for the 2026 representative mining scenarios, as part of the 2013 environmental assessment, has been used to evaluate monitoring results for the reporting period.

##### *Depositional Dust Gauges*

The results from the statutory depositional dust monitoring results are summarised in Table 11. Depositional dust gauge data capture rates for the reporting period were 100 per cent at all statutory sites.

For the reporting period, no statutory depositional dust gauges exceeded the annual average assessment criteria, as shown in Table 11.

Monitoring results for the reporting period are slightly wetter than those in FY24, suggesting that the wet conditions experienced throughout the reporting period may have influenced the monitoring results. Rainfall recorded in FY25 was approximately 17% higher compared to FY24 and 6% lower than in FY23.

**Table 11: Comparison of annual average deposited dust results**

Monitor Location	Approval criteria (annual average)	Annual average depositional dust (g/m <sup>2</sup> /month)			Trend / key management implications	Implemented / proposed management actions
		FY25	FY24	FY23		
Edderton Homestead (DD08)	4 g/m <sup>2</sup> /month	1.5	1.4	1.0	No exceedances	Continue dust management in accordance with AQMP
Roxburgh Road (DD14)		2.2	2.3	2.1		

##### *Tapered Element Oscillating Microbalance Samplers*

A summary of the results from the statutory real-time TEOM PM<sub>10</sub> monitoring sites for the reporting period is provided in Table 12. Mt Arthur Coal has implemented reasonable and feasible mitigation measures as per the Air Quality Management Plan (AQMP).

For the recorded exceedances it was determined that the incremental increase in concentrations due to the Mt Arthur Coal project was less than 50 µg/m<sup>3</sup>.

The long-term annual average decreased in comparison to concentrations recorded during FY24 and increased in comparison to FY23 except at the monitoring site Sheppard Avenue DC02. However, concentrations from all Mt Arthur Coal's statutory TEOM monitoring sites remained below the long-term annual impact assessment criteria of 30 µg/m<sup>3</sup>.

Air dispersion modelling predictions for the 2026 mining scenarios have been used to evaluate annual average TEOM PM<sub>10</sub> results for the reporting period, as summarised in Table 12. PM<sub>10</sub> results are within the modelled predictions from all TEOM monitoring sites.

The data capture for all monitors were above 95 percent except for a single monitor (DC02), which recorded 94.9% as shown below:

- DC02 – 94.9%
- DC04 – 99.5%
- DC05 – 98.1%
- DC06 – 99.4%
- DC07 – 99.6%
- DC08 – 99.4%
- DC09 – 99.2%
- DC10 – 98.2%
- DC11 – 96.1%
- DC12 – 97.7%
- DC13 – 97.3%

During the reporting period, the short term 24-hour cumulative impact assessment criteria (50  $\mu\text{g}/\text{m}^3$ ) was exceeded 19 times at statutory TEOM monitoring sites over a total of 15 days. It is noted that on 27 May 2025, the Hunter Region was subject to a regional dust storm and Mt Arthur Coal recorded high levels of absolute  $\text{PM}_{10}$  at all TEOMs. The DPHI were notified of the event to ensure compliance with the AQMP. The notification was acknowledged, and confirmation was received that Mt Arthur Coal should commence reporting dust exceedances in accordance with the requirements of the approved Modification to MP09\_0062 (MOD 2).

The MOD 2 approved on 16 April 2025 defines an air quality incident as an incremental impact of the 24-hour averaging period criterion. Accordingly, the exceedance of 24-hour cumulative impact assessment criteria recorded on 27 June 2025 did not require reporting to the DPHI.

All exceedances of the cumulative criteria were reported to the DPHI, as recorded in Table 13. For the recorded exceedances it was determined that the incremental increase in concentrations due to the Mt Arthur Coal project was less than 50  $\mu\text{g}/\text{m}^3$ .

**Table 12: Summary of TEOM PM<sub>10</sub> monitoring results using validated data**

Monitor location	Approval criteria (µg/m <sup>3</sup> )	2026 – predicted cumulative (µg/m <sup>3</sup> ) <sup>+</sup>	TEOM PM <sub>10</sub> monitoring results (µg/m <sup>3</sup> )						Trend / key management implications	Implemented / proposed management actions		
			FY25		FY24		FY23					
			Max 24-hour avg	Annual Ave µg/m <sup>3</sup>	Max 24-hour avg	Annual Ave µg/m <sup>3</sup>	Max 24-hour avg	Annual Ave µg/m <sup>3</sup>				
Sheppard Avenue (DC02)	Short term 24-hour average: 50  Long term annual average: 30	19	90	18	68	17	72	17	No valid exceedances of the incremental impact assessment criteria due to the Mt Arthur Coal project.	Continue dust management in accordance with AQMP		
South Muswellbrook (DC04)		19	85	19	57	20	47	17				
Roxburgh Road (DC05)		19	91	23	103	26	74	19				
Edderton Homestead (DC06)		N/A	72	18	70	21	44	14				
Antiene (DC07)		18	88	18	56	19	56	17				
Wellbrook (DC09)		19	93	21	67	24	61	19				

<sup>+</sup> These predictions were modelled in 2013, emissions from Bengalla Mine are not included in these cumulative predictions as detailed emissions information for the Bengalla Continuation Project were not publicly available for inclusion in the modelling for 2026. This has led to the predicted cumulative levels being potentially artificially low.

**Table 13: 24-hour PM<sub>10</sub> exceedances and calculated Mt Arthur Coal incremental impact for statutory TEOMs**

Date of event	Monitor location	24-hour PM <sub>10</sub> result (µg/m <sup>3</sup> )	Mt Arthur Coal contribution (µg/m <sup>3</sup> ) (Incremental impact)
25/09/2025	Shephard Avenue DC02	51.3	0.0
24/11/2025	Roxburgh Rd DC05	62.1	2.9
25/11/2025	Roxburgh Rd DC05	50.2	7.0
13/12/2025	Roxburgh Rd DC05	51.5	0.0
14/12/2025	Roxburgh Rd DC05	57.3	7.8
	Wellbrook DC09	60.1	11.0
15/12/2025	Roxburgh Rd DC05	66.7	13.2
29/12/2025	Roxburgh Rd DC05	61.0	11.5
02/01/2025	Roxburgh Rd DC05	50.8	14.8
19/02/2025	Roxburgh Rd DC05	54.3	15.5
23/02/2025	Roxburgh Rd DC05	50.7	3.3
24/02/2025	Shephard Avenue DC02	50.1	0.6
	Roxburgh Rd DC05	62.6	3.2
01/03/2025	Roxburgh Rd DC05	57.2	9.3
	Edderton Road DC06	53.5	0.4
	Wellbrook DC09	61.0	15.9
02/03/2025	Roxburgh Rd DC05	52.1	8.6
17/03/2025	Wellbrook DC09	51.7	6.8
20/03/2025	Roxburgh Rd DC05	52.7	1.2
27/05/2025*	Shephard Avenue DC02	75.7	0.1
	South Muswellbrook DC04	84.8	0.3
	Roxburgh Rd DC05	91.1	0.0
	Antiene DC07	71.8	0.0
	Edderton Road DC06	88.4	0.0
	Wellbrook DC09	93.4	0.0
27/06/2025^	Shephard Avenue DC02	90.3	3.7

Note: The results reported in this table are based on data as reported to regulators.

\* Associated with regional dust event and therefore not classified as an exceedance as per the approved AQMP.

<sup>^</sup> not reported as per the Project Approval (MOD 2) approved on 16 April 2025.

#### *Total Suspended Particulates*

TEOM PM<sub>10</sub> monitoring data is used to calculate annual average total suspended particulate (TSP) levels. TSP results were calculated by multiplying the annual average PM<sub>10</sub> results by 2.5, in accordance with the approved AQMP.

During the reporting period, TSP annual average at each of the monitoring locations were lower than the reported values for FY24 and were greater than the reported values for FY23, except for Sheppard Avenue DC02. TSP remained considerably below the long-term annual impact assessment criteria at all statutory sites, as shown in Table 14.

**Table 14: Summary of total suspended particulate results**

Site name	Approval criteria	TSP annual average monitoring results ( $\mu\text{g}/\text{m}^3$ )			Trend / key management implications	Implemented / proposed management actions
		FY25	FY24	FY23		
<b>Sheppard Avenue (DC02)</b>	Long term annual average: 90 $\mu\text{g}/\text{m}^3$	44	43	43	No exceedances	Continue dust management in accordance with AQMP
<b>South Muswellbrook (DC04)</b>		46	50	43		
<b>Roxburgh Road (DC05)</b>		58	66	49		
<b>Edderton Homestead (DC06)</b>		46	53	35		
<b>Antiene (DC07)</b>		45	49	42		
<b>Wellbrook (DC09)</b>		53	59	47		

#### 6.4.3 Complaints and Reportable Incidents

During the reporting period, two dust-related complaints were received from one complainant. Investigations indicated that real-time dust levels and 24-hour averages remained within regulatory limits at the monitoring location nearest to the complainant. Complaints are discussed further in Section 0.

The Mt Arthur Dust Control System (DCS), originally implemented in 2019 and redesigned on a new platform in 2022, has significantly enhanced the site's capability to better monitor and manage dust performance. This improvement is evidenced by the reduction in dust-related complaints since the implantation of the DCS.

Mt Arthur Coal has revised and updated the AQMP to comply with the updated conditions of the recently approved MOD 2. The updated AQMP has been submitted to DPHI, and implementation will be completed following DPHI's approval. In the meantime, the existing AQMP will remain in effect.

##### *EPA Dust Complaint*

On 28 August 2024 EPA contacted HVEC with an informal request for information regarding two community complaints alleging dust coming from HVEC's premises. Upon investigation, relevant information was provided to EPA including dust levels and actions taken to minimise dust on the day. HVEC carried out activities in accordance with Condition O3 of EPL11457 and implemented all reasonable and feasible avoidance and mitigation measures in accordance with the approved AQMP. No further information was required by the EPA.

#### 6.4.4 Continuous Improvements

Mt Arthur Coal has consistently upgraded the DCS to maximise efficiency and enhance operational dust and noise management. As proposed in the last reporting period, fleet data has been integrated into the DCS, and Mt Arthur Coal intends to use this functionality to assess dust emission risks based on fleet positions.

For FY26, Mt Arthur Coal is also investigating the potential to combine real-time fleet, meteorological and dust monitoring data to develop short-term dust forecasting. This could support more effective proactive controls and further reduce dust emissions.

In line with the continuous improvement principles integral to the site Environmental Management System, Mt Arthur Coal will continue to review the site systems and implement improvement opportunities as they arise.

## 6.5 Biodiversity

### 6.5.1 Environmental Management

Flora and fauna at Mt Arthur Coal are managed in accordance with:

- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-MTP-050 Biodiversity Management Plan (BioMP);
- MAC-ENC-PRO-012 Land Management (internal document);

## ANNUAL REVIEW FY25

- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure (REMP, internal document); and
- MAC-HSE-PRO-002 Pest Animal Management Procedure (internal document).

The BioMP outlines Mt Arthur Coal's biodiversity management and monitoring approach, addressing both State and Commonwealth approval conditions in relation to biodiversity management.

The biodiversity offset areas managed by Mt Arthur Coal, as per the BioMP, are as follows:

- Mt Arthur Conservation Area (100.8 hectares);
- Saddlers Creek Conservation Area (431.3 hectares);
- Thomas Mitchell Drive Offset Area (on-site) (219.4 hectares);
- Thomas Mitchell Drive Offset Area (off-site) (492 hectares);
- Roxburgh Road 'Constable' Offset Area (109 hectares); and
- Middle Deep Creek Offset Area (1257 hectares).

In accordance with the modification project approval, long-term security for the Mt Arthur Coal biodiversity offset areas is provided through conservation agreements, formally registered on title.

Mt Arthur Coal undertakes annual flora and fauna monitoring to track progress against the BioMP and RMP objectives. The monitoring program tracks the condition of habitat areas over time and ensures that the BioMP's established performance indicators and project approval requirements are being met. The program includes monitoring sites throughout site woodland rehabilitation areas and remnant vegetation areas onsite and within offset areas. Remnant vegetation monitoring sites are used to assess mine impact and natural regeneration, as well providing reference data for comparative assessment of rehabilitation monitoring sites.

### *Weed Assessment and Treatment*

Mt Arthur Coal a site weed action plan was used to inform weed treatment works in FY25. This is based on monitoring conducted in FY24 and is informed by observations completed by the weed management contractor.

Mt Arthur Coal's weed treatment programs are guided by the Hunter Regional Strategic Weed Management Plan 2017 – 2022 (Hunter Local Land Services, 2017). Mt Arthur Coal primarily targets Weeds of National Significance, as well as State Priority weeds and Regional Priority weeds for the Hunter Region, declared under the Biosecurity Act 2015.

### *Pest Animal Control*

Feral animal presence is continually monitored through scheduled inspections and workforce feedback. Information from these sources is used to plan the feral animal control programs across the mine site and all biodiversity offset and conservation areas.

The vertebrate pest management program continued during the reporting period, with the annual campaign utilising trapping of feral pigs (*Sus scrofa domesticus*).

### **6.5.2 Environmental Performance**

The annual ecological development monitoring program, consisting of vegetation community assessment and fauna surveys, was undertaken in October and November 2024 by independent consultants. The REMP monitoring schedule identifies a total of 5 monitoring sites scheduled to be monitored in FY25. Those sites are listed in Table 15.

**Table 15 FY25 rehabilitation monitoring sites**

Site Name	Site Location	Easting (MGA56)	Northing (MGA56)	Vegetation Type (PCT No.)	Site type
MA4	Mt Arthur Conservation Area	298749.37	6417575.54	Woodland (1604)	Reference Site
MA6	Mt Arthur Conservation Area	297841.59	6416792.02	Box Gum Woodland (1606)	Reference Site
MA8**	Mt Arthur Conservation Area	297559.57	6417360.03	Woodland (1608)	Reference Site
MA10	Mt Arthur Conservation Area	297960.63	6417117.37	Woodland (1691)	Reference Site
VB4	Visual Bund - Box Gum Woodland Establishment Area	297079.21	6424077.52	Box Gum Woodland (1606)	Rehabilitation
VB5	Visual Bund - Box Gum Woodland Establishment Area	298827.01	6422636.28	Box Gum Woodland (1606)	Rehabilitation
VB6	Visual Bund - Northeast Woodland Corridor	299773.5	6421649.86	Woodland (1691)	Rehabilitation
MS1	Central Woodland Corridor	295667.4	6416093.37	Woodland (1604)	Rehabilitation

\*\*No rehabilitation site currently proposed to be replanted as PCT 1608.

#### *Biodiversity Monitoring Results*

Results of flora and vertebrate fauna species for the monitoring sites are provided in Table 16, along with a condition assessment score, which indicates ecological health based on condition attributes such as dieback, canopy health, erosion, vegetation patch shape, epicormic growth, weed invasion, mid strata native density, ground strata native density and connectivity of vegetation.

**Table 16: Summary of native and introduced flora species within 20 x 20 m plots and condition scores across FY25 sites**

Item	Reference Sites				Rehabilitation Sites			
	MA4	MA6	MA8	MA10	MS1	VB4	VB5	VB6
Native species (No.)	62	62	57	64	26	25	16	26
Native species (% of total)	81%	83%	93%	84%	59%	58%	38%	47%
Introduced species (No.)	15	13	4	12	18	18	26	29
Introduced species (% of total)	19%	17%	7%	16%	41%	42%	62%	53%
Total species	77	75	61	76	44	43	42	55
Native species total cover (%)	139.9%	201.9%	176.8%	179.7%	136.8%	41.6%	35.2%	104.1%
Introduced species total cover (%)	1.7%	1.5%	0.4%	1.5%	26.8%	54.2%	58.9%	36.7%
HTW total cover (%)	0.6%	0.1%	0.0%	0.6%	4.2%	35.3%	38.6%	21.0%

#### MS1

Monitoring site MS1 is an active regeneration site located to the south of MacDonald's Void within the Rehabilitation Woodland Corridor. The vegetation present is considered to be 'best-fit' to PCT 1604 Narrow-leaved Ironbark – Grey Box – Spotted Gum shrub – grass open forest of the central and lower Hunter. The vegetation present includes a canopy dominated by *Corymbia maculata* (Spotted Gum) with *Eucalyptus blakelyi* (Blakely's Red Gum). Shrub species present include *Acacia salicina* (Cooba), *Acacia parramattensis* (Parramatta Wattle), *Notelaea microcarpa* var. *microcarpa*, *Acacia decora* (Western Silver Wattle) and *Eremophila debilis* (Amulla). Native groundcovers include

*Bothriochloa decipiens* (Pitted Bluegrass), *Aristida ramosa* (Purple Wire Grass), *Chloris ventricosa* (Tall Chloris), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Cymbopogon refractus* (Barbed Wire Grass) and *Sporobolus creber* (Slender Rat's Tail Grass).

Weed cover is moderate and includes a moderate cover of *Plantago lanceolata* (Lamb's Tongues) along with minor occurrences of *Galenia pubescens* (Galenia), *Lysimachia arvensis* (Scarlet Pimpernel) and *Chloris gayana* (Rhodes Grass). The total number of exotic species recorded at MS1 is 18, with an estimated cover of 27%. Assessment of MS1 against reference sites, phase and domain specific criteria draft completion criteria are presented in Table 17.

**Table 17 MS1: Comparison between reference site and benchmark values**

Site ID (Year)	Tree Richness	Shrub Richness	Grass and Grass like Richness	Forb Richness	Fern Richness	Other Richness	Tree Cover	Shrub Cover	Grass and Grass Like Cover	Forb Cover	Fern Cover	Other Cover	Litter Cover
<b>1604 Narrow-leaved Ironbark -Grey Box - Spotted Gum shrub - grass open forest of the central and lower Hunter</b>													
Bench-mark values	5	8	12	14	2	5	53	16	58	9	1	4	40
MA4 (FY20)	4	6	5	9	0	5	40.3	2.4	46.5	2	0	0.65	49
MA4 (FY21)	3	8	11	18	0	8	40.5	2.7	58.3	2.3	0	0.8	52
MA4 (FY23)	3	7	19	24	1	3	45.3	4.8	56.6	5.7	0.1	0.3	78
MA4 (FY25)	4	10	13	27	1	7	54.3	15.6	65.4	3.7	0.1	0.8	65
MS1 (FY23)	4	3	13	5	0	2	42.5	1.7	71.9	1	0	0.2	72
MS1 (FY25)	5	3	9	8	0	1	51.5	1.4	82.3	1.1	0	0.5	67

#### VB4

Monitoring site VB4 is an active rehabilitation site located in the north of the Box Gum Rehabilitation Area. The vegetation present is considered to be 'best-fit' to PCT 1606 White Box – Narrow-leaved Ironbark – Blakely's Red Gum shrubby open forest of the central and upper Hunter. The vegetation present includes the canopy species *Eucalyptus albens* (White Box) and *Brachychiton populneus* subsp. *populneus*. Shrub species present include *Acacia implexa* (Hickory Wattle), *Acacia falcata*, *Acacia decora* (Western Silver Wattle), *Acacia parvipinnula* (Silver-stemmed Wattle), *Bursaria spinosa* (Native Blackthorn), *Indigofera Australia* (Australian Indigo) and *Dodonaea viscosa* subsp. *angustifolia*. Native groundcovers include *Cynodon dactylon* (Common Couch), *Microlaena stipoides* var. *stipoides* (Weeping Grass), *Panicum effusum* (Hairy Panic), *Geranium solanderi* (Native Geranium), *Einadia trigonos* (Fishweed) and *Dichondra repens* (Kidney Weed). The total number of native species recorded at VB4 is 25, with an estimated cover of 42%.

Weed cover is high with dense areas of *Megathyrsus maximus*, as well as *Galenia pubescens* (Galenia), *Rapistrum rugosum* (Turnip Weed) and *Gomphocarpus fruticosus* (Narrow-leaved Cotton Bush) recorded. The total number of exotic species recorded at VB4 is 18, with an estimated cover of 54%. Assessment of VB4 against reference sites is presented in Table 18.

**Table 18 VB4: Comparison between historic data, reference site and benchmark values**

Site ID (Year)	Tree Richness	Shrub Richness	Grass and Grass like Richness	Forb Richness	Fern Richness	Other Richness	Tree Cover	Shrub Cover	Grass and Grass Like Cover	Forb Cover	Fern Cover	Other Cover	Litter Cover
<b>1606 White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter</b>													
Bench-mark values	<b>6</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>2</b>	<b>5</b>	<b>68</b>	<b>49</b>	<b>30</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>50</b>
MA6 (FY20)	4	4	7	7	0	4	58	15.2	7.4	0.7	0	0.5	60
MA6 (FY21)	4	7	9	24	2	9	90	13.6	51.2	3.4	0.2	1.2	60
MA6 (FY23)	4	7	10	25	1	7	50.4	12.2	96.5	5.7	0.3	1	22
MA6 (FY25)	4	6	13	30	2	7	73.0	32.0	90.6	4.4	0.3	1.6	51
VB4 (FY23)	1	3	6	5	0	0	0.8	5.1	21.4	0.6	0	0	10
VB4 (FY25)	2	7	9	6	0	1	3.3	13.5	13.6	11.1	0	0.1	48

**VB5**

Monitoring site VB5 is an active rehabilitation site located in the centre of the Box Gum Rehabilitation Area. The vegetation present is considered to be 'best-fit' to PCT 1606 White Box – Narrow-leaved Ironbark – Blakely's Red Gum shrubby open forest of the central and upper Hunter. The vegetation present includes the canopy species of *Eucalyptus dawsonii* (Slatey Gum), *Eucalyptus camaldulensis* (River Red Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark). Shrub species present include *Acacia implexa* (Hickory Wattle), *Acacia falcata* and *Acacia decora* (Western Silver Wattle). Native groundcovers include *Dichanthium sericeum* (Queensland Bluegrass), *Bothriochloa decipiens* var. *decipiens* (Pitted Bluegrass), *Sporobolus creber* (Slender Rat's Tail Grass), *Erodium crinitum* (Blue Crowfoot) and *Euphorbia drummondii* (Caustic Weed). The total number of native species recorded at VB5 is 16, with an estimated cover of 35%.

Weed cover is high with dense areas of *Chloris gayana* (Rhodes Grass), as well as *Panicum coloratum* (Coolah Grass), *Galenia pubescens* (Galenia), *Rapistrum rugosum* (Turnip Weed) recorded. The total number of exotic species recorded at VB5 is 26, with an estimated cover of 59%. Assessment of VB5 against reference sites is presented in Table 19.

**Table 19 VB5: Comparison between historic data, reference site and benchmark values**

Site ID (Year)	Tree Richness	Shrub Richness	Grass and Grass like Richness	Forb Richness	Fern Richness	Other Richness	Tree Cover	Shrub Cover	Grass and Grass Like Cover	Forb Cover	Fern Cover	Other Cover	Litter Cover
<b>1606 White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter</b>													
Bench-mark values	<b>6</b>	<b>13</b>	<b>10</b>	<b>13</b>	<b>2</b>	<b>5</b>	<b>68</b>	<b>49</b>	<b>30</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>50</b>
MA6 (FY20)	4	4	7	7	0	4	58	15.2	7.4	0.7	0	0.5	60
MA6 (FY21)	4	7	9	24	2	9	90	13.6	51.2	3.4	0.2	1.2	60
MA6 (FY23)	4	7	10	25	1	7	50.4	12.2	96.5	5.7	0.3	1	22
MA6 (FY25)	4	6	13	30	2	7	73.0	32.0	90.6	4.4	0.3	1.6	51
VB5 (FY23)	4	3	5	2	0	0	7.7	1.4	50.2	0.2	0	0	9.4

Site ID (Year)	Tree Richness	Shrub Richness	Grass and Grass like Richness	Forb Richness	Fern Richness	Other Richness	Tree Cover	Shrub Cover	Grass and Grass Like Cover	Forb Cover	Fern Cover	Other Cover	Litter Cover
VB5 (FY25)	3	3	4	6	0	0	8.5	13.5	8.5	4.7	0	0	37

## VB6

Monitoring site VB6 is an active rehabilitation site located to the south of the Box Gum Rehabilitation Area within the Rehabilitation Woodland Corridor. The vegetation present is considered to be 'best-fit' to PCT 1691 Narrow-leaved Ironbark – Grey Box grassy woodland of the central and upper Hunter. The vegetation present includes a canopy co-dominated by *Eucalyptus dawsonii* (Slaty Gum) and *Corymbia maculata* (Spotted Gum), with *Eucalyptus albens* (White Box) and *Eucalyptus crebra* (Narrow-leaved Ironbark) also present. Shrub species present include *Acacia prominens* (Gosford Wattle), *Acacia salicina* (Cooba), *Acacia decora* (Western Silver Wattle), *Myoporum montanum* (Western Boobialla), *Solanum cinereum* (Narrawa Burr) and *Sclerolaena birchii* (Galvanised Burr). Native groundcovers include *Sporobolus creber* (Slender Rat's Tail Grass), *Cynodon dactylon* (Common Couch), *Austrostipa scabra* (Speargrass), *Eriochloa pseudoacrotricha* (Early Spring Grass) and *Sida hackettiana* (Golden Rod). The total number of native species recorded at VB6 is 26, with an estimated cover of 104%.

Weed cover is moderate with dense areas of *Chloris gayana* (Rhodes Grass), as well as *Melinis repens* (Red Natal Grass), *Panicum coloratum* (Coolah Grass), *Setaria parviflora* and *Lycium ferocissimum* (African Boxthorn) recorded. The total number of exotic species recorded at VB6 is 29, with an estimated cover of 37%. Assessment of SDS1 against reference sites is presented in Table 20.

**Table 20 VB6: Comparison between historic data, reference site and benchmark values**

Site ID (Year)	Tree Richness	Shrub Richness	Grass and Grass like Richness	Forb Richness	Fern Richness	Other Richness	Tree Cover	Shrub Cover	Grass and Grass Like Cover	Forb Cover	Fern Cover	Other Cover	Litter Cover
1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter													
Bench-mark values	5	8	12	14	2	5	53	16	58	9	1	4	40
MA10 (FY20)	4	7	9	6	0	2	30.1	6.8	28.45	0.7	0	0.2	43
MA10 (FY21)	4	9	12	21	1	4	25.1	9.7	44.7	4.9	0.1	0.4	61
MA10 (FY23)	6	6	17	22	1	1	48.1	16.7	86.5	4.2	0.2	0.1	47
MA10 (FY25)	5	9	18	26	2	4	52.1	29.9	93.6	3.3	0.4	0.4	59
VB6 (FY23)	5	4	11	5	0	0	37	10.9	46	1	0	0	41
VB6 (FY25)	6	4	8	7	1	0	61	15.7	25.6	1.7	0.1	0	47

#### Weed Control

FY25 weed assessment work consisted of the following elements:

- Biodiversity monitoring weed assessment work completed by independent consultants as part of the Rehabilitation and Ecological Monitoring Program and Conservation Agreement monitoring; and
- A site weed treatment action plan.

The following weed species were targeted (but not limited to) during the reporting period:

- African boxthorn (*Lycium ferocissimum*);
- African Olive (*Olea europaea Cuspidate*)
- Exotic grasses
- Blue heliotrope (*Heliotropium amplexicaule*);
- Coolatai Grass (*Hyparrhenia hirta*)
- Galenia (*Galenia pubescens*)
- Golden wreath wattle (*Acacia saligna*)
- Pampas grass (*Cortaderia sellona*)
- Saffron Thistle (*Carthamus sp*)
- St. John's wort (*Hypericum perforatum*)

Mt Arthur Coal targeted the following areas of operational land for weed treatment during the reporting period:

- VDs 1, 4 and 5;
- CD1;
- Drayton Void;
- Saddlers North;
- McDonald's South;
- Western boundary Adjacent the Core Shed and EME pad;
- Adjacent the Environment and Dirty Water Dams; and
- Rail loop.

Weed treatment for Biodiversity Offset Areas included slashing and spraying of weeds across all areas.

#### Pest Animal Control

During the reporting period Mt Arthur conducted the following pest animal control programs:

- Wild pig trapping program commenced at the end of the reporting period and numbers will be included in the FY 25 report and control of goats was not undertaken in FY25.

Table 21 shows the breakdown of species humanely destroyed during pest control programs.

**Table 21 Pest animal control program results for FY25**

Species	Count
Feral Pigs	2

### 6.5.3 Long Term Security Arrangements

The status of Long-Term Security of biodiversity offsets required under Project Approval 09\_0062 is presented in Table 22.

**Table 22 Status of Long-Term Security Agreements**

Condition	Biodiversity Offset	Status
Schedule 3 Condition 39(a)	Mount Arthur Conservation Area Middle Deep Creek and Oakvale Offset Conservation Agreement Roxburgh Road Offset Conservation Area Saddlers Creek Conservation Area Thomas Mitchell Drive Off-Site Offset Conservation Area Thomas Mitchell Drive On-Site Offset Conservation Area	Conservation Agreements executed.
Schedule 3 Condition 39(a)	Rehabilitation Area	Long term security of the Rehabilitation Area is required at least 2 years prior to the cessation of rehabilitation activities associated with the development, or other timeframe agreed by the Secretary. Mt Arthur will consider available mechanisms to provide appropriate long-term security at an appropriate time.
Schedule 3 Condition 39A	Proposed additional Box-Gum Woodland located adjacent to Saddlers Creek Offset Area	Long term security of the proposed additional box-Gum Woodland within 2 years of the approval of MOD 2, or another timeframe agreed by the Secretary Mt Arthur will consider available mechanisms to provide appropriate long-term security at an appropriate time.

### 6.5.4 Complaints and Reportable Incidents

There was no biodiversity complaints received in FY25. Mt Arthur Coal did not receive any government fines or penalties related to flora and fauna during the reporting period and there were no related reportable incidents.

### 6.5.5 Proposed Improvements

Mt Arthur Coal will continue to implement the REMP and action recommendations as required during the next reporting period, with monitoring of woodland rehabilitation, remnant woodland community sites and revegetation/regeneration areas within conservation areas.

Mt Arthur Coal will continue removing waste items and repairing sections of fence that require maintenance in conservation and biodiversity offset areas during the next reporting period.

During the next reporting period, Mt Arthur Coal will also implement another vertebrate pest management program on site. Improvements in the management of additional pest animal species will be a particular focus, with expanded shooting, trapping and baiting programs to be completed to include rabbits, goats and pigs.

## 6.6 Visual Amenity and Lighting

### 6.6.1 Environmental Management

Visual amenity and lighting management at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring;
- MAC-PRD-PRO-073 Procedure for Lighting Plant Movement and Setup; and
- MAC-ENC-PRO-077 Light Management Procedure.

Mt Arthur Coal's visual assessment procedure ensures overburden emplacement development is monitored and assessed against modelled predictions in the environmental assessment.

Management measures presented in the Light Management Procedure aim to control and reduce the impact of lighting on the surrounding area. The procedure is used in conjunction with the procedure for lighting plant movement and setup, which advises operational staff on correct alignment of lights to avoid offsite impact.

### 6.6.2 Environmental Performance

Visual impact inspections were completed on 24 October 2024. The inspection indicated that viewpoint locations to the east of Mt Arthur Coal have extensive views of rehabilitated overburden dumps, with reduced visual contrast to surrounding non-mined landforms and peripheral visual impact from active mining activities. Viewpoint locations to the north and west of MAC recorded that a distinct visual contrast between mining activity and the surrounding non-mined landscape is evident due to exposure to low wall overburden dumps. For all locations the shape and size of the overburden dumps are generally in line with the predicted model as shown in the environmental assessment.

Management measures designed to reduce the visual impact created by the overburden emplacement have been incorporated into the mine plan. Such measures include:

- The integration of tree corridors on overburden emplacements as part of progressive rehabilitation;
- Incorporating micro relief features (stag trees, ripping, rock features and habitat trees) throughout overburden emplacements to provide an enhanced naturally appearing landform and fauna habitat;
- The practical consideration of geomorphic designs on emplacements to sustainably manage water and create a natural looking and stable landform;
- The strategic design and rehabilitation of overburden emplacements for increased visual shielding of operations;
- Establishing visual and ecological planting patterns of native trees to achieve landscape patterns that complement the existing spatial distribution of tree and grass cover in a grazing landscape; and
- Minimising exposure of work areas to sensitive receivers where possible, largely through the timely rehabilitation of visible overburden emplacements.

### 6.6.3 Complaints and Reportable Incidents

During the reporting period, one lighting complaint was received, which is significant less than the number of lighting complaints recorded in FY24 (11 complaints). On notification of the complaint, action was taken to address the complainant's concerns, including location and redirection of offending lights, as well as communication to operational teams. Further information is provided in Section 0.

Mt Arthur Coal did not receive any government fines or penalties related to lighting or visual amenity during the reporting period and there were no related reportable incidents.

#### **6.6.4 Proposed Improvements**

During the reporting period Mt Arthur Coal continued to incorporate fluvial geomorphic principles into the design of overburden emplacements. Rehabilitated landforms were reshaped to facilitate natural surface flow processes, resulting in a final shape that more closely mimics the adjacent non-mined landscape and reduces visual impact. This process will be developed further in subsequent reporting periods.

Lighting from Mt Arthur Coal will continue to be implemented in accordance with the Light Management Procedure and managed to minimise impacts on the local community whilst maintaining the minimum level necessary for operational and safety needs. Screen planting for visual amenity will continue to be reviewed and planned in FY26.

### **6.7 Aboriginal Cultural Heritage**

#### **6.7.1 Environmental Management**

Aboriginal cultural heritage at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-042 Aboriginal Heritage Management Plan.

Mt Arthur Coal is required to prepare an Aboriginal Heritage Management Plan (AHMP) under MP09\_0062 in consultation with Registered Aboriginal Parties (RAPs) and Heritage NSW, and to have this plan approved by the Secretary of the Department of Planning, Housing and Infrastructure (DPHI) prior to implementation. This management plan provides the framework to identify, assess, monitor, protect and manage Aboriginal Cultural Heritage on site. The management plan assists Mt Arthur Coal to mitigate the impacts of its operations on Aboriginal Cultural Heritage, comply with the requirements of the *National Parks and Wildlife Act 1974*, *Environmental Planning and Assessment Act 1979* and the relevant Project Approvals and continue its active partnership with the Aboriginal community.

#### **6.7.2 Environmental Performance**

Minor survey and/or salvage activities and due diligence assessments were completed and recorded during the reporting period for the following site works in accordance with the methodology detailed in the approved AHMP:

- Areas required for future mining and overburden emplacement;
- Exploration Drill Sites; and
- Minor changes to roads, access tracks and powerlines

All site cards required by section 89A of the *National Parks and Wildlife Act* are being prepared to be lodged with Heritage NSW.

Known grinding grooves and scar trees within the site boundary and biodiversity offset areas were inspected and assessed by an archaeologist and RAPs as required by the AHMP.

#### **6.7.3 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive any complaints, government fines, or penalties related to Aboriginal cultural heritage during the reporting period and there were no related reportable incidents.

#### **6.7.4 Proposed Improvement**

All measures to protect Aboriginal Cultural Heritage described in the approved AHMP are intended to continue, along with consultation with our key Aboriginal stakeholders. Mt Arthur Coal is currently reviewing and updating the AHMP, in consultation with RAPs and Heritage NSW, to comply with the updated conditions of the recently approved MOD 2. As required, the updated plan will be submitted to DPHI for approval prior to implementation. The existing AHMP will continue to be implemented in the interim.

## 6.8 European Cultural Heritage

### 6.8.1 Environmental Management

European cultural heritage at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-046 European Heritage Management Plan;
- MAC-ENC-MTP-048 Edinglassie and Rous Lench Conservation Management Plan - Volume 1;
- MAC-ENC-MTP-049 Edinglassie and Rous Lench Conservation Management Plan - Volume 2.

Mt Arthur Coal owns and manages five heritage-listed homesteads as follows:

- Edinglassie Homestead (state significance);
- Rous Lench Homestead (state significance);
- Edderton Homestead Complex (local significance);
- Belmont Homestead Complex (local significance); and
- Balmoral Homestead (local significance).

The greater Edinglassie property is the location of both the Edinglassie and Rous Lench Homesteads. The property is located directly opposite the operation, with the Edinglassie Homestead situated less than 500m from the active mining areas. These two State Significant historic heritage items have the greatest potential for experiencing possible impacts resulting from mining activities.

The European Heritage Management Plan assists Mt Arthur Coal to coordinate and manage the European heritage items affected or potentially affected by its operations, comply with the requirements of the *Heritage Act 1977* and the relevant Project Approvals, and to mitigate any potential or actual impacts of its operations on European cultural heritage.

### 6.8.2 Environmental Performance

#### *Edinglassie and Rouse Lench Complex*

During the reporting period, Mt Arthur Coal inspected Edinglassie Homestead, Rous Lench Homestead and related buildings and structures to ensure properties were maintained to an acceptable standard.

Annual actions described in the Conservation Management Plan were undertaken including pest control, ground maintenance, annual inspections, fire protection audits and checks of sewerage systems.

During the reporting period, the ground floor bathroom was replaced, the upper storey was repainted to unify the overall colour scheme and minor electrical and plumbing repairs and upgrades were completed. All works were guided by a heritage consultant.

Assessments on potential works at Rouse Lench were undertaken with a structural engineer and heritage consultant, with plans to carry out works during the 2026 reporting period

During September 2024, Muswellbrook experienced a number of earthquakes that unfortunately resulted in superficial cracking of the newly repaired interior render at the Edinglassie Homestead. These cracks were assessed following the events and will be repaired when trade availability and budget allow.

#### *Balmoral Homestead*

Exterior painting was undertaken of the main homestead during the 2024 reporting period. Work commenced on the restoration of the Servant's Quarters including risk assessments, structural assessments, heritage assessments and work planning.

The earthquakes during September 2024 resulted in severe cracking to the interior of the main Balmoral Homestead, and structural impacts to the Servant's Quarters. Works have temporarily ceased while assessments of the structural impacts are carried out and reported on. The scope of works is being revised and will be carried out when trade availability and budget allow.

### **6.8.3 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive any complaints, government fines or penalties related to European cultural heritage during the reporting period and there were no related reportable incidents.

### **6.8.4 Proposed Improvements**

All heritage structures are planned to remain in situ during the next reporting period with no impacts predicted from the current mine plan. Inspections and maintenance measures will continue to be implemented during the next reporting period to conserve all historic homesteads and related buildings. Mt Arthur Coal will continue to invest in restoration of its heritage properties with large scale works being undertaken in the past year and planned into the next financial year.

## **6.9 Contaminated Land and Hydrocarbon Contamination**

### **6.9.1 Environmental Management**

Contaminated land at Mt Arthur Coal is managed in accordance with the following internal documents:

- MAC-ENC-PRO-029 Spill Response;
- MAC-ENC-PRO-074 Contaminated Land Management;
- MAC-ENC-PRO-087 Hydrocarbon Bioremediation Management;
- MAC-STE-PRO-013 Hazardous Materials Management Procedure; and
- MAC-STE-015-Restricted and Banned tools, Equipment and Activities.

Hydrocarbons and other hazardous substances are kept in designated storage compounds designed and managed in accordance with relevant standards and procedures. Monitoring and inspection programs are maintained for these facilities to ensure hazardous materials and wastes are being adequately stored and disposed of and that any spills or leaks are promptly reported and managed in line with site procedures. Use of some substances (i.e. PFAS foams) are banned or restricted from site which is managed through internal tracking and ordering systems as well as routine inspections.

### **6.9.2 Environmental Performance**

During the reporting period, all spills were controlled and contained using emergency spill kits or earthmoving equipment to form a temporary bund. Spills were managed in line with site procedures.

### **6.9.3 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive any complaints, government fines, or penalties related to contaminated land or hydrocarbon contamination during the reporting period and there were no related reportable incidents.

### **6.9.4 Proposed Improvements**

Mt Arthur Coal will continue to implement management practices in line with the current procedures. Where feasible, Mt Arthur Coal will investigate and implement improvements to the management of contaminated land and hydrocarbon contamination in accordance with legislative requirements.

## **6.10 Spontaneous Combustion**

### **6.10.1 Environmental Management**

Spontaneous combustion at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-PRG-002 Spontaneous Combustion Control Program.

Mt Arthur Coal has implemented a spontaneous combustion control program to prevent, monitor, control and report outbreaks of spontaneous combustion.

### 6.10.2 Environmental Performance

In H2 of FY25 Mt Arthur Coal implemented various updates and improvements to the spontaneous combustion tracking, categorising and reporting processes. These improvements aim to more accurately capture monthly changes by using the advanced technology currently available and based on learnings that have been gathered by the Mt Arthur Coal team. The key changes include:

- Updates to the intensity classification criteria based on newly available data from thermal imagery surveys and a benchmarking exercise
- The monitoring areas have been split between active mining areas and Bayswater No. 2 and Drayton sub-lease areas (historical) mining areas.
  - Spontaneous combustion in the active mining areas is consistently changing due to the nature of the area i.e. material is being uncovered and relocated constantly. Due to the complex and constant change that is seen in these areas, thermal imagery surveys are completed monthly to ensure there is adequate tracking and understanding of spontaneous combustion in these areas.
  - Spontaneous combustion in the Bayswater No. 2 and Drayton sub-lease areas has been consistently reported over time as static and low risk in nature. Due to the low-risk nature and the operating context of this area i.e. there is no new operational activity scheduled to take place prior to 2030 closure, thermal imagery surveys will continue to be undertaken on a regular basis with monitoring results in this zone removed from the standard monthly report and tracked separately in line with the Spontaneous Combustion Control Reporting requirements.

A summary of the areas of known spontaneous combustion for FY25 is presented in Table 23. Noting that for the second half of FY25 (January 2025 – June 2025) the reporting methodology was updated in line with the above.

At the end of the reporting period, there was a total of 6085 m<sup>2</sup> of area affected by spontaneous combustion, in line with new reporting categories. A comparison will be made in FY26 after one full year of the new tracking and reporting. A summary of spontaneous combustion in the reporting period is shown in Table 23.

**Table 23: Summary of spontaneous combustion at Mt Arthur Coal in FY25 (July 24 - June 25)**

Month	Total area affected at start of month (m <sup>2</sup> ):	Areas unchanged (m <sup>2</sup> ):	Existing areas that have expanded or contracted (m <sup>2</sup> ):	New areas discovered in month (m <sup>2</sup> ):	Area extinguished in month (m <sup>2</sup> ):	Area treated in month (m <sup>2</sup> ):	Total area remaining at end of month (m <sup>2</sup> ):
July	10252	-	-	1021	0	815	10458
August	10458	-	-	261	266	0	10452
September	10452	-	-	1400	631	370	10850
October	10850	-	-	445	778	982	9534
November	9534	-	-	478	184	0	9829
December	9828	-	-	3090	963	0	11449
January	5178	2004	4451	326	162	0	6781
February	6781	4264	1258	2868	115	0	8389
March	8389	1962	4257	0	3449	0	6219
April	6219	3000	4505	1093	975	0	8598
May	8598	2239	4053	145	1755	0	6439
June	6439	3046	2807	232	633	0	6085

### 6.10.3 Complaints and Reportable Incidents

During the reporting period there were no complaints relating to spontaneous combustion.

Mt Arthur Coal did not receive any government fines or penalties related to spontaneous combustion during the reporting period.

#### **6.10.4 Proposed Improvements**

Mt Arthur Coal will continue to monitor spontaneous combustion during the next reporting period and continue closure studies focusing on capping and final landform designs.

### **6.11 Bushfire**

#### **6.11.1 Environmental Management and Performance**

Bushfire at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-PRO-076 Bushfire Prevention Procedure (internal document); and
- MAC-STE-PRO-010 Emergency Procedure – Bushfires (internal document).

Specific prevention and fire suppression control measures are implemented in order to protect remnant vegetation communities as well as Mt Arthur Coal infrastructure. Preventative measures include fuel load assessment and reduction programs, the establishment and maintenance of fire breaks and the prevention of ignition sources. Fire suppression and control is achieved through on-site fire-fighting equipment, including a rescue truck and water carts, facilitated by a network of roads and vehicle access trails, which provide access to most areas of Mt Arthur Coal owned land. Mt Arthur Coal also maintained a trained emergency response team on each shift. Fire extinguishers are fitted in vehicles and buildings.

No major grass or bushfires occurred on site or at the conservation or offset areas during the reporting period.

#### **6.11.2 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive any complaints, government fines or penalties related to bushfire during the reporting period and there were no related reportable incidents.

#### **6.11.3 Proposed Improvements**

During the next reporting period Mt Arthur Coal will continue to manage bushfire risk in accordance with relevant procedures, including the possibility of additional controlled burns on offsite properties.

### **6.12 Greenhouse Gas and Energy**

#### **6.12.1 Environmental Management**

Greenhouse gas and energy at Mt Arthur Coal are managed in accordance with the MAC-ENC-MTP-040 Air Quality Management Plan.

Mt Arthur Coal undertakes regular reviews and monitoring of greenhouse gas emissions and energy efficiency initiatives to ensure that greenhouse gas emissions per tonne of product coal are kept to the minimum practicable level. During the reporting period Mt Arthur Coal continued greenhouse gas and energy consumption monitoring with the use of a centralised database to assist with monthly tracking and reporting of key emission sources. A key focus during the reporting period was to ensure the operation complied with the regulations under the *National Greenhouse and Energy Reporting (NGER) Act 2007* and the Safeguard Mechanism reforms.

#### **6.12.2 Environmental Performance**

Total emissions were 616 kt CO<sub>2</sub>-e in the FY25 reporting period, of which direct (scope 1) emissions accounted for 89 per cent, and scope 2 emissions from the use of grid-based electricity accounted for the remaining 11 per cent. As in the previous reporting period, Mt Arthur Coal used NGER Method 2 measurement of its open fugitive emissions, which were reduced for the period (to 40 kt CO<sub>2</sub>-e) and as a proportion of total scope 1 emissions of 7 per cent. Fugitive emissions are expected to remain relatively stable over time as the mine progresses towards closure.

Fuel combustion continues to constitute the bulk of emissions from Mt Arthur Coal, accounting for 93 per cent of scope 1 emissions and 82 per cent of total emissions in the reporting period. Energy use was similarly dominated by diesel fuel (93 per cent), with other fuels and electricity making up the balance.

Scope 1 and Scope 2 emissions predictions modelled in the 2013 Air Quality and Greenhouse Gas Assessment were used for comparison with the results for this reporting period, as shown in Table 24. From FY27, GHG emissions will be compared to the predictions in the 2023 Air Quality Impact and Greenhouse Gas Assessment that was prepared as part of Mt Arthur Coal Modification 2 Modification Report. The FY25 Scope 1 emissions profile decreased on FY24 despite the predicted increase in the EA. Annual emissions continue to remain below predicted estimates for both Scope 1 and Scope 2 emissions.

**Table 24 Annual GHG Emissions (Scope 1 & 2)**

Year*	t CO2-e					
	Predicted Scope 1	Actual Scope 1	Predicted Scope 2	Actual Scope 2	Total (Predicted)	Total (Actuals)
FY23	596,988	528,632	122,671	73,148	719,659	601,780
FY24	625,627	594,767	120,941	69,101	746,568	663,868
FY25	661,789	548,294	124,009	68,064	785,798	616,358

\*In accordance with the 2013 EA, the predicted emissions estimates are provided by calendar year. In accordance with the NGER reporting requirements, the actual emissions data is provided by financial year.

The Environmental Assessment (EA) that was prepared in 2013 to support the NSW Project Approval Modification of PA09\_0062 included an assessment of greenhouse gas impacts, Appendix F Air Quality and Greenhouse Gas Assessment (the assessment), Mt Arthur Coal Open Cut Modification prepared by PAEHolmes in January 2013.

Due to a change in reporting methodology from Method 1 to Method 2, the fugitive emissions estimates prepared in the assessment in January 2013 are not directly comparable to the fugitive emissions that are now reported under the Commonwealth National Greenhouse and Energy Reporting Act 2007 (NGER Act). The January 2013 predictions were calculated using Method 1, utilising a default emissions factor across NSW as set out in the Commonwealth Department of Climate Change and Energy Efficiency National Greenhouse Accounts 2011. Since this time Mt Arthur Coal has changed to the more accurate and site-specific Method 2 methodology as outlined in the NGER Act which is subject to a rigorous process which includes independent assurance. As such, a direct comparison of current emissions reported under the NGER Act to those predicted in the EA by PAEHolmes in January 2013 is not considered practicable or informative, and therefore Table 24 removes fugitive emissions from the predicted emissions comparison.

Additionally, the 2023 Air Quality Impact and Greenhouse Gas Assessment that was prepared as part of Mt Arthur Coal Modification 2 Modification Report does not include predictions for FY25 and FY26 (because Modification 2 seeks approval for continued operations from FY27 – FY30), as such, Mt Arthur will continue to report against the 2013 EA until such time that the predicted years align with current year.

As diesel fuel consumption represents most Scope 1 emissions for Mt Arthur Coal, the key mitigation measures currently in place are generally focused on minimising GHG emissions through efficient use of diesel by:

- Optimising the design of haul roads to minimise the distance travelled.
- Minimizing the re-handling of material (i.e. coal, overburden and topsoil); and
- Maintaining the mobile fleet in good operating order.

In addition to the above, other controls in place include:

- Consideration of ways to reduce energy consumption during project planning phases and consider practicality of more energy efficient alternatives; and
- Regulator scheduled maintenance of equipment and plant.

Energy efficiency initiatives and opportunities at Mt Arthur Coal are evaluated in the context of:

- Their compatibility with the production output and needs;

- Energy and carbon costing;
- Closure;
- Capital cost; and
- Overall cost effectiveness including maintenance costs.

Mt Arthur Coal also regularly assesses decarbonisation options with the reduction of Scope 2 emissions in mind which include initiatives such as the implementation of a Power Purchasing Agreement for renewable energy.

Reasonable and feasible measures (emissions reduction and/or energy efficiency initiatives) that are deemed effective at reducing GHG emissions are implemented should they be viable and available.

### **6.12.3 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive any complaints; government fines or penalties related to greenhouse gas or energy during the reporting period and there were no related reportable incidents.

### **6.12.4 Proposed Improvements**

In accordance with the Mt Arthur Coal Consolidated Consent Modification 2, Mt Arthur Coal are currently undertaking a review of the Gas Assignment Model in line with Schedule 3 Condition 24B and will be developing a Greenhouse Gas Mitigation Plan in line with Schedule 3 Condition 24C throughout the next reporting period.

BHP is committed to reducing its operational emissions globally. The 2024 Climate Transition Action Plan sets out BHP's climate change strategy, commitments, targets and goals, and forward-looking plans. BHP remains on track for the previously set medium-term goal to reduce its operational emissions by at least 30% by 2030 on the way towards the longer-term commitment to achieve net-zero operational GHG emissions by 2050.

Mt Arthur Coal will continue to investigate and, where feasible, implement projects to decarbonise, reduce fossil fuel energy consumption and greenhouse gas emissions in accordance with BHP's sustainability commitments, including the company's greenhouse gas emission targets.

## **6.13 Waste Management**

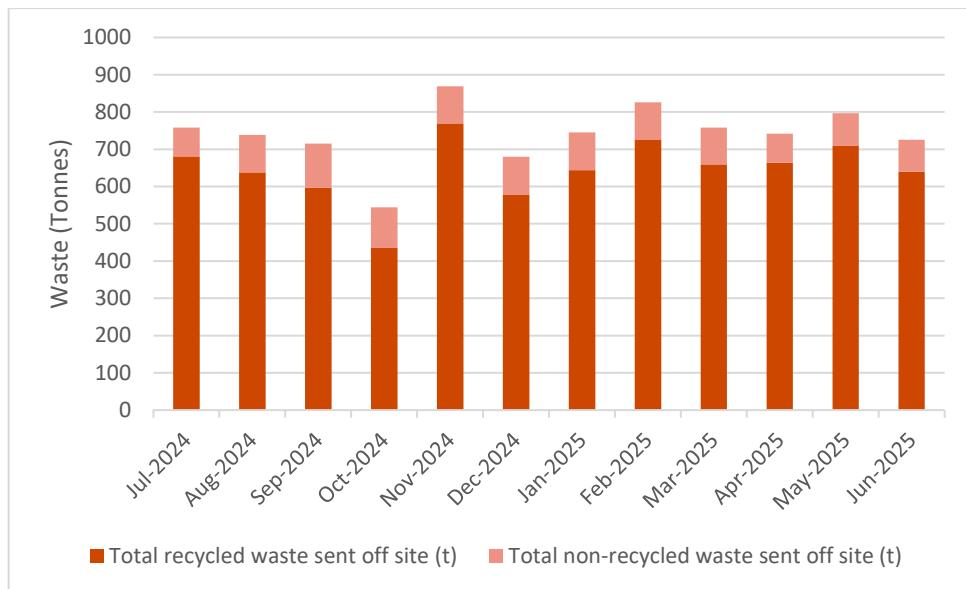
### **6.13.1 Environmental Management**

Waste at Mt Arthur Coal is managed in accordance with MAC-ENC-PRO-033 Waste Handling and Disposal (internal document).

### **6.13.2 Environmental Performance**

During the reporting period, Mt Arthur Coal's activities generated approximately 8,898 tonnes of both recycled and non-recycled waste that was sent off-site for management. This is a slight decrease of approximately 2% per cent from the FY24 total of 9,072 tonnes.

During the reporting period, approximately 87% (7,743 tonnes) of the total waste produced and sent off site for management was recycled. This is an increase from the FY24 percentage of 85% (7,709 tonnes) that was recycled off-site. Waste disposal amounts for the reporting period are shown in Figure 4 below.

**Figure 4: Waste disposal Mt Arthur Coal FY25 (tonnes)**

### 6.13.3 Complaints and Reportable Incidents

Mt Arthur Coal did not receive any complaints; government fines or penalties related to waste during the reporting period and there were no related reportable incidents.

### 6.13.4 Proposed Improvements

Mt Arthur Coal will continue to implement management practices in line with the current procedures. Where feasible, Mt Arthur Coal will investigate and implement improvements to the management of waste in accordance with relevant procedures and legislative requirements.

## 6.14 Public Safety

### 6.14.1 Environmental Management and Performance

During the reporting period Mt Arthur Coal maintained a boundary security fence around much of the perimeter of its site to ensure no unauthorised access to mining areas. A number of boom gates also exist to restrict unauthorised or unintentional access to the active mining and infrastructure areas. Routine patrols of these boundaries and access points are conducted through the engagement of third-party security specialists and by internal statutory compliance personnel with no identified security or access breaches occurring during the reporting period.

During the reporting period Mt Arthur Coal maintained a permanent emergency response team consisting of BHP Emergency Services Officers, Paramedics and Emergency Response Team members. These personnel, along with the existing emergency response team, provide a professional emergency response service to site. The team are dedicated to ongoing continuous improvement, standardisation and preventative work.

### 6.14.2 Complaints and Reportable Incidents

Mt Arthur Coal did not receive any complaints, government fines or penalties related to public safety during the reporting period and there were no related reportable public safety incidents.

### 6.14.3 Proposed Improvements

Mt Arthur Coal will continue to maintain and monitor site security and ensure public safety during the next reporting period.

## 7 Water Management

### 7.1 Water Balance

#### 7.1.1 Environmental Management and Performance

Mt Arthur Coal maintains a site water balance model incorporating surface and groundwater inputs and outputs. The model is used to interpret current conditions and forecast future mine water inventories and use. The model build generally aligns to the Minerals Council of Australia Water Accounting Framework.

Mt Arthur Coal discharges water into the Hunter River from its licensed discharge point under the Hunter River Salinity Trading Scheme (HRSTS). There were no discharges during FY25 under the HRSTS.

Mt Arthur Coal reports in accordance with the Minerals Council of Australia Water Accounting Framework. In accordance with these reporting metrics, Total Water Withdrawal during FY25 was 10,384ML compared to 8,100ML in FY24, water withdrawal measures the water captured from the environment including catchment runoff and groundwater infiltration, as such it is significantly influenced by rainfall runoff. The difference between FY24 and FY25 is due to the increased rainfall in FY25 (742.8mm) compared to FY24 (561.6mm).

Water Re-use and Recycling in FY25 was 7,757ML compared to 4,400ML in FY24. The operational context for the increase in Water Re-use and Recycling can be attributed to a combination of the following:

- Installation of a secondary flocculation plant on the TSF, increasing availability of recycled water and prioritisation of its use over importing TYPE 1 water
- Installation of new flow meters on truck fill points increasing accuracy of recycled water volumes used for dust suppression
- continued sourcing of water from the Muswellbrook Shire Council treated effluent scheme to reduce the demand from other external sources, 805ML of effluent was brought onto site for reuse in site operations.

Water consumption in FY25 of 9,562ML was consistent with FY24 10,361ML, water consumption includes evaporation, product entrainment and tank loss. The Mt Arthur Coal Water Accounting Framework is audited annually as part of the BHP Sustainability reporting assurance program.

Mt Arthur Coal extracted 1381.92ML of water from the Hunter River under water extraction license, shown in Table 25.

**Table 25: Water take for FY25**

Water Licence number	Water sharing plan, source and management zone	Entitlement (Unit Shares)	Passive take / inflows (ML)	Active pumping (ML)	Total (ML)
WAL 917 20AL201126	Hunter Regulated River Water Source (High Security), Zone 1A Management Zone	2,197	0	5.4	0
WAL 918 20AL201127	Hunter Regulated River Water Source (General Security), Zone 1A Management Zone	3,564	0	1,654.8	0
WAL 1296	Hunter Regulated River Water Source (Supplementary), Zone 1A Management Zone	301	0	0	0
WAL 18141	Hunter Regulated River Alluvial Water Source, U/S Glennies Creek Management Zone	104	50*	0	50*
WAL 18247	Hunter Regulated River Alluvial Water Source, U/S Glennies Creek Management Zone	247	191*	0	191*
WAL 41495	Sydney Basin-North Coast Groundwater Source	750	452 <sup>^</sup>	0	452 ^
WAL 41556	Sydney Basin-North Coast Groundwater Source				

\* Alluvial inflow has been calculated, based on predicted flux to and from alluvium (ML/day) as reported in the EIS, to be a total of 241 ML, which has been allocated across the two alluvial licences.

<sup>^</sup> Groundwater inflow to open cut mining pits on site is output from the GoldSim model based on groundwater model simulated values provided by SLR (2023), to be a total of 452ML which has been allocated across the two groundwater licences. A notable decrease compared to prior years based on the updated model accuracy.

### 7.1.2 Proposed Improvements

Mt Arthur Coal will continue to use water collected in both in-pit and out-of-pit storages prior to the use of water from the Hunter River. Where plans indicate that there would be sufficient water stored on site, water allocations for the Hunter River will continue to be offered to leaseholders and near neighbours as a temporary transfer.

Mt Arthur Coal is continuing major infrastructure improvement projects for the water management network. The expansion of the water management network will provide improved connectivity of water storages, active mining areas and infrastructure across the site. The improvements allow more effective operation in all weather extremes from flood to drought. Increasing the ability to reuse water stored onsite leading to reduction in reliance on the Hunter River licence intake, reducing compliance risks and also improve pit dewatering activities enabling more efficient mining activities.

## 7.2 Erosion and Sediment

### 7.2.1 Environmental Management

Erosion and sediment at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-PRO-060 Erosion and Sediment Control Plan; and
- MAC-ENC-MTP 034 Site Water Management Plan.

### 7.2.2 Environmental Performance

Total suspended solids (TSS) results remained low during the reporting period at the majority of statutory sites. The TSS results were generally consistent compared with results from previous financial years. TSS results are summarised in Table 27 with results presented as Appendix 1 Surface Water Quality Monitoring Results.

Inspections at identified water management structures were completed after rain events > 25mm to confirm need for pumping and maintenance to ensure facilities are performing to design and to prevent potential impacts on downstream waters. There were no overtopping events that resulted in off-site discharge during the reporting period. Improvements that occurred during the reporting period included installation of a dedicated pump and pipelines at the Belmont West B Sediment Dam.

In December 2024 the annual monitoring of riparian vegetation was undertaken as part of the annual riparian vegetation and channel stability assessment, in accordance with the Water Management Plan. The riparian vegetation and channel stability assessment methodology utilised was the Rapid Appraisal of Riparian Condition methodology (RARC) which integrates geophysical and biological values to allow a reliable estimation of the ecological condition in the riparian ecosystems and the CSIRO Ephemeral Stream Assessment methodology to assess the channel stability of the creeks and to enable comparison with previous stability assessments.

#### RARC Methodology

The RARC method is composed of five sub-indices, each with several indicator variables as follows:

- Habitat continuity and extent
- Vegetation and structural complexity
- Native vegetation dominance versus exotics
- Standing dead trees, leaf litter, fallen logs
- Indicative features like native vegetation regeneration and presence of native tussock grasses and reeds

These indicator values are recorded along a transect at predetermined sites using the RARC site assessment sheet proposed by Jansen et al. (2005). The indicator values are tallied to provide a score indicating riparian health. These scores enable the ranking of each site from either 'Very Poor' through to 'Excellent'. The collected information is useful to compare this total score over time to see how the biodiversity and functionality of the riparian zone is progressing at each of the transects.

### CSIRO Methodology

The CSIRO assessment uses four main classes of indicators to evaluate the condition of the stream bed and banks:

- The type and condition of the vegetation present, if any;
- The shape and profile of the drainage line and type of materials on the drainage line floor;
- The nature of the drainage line wall materials; and
- The nature of the stream bank bordering flats and/or slopes and regulation of lateral flow into the drainage line.

The indicators produce a rating based on a scoring system, and the combined total of the indicators rank each location from very actively eroding through to very stable.

The assessment was completed on the four areas as per previous years (SW03, SW04, SW12 and SW15) and was split up into 30 sites along the transect. The CSIRO report identified additional datapoints between monitoring location (including SW monitoring location) to allow for more accurate monitoring across the transect, the below table only includes monitoring locations used in the year prior. Refer to Figure 5 below for the site locations.

Table 26 below outlines the results of the RARC and CSIRO assessments for each Creek within the assessment.

**Table 26: Riparian vegetation assessment – FY24 RARC and CSIRO Assessment Results**

Site	SW03 (Saddlers Creek)	SW04 (Quarry Creek)	SW12 (Ramrod Creek)	SW15 (White's Creek Diversion)
RARC Assessment Score	3 / 12 sites – average 4 / 12 sites – poor 5 / 12 sites – very poor	3/7 - poor 3/ 7 sites – very poor	3 / 7 sites – average 3 / 7 sites – poor 1 / 7 sites – very poor	4 / 4 sites – very poor
CSIRO Assessment Score	2 / 12 sites – very stable 7 / 12 sites – stable 3 / 12 sites – potentially stabilising	1 / 7 sites – very stable 1 / 7 sites – stable 4 / 7 sites – potentially stabilising 1 / 7 sites – active	2 / 7 sites – very stable 3 / 7 sites – stable 2 / 7 sites – potentially stabilising	4 / 4 sites – very stable
Recommendations	MAC adopt a risk-based approach to the erosion sites within SC1 to SC6. If deemed necessary at any sites, MAC should action restoration works.  Maintain treatment of priority weeds in future land management work.	MAC adopt a risk-based approach to the erosion sites within QC2 to QC6. If deemed necessary at any sites, MAC should action restoration works.  Maintain treatment of priority weeds in future land management work	Maintain treatment of priority weeds in future land management work.	Maintain annual inspections in line with the Checklist and inspect using the Checklist following >59 mm of rainfall in 24 hours then respond as required (GHD, 2017).  Maintain treatment of priority weeds in future land management work.

The application of the RARC method to streams within the study area shows the condition of the streams ranged from “average” to “very poor” condition. Most streams that recorded scores of “average” were in areas where minimal disturbance has occurred and generally in areas close or connected to larger patches of native vegetation with wider canopy widths. Those sites that recorded scores of “very poor” or “poor” were consistent with areas where creek diversion works have occurred or areas where the riparian vegetation had been cleared for past and current grazing practices. Such low condition scores are not unexpected given the land use history within the study area, which has included a range of historic agricultural practices and, more recently, mining.

The CSIRO ratings for the monitoring locations along the creeks ranged from ‘very active’ to ‘very stable’. In summary, the initial condition assessment showed:

- Quarry Creek contains the most erosion sites of the streamlines targeted through this monitoring program. Various sites were observed to have improved compared to previous years as a result of vegetation

development through the channel bed and on the bank edge. However, a multitude of active erosion sites remain, and those spanning from QC2 to QC6 should be considered priority for any reparative actions, should they be taken.

- Ramrod Creek generally has good channel stability and only a handful of locations between monitoring sites are identified for continued monitoring. Greater vegetation cover was evident at several locations along the monitored sections, leading to improved condition ratings.
- Saddlers Creek channel condition differs markedly upstream and downstream along the monitored section. The majority of the downstream section is in stable condition, whereas upstream Saddlers Creek contains an array of actively eroding locations. Numerous improved ratings were assigned to monitoring locations along Saddlers Creek due to greater vegetation cover establishing through the channel.
- Whites Creek diversion channel condition appears excellent with little to no erosion observed at or between monitoring sites.

Overall riparian and channel stability rating remained static or reported improvements compared to previous years. There were no declines in condition reported at any location.

Weed management practices at MAC will continue to be reviewed to ensure that the presence of priority weed species do not continue to have a negative effect on the overall condition of riparian areas and stream health.

Stream health and channel stability monitoring at MAC will continue in 2025/ 2026 in line with the previously adopted the monitoring methodology to allow identification of any channel degradation, and any necessary response actions to ensure the integrity of watercourses around site.

No active remediation or treatment was recommended except for control of priority weeds in future land management work, review revegetation programs to increase vegetation in Ramrod Creek, and considering the exclusion of stock on lands owned by Mt Arthur Coal.



**Figure 5 Riparian Vegetation and Channel Stability Monitoring Locations**

### 7.2.3 Complaints and Reportable Incidents

Mt Arthur Coal did not record any erosion or sediment control complaints or incidents during the reporting period.

### 7.2.4 Proposed Improvements

Proposed improvements for the next reporting period include completion of program of planned maintenance works involving ground truthing of on-site drainage lines and updating of site GIS systems with mapped facilities and structures.

HVEC will complete a review and update (where required) of the ESCP which will include review of the catchment areas and sediment control facilities in consideration of the Mod2 approval. Updated catchment risks will be updated in site GIS system.

Mt Arthur Coal will continue to complete management in line with current practices and procedures at sediment dams to ensure appropriate management and pump out strategies are in place and erosion and sediment controls will be implemented as part of the Permit to Disturb process and inspected on an as needed.

## 7.3 Surface Water

### 7.3.1 Environmental Management

Surface water at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-034 Site Water Management Plan (WMP);
- MAC-ENC-PRO-084 Water Monitoring Procedure (internal document); and
- MAC-ENC-PRO-032 Water Management (internal document).

The MAC-ENC-MTP-034 Site Water Management Plan (WMP) was revised during the reporting period, approved by DPE on 29 March 2023. The revised WMP incorporates the site water management documents referenced above into a single consolidated WMP and includes revised trigger levels for groundwater and surface water sites based developed by specialist independent third parties.

Water quality downstream of Mt Arthur Coal's operation is currently monitored by an independent consultant at six statutory monitoring sites, plus Mt Arthur Coal's licensed discharge point as well as one upstream monitoring site in the Hunter River.

Mt Arthur Coal's WMP outlines measures for managing water on site, while the Surface Water Monitoring Program establishes impact assessment criteria against which monitoring results are compared. Impact assessment criteria are presented as trigger values which, if exceeded, lead to a response such as more intensive monitoring, investigation and if required, remedial action.

### 7.3.2 Environmental Performance

Water quality parameters in natural watercourses surrounding the mine including Saddlers Creek (SW02 and SW03), Quarry Creek (SW04), Ramrod Creek (SW12) and Whites Creek (SW15) were subject to normal variations in response to the ephemeral nature of the creeks, local geology and weather conditions.

No HRSTS discharges occurred during the reporting period. Reports were provided to the EPA accordance with the Hunter River Salinity Trading Scheme Regulations.

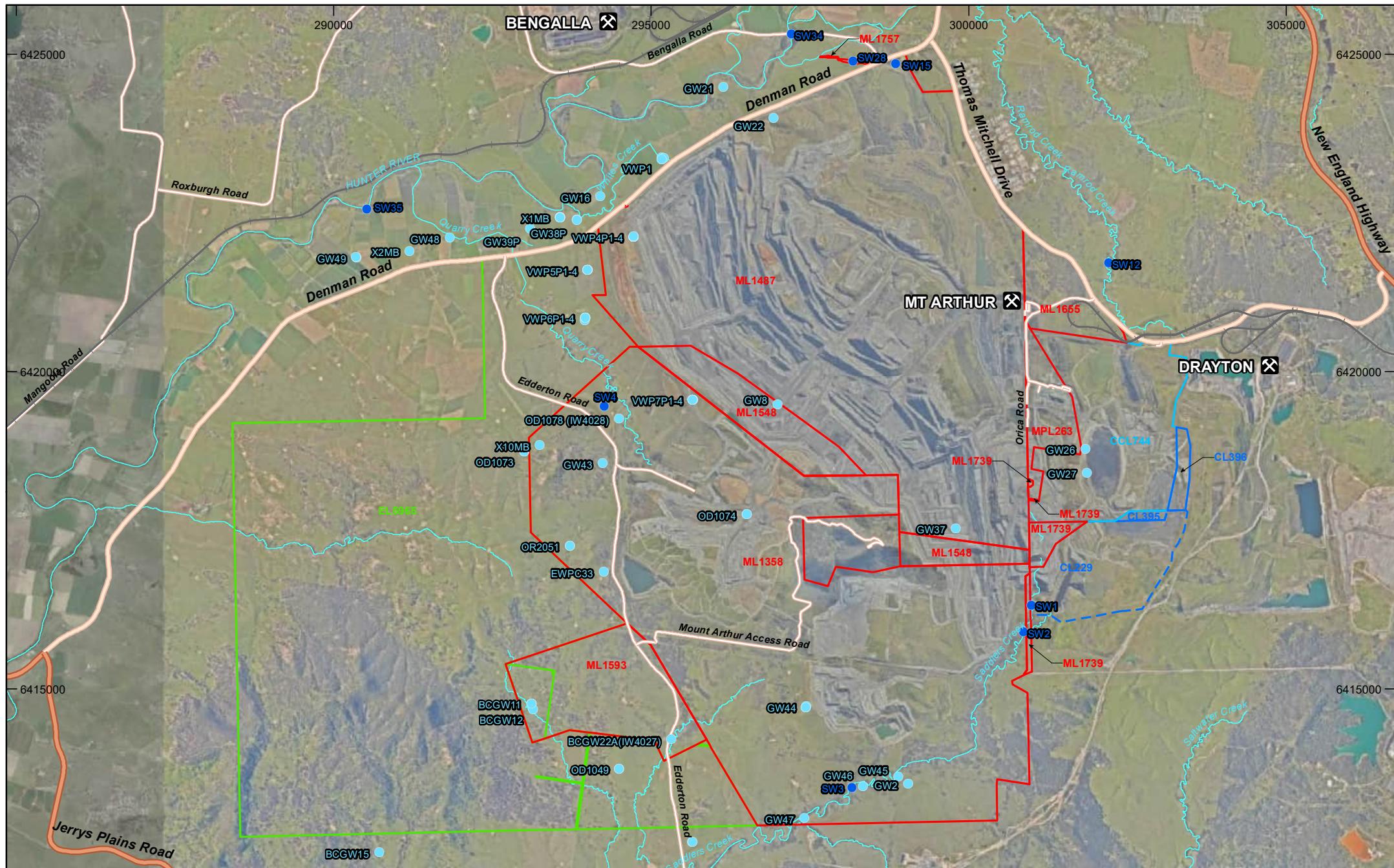
Surface water pH measured at individual statutory sites remained within the relevant trigger level ranges at all sites.

Surface water EC measured at individual statutory sites remained below the relevant impact assessment trigger levels during the reporting period with the exception of SW03, SW12 and SW15. Reporting to the DPHI was not required with the exception of Stage 2 exceedances reported at SW12 during February and March 2025.

Surface water TSS measured at individual statutory sites remained below the relevant trigger levels during the reporting period with the exception if SW03. Reporting to the DPHI was not required.

Exceedances of relevant trigger levels are further detailed below in Table 27.

Surface water monitoring locations are shown in Figure 6. Surface water results are presented as Appendix 1 Surface Water Quality Monitoring Results. A summary of the results is shown below in Table 27.



**BHP**

Geospatial Team  
Brisbane

- Surface Water Monitor (Statutory Use)
- Groundwater Monitor (Statutory Use)
- Mining Lease
- Coal Lease
- Consolidated Coal Lease
- Exploration Lease
- Coal Lease (sublease)



0 1,000 2,000 3,000 m  
Transverse Mercator Projection  
GDA2020 MGA Zone 56

### MT ARTHUR MINE SURFACE WATER AND GROUNDWATER MONITORING LOCATIONS

Drawn: K. Reedy	Date: 23/07/2025	Revision: 0
Checked: C. Christensen	Filename: MAC Monitoring Groundwater	

**FIGURE 6**

**Table 27: Summary of statutory surface water quality monitoring results**

Site	Impact Assessment Criteria Trigger Values*			Monitoring Results*			Key management implications	
				min	ave	max		
SW02	pH	6.5 – 9.0		7.67	7.71	7.75	No exceedances. Dry between Jul 2024 – Apr 2025	
	EC (µS/cm)	Stage 1	12,365	6,250	7,065	7,880		
		Stage 2	13,900					
	TSS (mg/L)	Stage 1	219	19	42	65		
SW03		Stage 2	277					
pH	6.5 – 9.0		7.55	8.08	8.87	No exceedances of pH or EC trigger values Stage 1 criteria for TSS triggered in April and May 2025. Reporting to the DPHI was not required.		
EC (µS/cm)	Stage 1	10,133	1,113	6,064	10,000			
	Stage 2	11,402						
SW04	TSS (mg/L)	Stage 1	37	6	15		42	
		Stage 2	46					
	pH	6.5 – 9.0		7.91	8.10	8.45	No exceedances.	
	EC (µS/cm)	Stage 1	13,959	6,350	7,784	9,390		
		Stage 2	15,509					
SW12	TSS (mg/L)	Stage 1	82	6	11	14		
		Stage 2	104					
	pH	6.5 – 9.0		7.41	7.65	8.19	No exceedances of pH or TSS trigger values Stage 1 criteria for EC triggered in Nov 2024. Reporting to the DPHI was not required. Surface Water was too low to sample in Jan 2025. Stage 2 criteria for EC triggered in Feb and March 2025. DPHI reporting was required.	
	EC (µS/cm)	Stage 1	6,659	2,920	6,398	12,200		
		Stage 2	7,153					
	TSS (mg/L)	Stage 1	555	6	11	19		
SW15		Stage 2	708					
pH	6.5 – 9.0		7.11	7.27	7.39	No exceedances.		
EC (µS/cm)	Stage 1	7,128	386	1,113	3,180			
	Stage 2	8,262						
SW34	TSS (mg/L)	Stage 1	103	5	18	25	Trigger levels do not apply	
		Stage 2	130					
	pH	N/A		7.96	8.11	8.27		
	EC (µS/cm)	N/A		397	648	976		
SW35	TSS (mg/L)	N/A		7	21	37	No exceedances of pH or TSS trigger values Stage 1 criteria for EC triggered in Nov 2024. Reporting to the DPHI was not required.	
	pH	7.8 – 8.5		7.98	8.23	8.50		
	EC (µS/cm)	Stage 1	893	397	653	947		
	TSS (mg/L)	Stage 1	54	7	22	44		

### **7.3.3 Complaints and Reportable Incidents**

Mt Arthur Coal did not receive complaints relating to surface water during the reporting period.

### **7.3.4 Proposed Improvements**

HVEC will complete a review and update (where required) of the WMP which will include review of the surface water sample location suitability in consideration of the MOD 2 approval.

Mt Arthur Coal will continue to use site water collected in both in-pit and out-of-pit storages prior to the use of water from the Hunter River.

## **7.4 Ground Water**

### **7.4.1 Environmental Management**

Groundwater at Mt Arthur Coal is managed in accordance with:

- MAC-ENC-MTP-034 Site Water Management Plan; and
- MAC-ENC-PRO-084 Water Monitoring Procedure

The MAC-ENC-MTP-034 Site Water Management Plan incorporates the site water management documents referenced above into a single consolidated WMP and includes revised trigger levels for groundwater and surface water sites based developed by specialist independent third parties.

The WMP aims to minimise any adverse impacts on aquifers in proximity to the operation, including the two major aquifer areas, the hard rock coal measures and the shallow alluvial deposits associated with the Hunter River.

The WMP includes a Groundwater Monitoring Program, in accordance with Schedule 3 Condition 29 and 33 of Development Consent 09\_0062. The Groundwater Monitoring Program outlined in Section 9.3 of the WMP details the monitoring methodology, monitoring locations, frequency impact assessment criteria (water levels and quality), mine inflows/licensing, impacts to private bores and groundwater dependent ecosystems (GDEs), cut-off wall and flood levee monitoring and monitoring records. The WMP was updated in 2022 and approved by DCCEEW on 29 March 2023.

### **7.4.2 Environmental Performance**

A groundwater review was undertaken by an external specialist consultant for the reporting period. The scope of work included:

- Comparison between modelled and actual measured water levels to June 2025;
- Compare actual measured monitoring data to drawdown predictions from the 2020 modelling for the approved operations;
- Review site water quality monitoring data, field reports and laboratory reports and check performance;
- Review of groundwater triggers and report on any trigger exceedances, based on the current established groundwater triggers for the site; and
- Review performance of the cut-off wall using available data.

The full Annual Groundwater assessment report is included as Appendix 2 Ground Water Monitoring Results and Groundwater Level Drawdown Analysis.

### *Drawdown performance*

There has generally been a slight increase in water levels within the Hunter River alluvium, as shown in Figure 4.1. However, there was spatial variance in the total drawdown with bore X1MB recording a 2.5m increase in levels since November 2020.

Bores located east of Quarry Creek, closer to mining operations at MAC (GW21, GW16, X1MB and GW38A) recorded a higher increase in water levels than bores located west of the creek, further from MAC (GW41A(IW4029) and X2MB). It should be noted that the total drawdown recorded in bores GW16 and GW21 covers a much larger time frame (26 years) compared to bores GW38A (IW4030) and GW41A (IW4029) (nine years) and X1MB and X2MB (five years).

Groundwater levels in the alluvial bores along Saddlers Creek have fluctuated over time and appear to be in response to rainfall trends, with an overall increasing trend in groundwater levels since the end of 2020. However, since monitoring began in 2016 there has been an overall minor decline in water levels (drawdown) within the Saddlers Creek alluvium (Figure 4.1, Appendix 2). It should be noted that this is less than what was predicted by both the 2020 groundwater model and the 2023 model update.

Total drawdown varied spatially, with bore GW45 (located in the upper reaches of Saddlers Creek), recording the most drawdown in the Saddlers Creek alluvium. The model predicted drawdown of 3.29m between 2016 and 2025 for GW45 while the total measured drawdown over the same period was 0.93 m, a difference of 2.36 m. Therefore, the model predicted more drawdown than has actually occurred. There was an increase in water level at GW45 between July 2024 and June 2025 of 1.43m. This increase in water level is due to the significant rainfall events experienced in 2025, particularly in May. It is likely this significant rainfall event contributed to the contrasting predicted and measured drawdown levels in 2025.

Bore GW47, (also screened within the Saddlers Creek Alluvium and located approximately 1.6 km downstream of GW45), also had a higher predicted drawdown than actual recorded values. The model predicted drawdown between 2016 and 2025 was 2.14 m while actual measured drawdown over this period was 0.81 m, a difference of 1.33 m.

There has been a decline in groundwater levels within the Saddlers Creek shallow Permian (regolith) since monitoring began, as shown in Figure 4.2, Appendix 2. Bore X14MB-1S (located to the north of Saddlers Creek), recorded the most drawdown (-4.88 m). In comparison, the deeper paired bore X14MB-2D (screened within the Glen Munro Seam), recorded an increase in water levels (i.e., no drawdown).

Figure 4.3, Appendix 2 shows that, with the exception of 7 bores (EWPC33, GW38P, GW43, GW48, GW49, X10MB and X14MB-2D), there was a general decline in groundwater levels within the Permian coal measures to the southwest of open cut operations. This shows a response to the progression of mining to the southwest. Bores GW38P, GW48 and GW49 are located to the west of operations near the Hunter River. Bores EWPC33 and GW43 are located near in-pit water storage (Belmont and MacDonald dams) which potentially buffers the extent of drawdown in localised areas.

To monitor performance of the cut-off wall impact to reduce drawdown within the Hunter River alluvium, VWPs were installed to monitor the Permian coal measures underlying the Hunter River alluvium. The VWP sensors include:

- VWP1 - Edinglassie Seam (footwall) at 204.5 m depth (-69.0 mAHD) (decommissioned in 2020)
- VWP2 - F4 fault at 216.5 m depth (-81.1 mAHD)
- VWP3 - Sensor 1 - Edinglassie Seam (hanging wall) at 227.0m depth (-91.6 mAHD)
- VWP3 - Sensor 2 - Ramrod Creek Seam at 241 m depth (-105.6 mAHD).

Review of VWPs and nearby monitoring bores reported relatively stable groundwater level trends in the Hunter River alluvial monitoring locations. This indicated that depressurisation observed in the Permian Coal measures does not appear to have impacted the Hunter River alluvium groundwater levels. Monitoring of the Hunter River alluvium shows no adverse impact from mining activities on alluvial groundwater conditions and beneficial use of groundwater.

Results of the VWP against the relevant trigger levels are included in the Groundwater Level section below and further expanded upon in Appendix 2 Ground Water Monitoring Results and Groundwater Level Drawdown Analysis.

#### *Groundwater Level*

Groundwater level data collected over the reporting period was compared to the trigger values outlined in the WMP. Bore X14MB-2D recorded a water level reading below the relevant trigger level in the Q2 (December 2025) monitoring round. However, there were no other consecutive readings below the trigger level and therefore not considered a reportable exceedance. The event did not require notification to the DPHI.

Consecutive groundwater levels exceedances of relevant trigger levels were recorded at bores VWP07 (June 2023 to November 2024) and X1 (June 2023 and June 2025). These are further detailed in Table 28 below.

#### *Groundwater Quality*

Groundwater quality data collected over the reporting period was compared to the trigger values outlined in the WMP. Bore GW43 recorded a pH reading in the Q4 monitoring round (June 2025) below the relevant lower pH trigger level. However, there were no other consecutive readings above the trigger level and therefore not considered a reportable exceedance. The event did not require notification to the DPHI.

Consecutive groundwater quality exceedances were reported at bore X14MB-2D above the relevant upper pH trigger level (June 2023 to June 2025). This is further detailed in Table 29 below.

Trigger exceedances have been reviewed by comparing groundwater levels and quality concentrations and the cumulative rainfall departure plot. Graphs for all monitoring bores are presented in Appendix 2 Ground Water Monitoring Results and Groundwater Level Drawdown Analysis.

#### **7.4.3 Proposed Improvements**

HVEC will complete a review and update (where required) of the WMP in consideration of the updated Groundwater Model and the Umwelt Network Monitoring Review. This will include reviewing the condition and instrumentation of groundwater bores and restore, remediate, replace or decommission bores/instrumentation where required.

**Table 28: Reportable Groundwater Level Trigger Exceedances**

Bore ID	Exceedance	Screened Lithology and Location	Comment	Action
VWP07_418	Pressure level reading below trigger level of 142.3 mAHD since June 2023.	Ramrod Creek Seam  On-site, 200 m west of MAC open pit (Windmill Pit)	<p>Levels in the Ramrod Creek Seam, recorded in VWP07_418, have exceeded the trigger level since June 2023, when the revised trigger level was implemented (refer Figure 4.4, Appendix 2). The SLR (2020) model predicted continued drawdown in this area with simulated water levels in all seams (refer Figure 4.5, Appendix 2). The SLR (2020) model predicted higher starting heads in this location but does capture the trend of declining groundwater levels over time consistent with the observed data.</p> <p>A preliminary desktop review of the water level exceedance was undertaken by Umwelt (Umwelt, 2025a) in March 2025. The investigation identified that the continued declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020). The sensor connection in the surface unit was replaced in early 2025; however, the data is erroneous and the sensor downhole has likely failed.</p>	<p>During the reporting period, water level readings exceeded the trigger threshold and DPHI have been notified in-line with requirements in the WMP.</p> <p>As the downhole sensor has likely failed, it is recommended that the sensor is removed from the monitoring program and from the WMP in the next revision.</p>
X1_S-2 (59)	Pressure level reading below trigger level of 91.0 mAHD since June 2023.	Mt Arthur Seam  On-site, approx. 1.2 km west of MAC open pit and 100 m south of the Hunter River	<p>VWP X1 was installed in April 2020. Levels in the Mt Arthur Seam, recorded by X1_S-2 (59), have exceeded the trigger level since June 2023, when the new trigger level was implemented (refer Figure 4.6, Appendix 2). The declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020) (refer Figure 4.7). The SLR (2020) model predicted higher starting heads in this location but does capture the trend of declining groundwater levels over time consistent with the observed data. The model under predicts drawdown in all layers in this area indicating the area was less saturated than predicted.</p> <p>A preliminary desktop review of the water level exceedance was undertaken by Umwelt (Umwelt, 2025b) in June 2025. The investigation identified that the continued declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020).</p>	<p>During the reporting period, water level readings exceeded the trigger threshold and DPHI have been notified in-line with requirements in the WMP.</p> <p>Initial review indicates no adverse impacts beyond those predicted for the approved operations. The current trigger level is based on the predicted levels and trends from the SLR (2020) groundwater model. The model has been updated as part of MOD 2. Revised model predictions can be used to the revise trigger levels.</p>

**Table 29: Reportable Groundwater Quality Trigger Exceedances**

Bore ID	Exceedance	Screened Lithology and Location	Comment	Action
X14MB-2D	Nine consecutive pH readings above the upper trigger level of 8.3 since June 2023	Glen Munro Seam  On-site approx. 5km South of McDonalds Pit Dam and 3.5 km southwest of Saddlers Pit	<p>The purpose of the bore is to monitor the Glen Munro Seam near an unnamed tributary of Saddlers Creek, between McDonalds Pit Dam and Saddlers Creek. The bore was installed in July 2020 to assess any impact from mining activities adjacent to mining areas to the southwest of MAC. A paired bore with X14MB-1S to assess the hydraulic gradient between the regolith and Glen Munro Seam. Bore X14MB-2D was added to the groundwater compliance monitoring network in the revised WMP, which came into effect in April 2023.</p> <p>The pH of groundwater recorded within the bore has ranged from 9.34 (June 2024) to 12.60 (November 2020), with an average pH of 10.26. The pH declined from June 2021 until around July 2022 and then remained stable until December 2024. The most recent Q4 2025 reading of 10.14 shows a slight increase following development of the bore. The pH level has been above the revised Glen Munro Seam pH trigger level since June 2021, as shown in Figure 5.1, appendix 2.</p> <p>It should be noted that the trigger level in the current WMP is based on grouped data from all bores monitoring the Glen Munro Seam. At the time of trigger derivation, in 2022, only eight water quality samples had been collected from bore X14MB-2D.</p> <p>In comparison, pH has ranged between 7.04 and 9.97 in bore X10MB which also monitors the Glen Munro Seam and is located approximately 8 km to the north of X14MB-2D.</p> <p>The condition of bore X14MB-2D was checked in September 2024 with a downhole camera. The footage indicates potential issues with the casing joints at 50 m to 60 m depth with indications of a chemical buildup at the joints. The buildup at the casing joints is potentially from grout contamination. The high pH levels recorded are likely due to grout contamination. In early December 2024 Umwelt redeveloped the bore to flush out any drilling fluids or grout contamination from the bore and annulus. The pH reading of 10.02 was collected at the end of December. It is noted that groundwater levels had not fully recovered by the time the sample was collected and may not be representative of the surrounding groundwater. The bore was checked again with a downhole camera in March 2025 and showed that the buildup at the casing joints remains following redevelopment of the bore. The pH of 10.14 recorded in Q4 indicates grout contamination is still effecting the condition of the bore.</p>	<p>During the reporting period, pH readings exceeded the trigger threshold and DPHI have been notified in-line with requirements in the WMP.</p> <p>Due to the condition of the bore, it is recommended that the inclusion of the bore in the monitoring network is reviewed in the next revision of the WMP.</p>

## 8 Rehabilitation

### 8.1 Surface Disturbance Activities

Mining continued within the extended pit shell of Mt Arthur, consisting of:

- Windmill Pit;
- Calool Pit;
- Roxburgh Pit; and
- Ayredale Pit;

Mining (extraction) occurred less than the approved rate stated in the Project Approval. Prior to excavation of a new open cut strip, pre-stripping operations ensure that natural resources (vegetation and topsoil) are cleared and, where appropriate, recovered for subsequent use in post-mining rehabilitation.

There was no decommissioning of infrastructure during the reporting period.

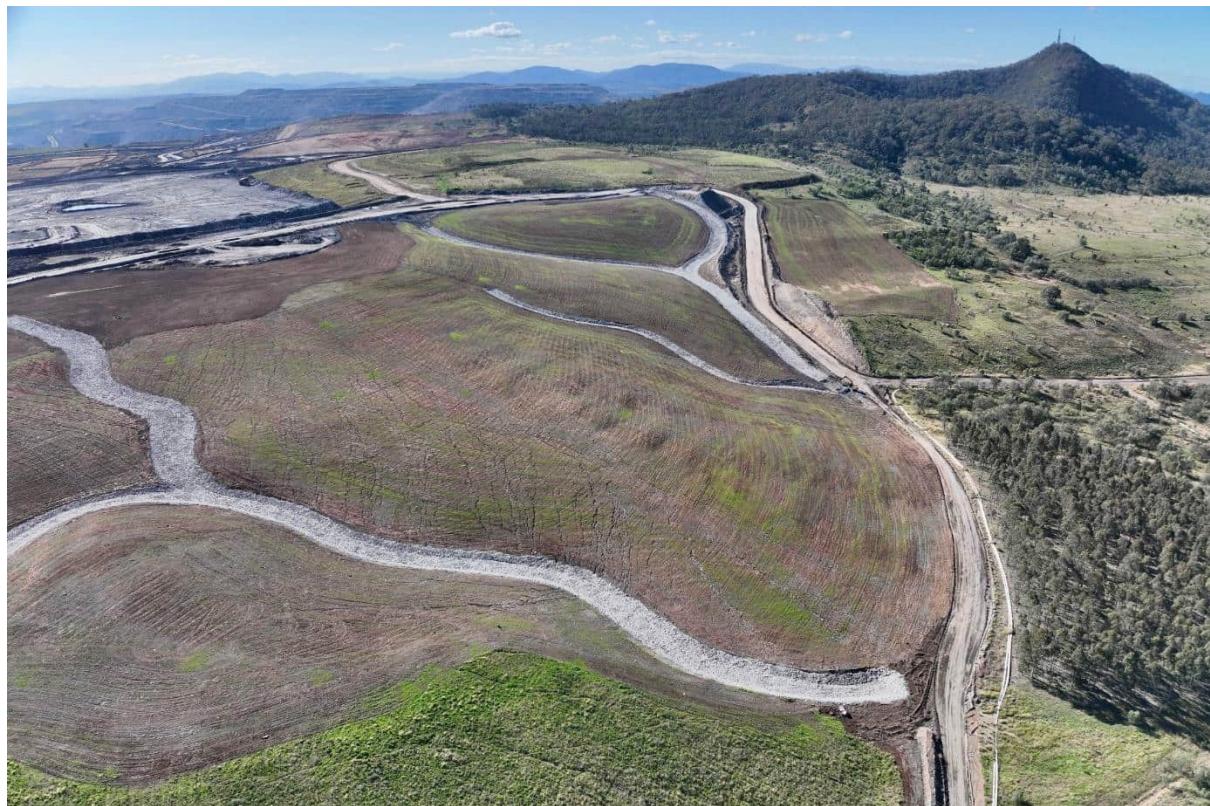
Rehabilitation of land is carried out in accordance with:

- MAC-ENC-MTP-052 Mt Arthur Coal Forward Program;
- MAC-ENC-MTP-055 Mt Arthur Coal Rehabilitation Management Plan;
- MAC-STE-STD-214 Mine Rehabilitation Standard (internal document);
- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-MTP-050 Biodiversity Management Plan; and
- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring (internal document).

Mt Arthur Coal aims to create rehabilitation that is safe, stable and non-polluting, that is self-sustaining and comparable to the surrounding natural landscape. Landform and rehabilitation established since 2014 utilises geomorphic design and incorporates micro-relief and drainage lines for landforms designed and constructed post the current modification project approval. The geomorphic design uses the characteristics of stable natural alluvial landforms in the local environment as an analogue on which to base the design of overburden landforms.

Rehabilitation is designed to achieve a stable final landform compatible with the surrounding environment and to meet the landform commitments presented in the Rehabilitation Management Plan (RMP). Examples of rehabilitation completed to this reporting period can be seen in Figure 7 to Figure 12.

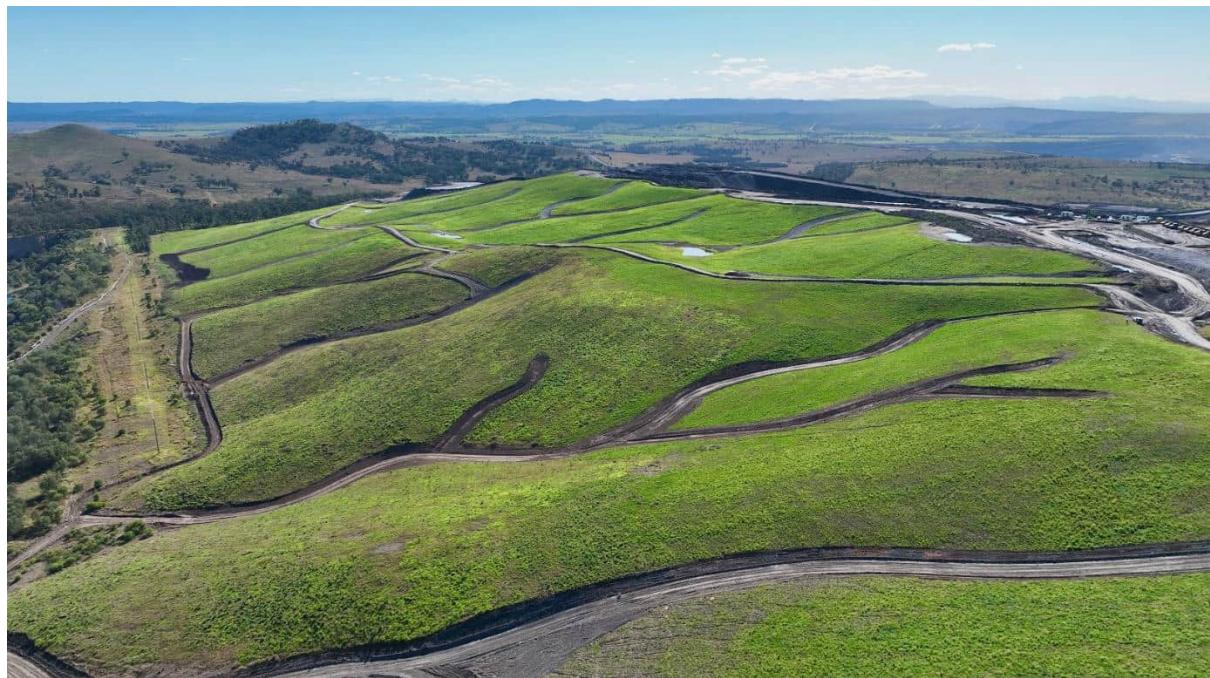
Although this geomorphic design has been implemented on other sites within NSW and also worldwide there are many defining characteristics that restrict its use such as space, waste characterisation, rainfall, availability of suitable rock, availability of mulch, final landuse, landform height and steepness of the landform. Mt Arthur Coal has larger higher landforms than other sites in the Hunter Valley and is also space constrained for emplacement area. The resultant design aligns with industry best practice but will be monitored over the coming years to ensure further natural landform design incorporates learnings and improvement from the current work.



**Figure 7 FY25 pasture rehabilitation in the OPD emplacement**



**Figure 8 Harrowing of FY25 pasture rehabilitation in the OPD emplacement**



**Figure 9** Constructed drains in FY23-24 pasture rehabilitation in the OPD emplacement



**Figure 10** Drain construction in FY23-24 pasture rehabilitation in the OPD emplacement



**Figure 11 FY25 woodland rehabilitation in the Saddlers North emplacement**



**Figure 12 FY25 woodland rehabilitation (foreground) with habitat features and FY25 pasture (background) in the OPD emplacement**

During the reporting period Mt Arthur Coal completed (achieved Phase 4 – Ecosystem and Landuse Establishment) 137 hectares of rehabilitation across four areas (Out of Pit Dump [OPD] and Saddlers North emplacement areas, Main Dam and North Cut Tailings Dam). Comparison with FY25 targets is shown in Table 30 and Table 31.

Table 31 provides the Mt Arthur Coal rehabilitation summary for the operation. These areas were seeded with either the pasture species mix (OPD, Main Dam and North Cut Tailings Dam), see Table 32, or the Woodland mix, see Table 33. In addition to areas completed in FY25 rock drains were constructed in areas completed in FY22-23 following an improvement program in drain design and material specifications (see Section 8.5).

**Table 30: Mt Arthur Coal rehabilitation claimed for FY25**

Rehabilitation phase	FY25 FWP rehabilitation commitments (hectares)	FY25 areas in active rehabilitation phases (hectares)
Phase 2 – Landform Establishment	0	5
Phase 3 – Growing Media Development	0	0
Phase 4 – Ecosystem and Landuse Establishment	137	137
Total	137	142

Note: All areas calculated using GDA2020 Zone 56 coordinate system

**Table 31: Mt Arthur Coal rehabilitation and disturbance summary**

Mine area type	Previous reporting period (FY24 actual)	This reporting period (FY25 actual)	This reporting period (FY25 forecast)	Next reporting period (FY26 forecast)
A. Total mine footprint <sup>1</sup>	5,869	5,942	6,019	6,032
B. Total active disturbance <sup>2</sup>	4,680	4,636	4,717	4,656
C. Land being prepared for rehabilitation <sup>3</sup>	48	5.0	0.8	70
D. Ecosystem and land use establishment <sup>4</sup>	1,188	1,306	1,303	1,376
E. Ecosystem and land use development	0	0	0	0
F. Completed rehabilitation <sup>5</sup> (as formally certified by NSW Government)	0	0	0	0
G. New active disturbance during reporting period	175	73	153	90

Note: All areas calculated using GDA2020 Zone 56 coordinate system

1 Total mine footprint includes all areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to mining and associated activities.

2 Total active disturbance includes all areas ultimately requiring rehabilitation.

3 Land being prepared for rehabilitation includes the sum of mine disturbed land that is under the following rehabilitation phases – decommissioning, landform establishment and growing media development.

4 Land under active rehabilitation includes areas under rehabilitation and being managed to achieve relinquishment includes the sum of mine disturbed land that is under the following rehabilitation phases.

5 Completed rehabilitation requires formal signoff by the NSW Resources Regulator that the area has successfully met the rehabilitation land use objectives and completion criteria.

**Table 32: Mt Arthur Coal FY25 pasture seed mix**

Common name	Species name	Seed mix (kg/ha)
Couch	<i>Cynodon dactylon</i>	10
Lucerne	<i>Medicago Sativa</i>	3
Green Panic	<i>Panicum Coloratum</i>	3
Seaton Park Sub-clover	<i>Trifolium Subterranean</i>	3
Haifa White Clover	<i>Trifolium Repens</i>	3
Kikuyu	<i>Pennisetum Clandestinum</i>	3
Wimmera Rye	<i>Lolium Rigidum</i>	7
Perennial Rye	<i>Lolium Perenne</i>	7
Phalaris	<i>Phalaris Aquatica</i>	5
Shirohie Millet (summer)	<i>Echinochloa Esculenta</i>	10
Oats (winter)	<i>Avena Sativa</i>	10

**Table 33: Mt Arthur Coal FY25 woodland seed mix**

Species and category	Sowing rate
	kg/Ha
<b>Dominant tall tree species</b>	
<i>Eucalyptus albens</i>	0.2
<i>Eucalyptus blakelyi</i>	0.2
<i>Eucalyptus crebra</i>	0.3
<i>Eucalyptus moluccana</i>	0.3
<b>Total - Dominant tall tree</b>	<b>1</b>
<b>Sub-dominant small trees</b>	
<i>Acacia decurrens</i>	0.233
<i>Acacia implexa</i>	0.217
<i>Acacia salicina</i>	0.1
<i>Brachychiton populneus</i>	0.217
<i>Callitris endlicheri</i>	0.033
<i>Notelaea microcarpa</i>	0.2
<b>Total - Sub-dominant small trees</b>	<b>1</b>
<b>Shrubs</b>	
<i>Acacia decora</i>	0.25
<i>Acacia falcata</i>	0.25

Species and category	Sowing rate
	kg/Ha
<i>Acacia paradoxa</i>	0.1
<i>Bursaria spinosa</i>	0.2
<i>Cassinia arcuata</i>	0.2
<i>Cassinia quinquefaria</i>	0.2
<i>Dodonaea viscosa</i>	0.15
<i>Hardenbergia violacea</i>	0.1
<i>Indigofera australis</i>	0.2
<i>Myoporum montanum</i>	0.15
<i>Senna artemesioides</i>	0.2
<b>Total - Shrubs</b>	<b>2</b>
<b>Forbs and Subshrubs</b>	
<i>Atriplex semibaccata</i>	0.1
<i>Calotis cuneifolia</i>	0.1
<i>Calotis lappulacea</i>	0.2
<i>Chrysocephalum apiculatum</i>	0.1
<i>Dichondra repens</i>	0.1
<i>Einadia nutans</i>	0.1
<i>Einadia trigonos</i>	0.1
<i>Enchytraea tomentosa</i>	0.2
<i>Eremophila debilis</i>	0.1
<i>Maireana microphylla</i>	0.15
<i>Solanum cinereum</i>	0.05
<i>Vittadinia spp.</i>	0.2
<b>Total - Forbs and Subshrubs</b>	<b>1.5</b>
<b>Native Grasses</b>	
<i>Aristida personata</i>	0.667
<i>Aristida ramosa</i>	0.667
<i>Austrodanthonia spp. (Rytidosperma spp.)</i>	0.667
<i>Austrostipa scabra</i>	0.5
<i>Austrostipa verticillata</i>	0.167
<i>Bothriochloa decipiens</i>	0.667
<i>Bothriochloa macra</i>	0.333
<i>Chloris truncata</i>	0.5
<i>Chloris ventricosa</i>	0.167
<i>Cymbopogon refractus</i>	0.667
<i>Dichanthium sericeum</i>	1.667
<i>Microleana stipoides</i>	0.5
<i>Panicum effusum</i>	0.25
<i>Panicum queenslandicum</i>	0.333
<i>Sporobolus creber</i>	0.25
<i>Themeda triandra</i>	2
<b>Total - Native Grasses</b>	<b>10</b>
<b>TOTAL ALL CATEGORIES</b>	<b>15.5</b>
<b>Extra Materials</b>	

Species and category	Sowing rate
	kg/Ha
Cover crop - millet	3
Cover crop - oats	3
Cover crop - couch	1

Topsoil management at Mt Arthur Coal focuses on maintaining the quality of the topsoil resource as a rehabilitation growth medium. Activities undertaken during the reporting period included:

- Prioritising direct placement of topsoil;
- Testing topsoil to determine appropriate depths for stripping and recovery as well as ameliorant requirements;
- Felling and mulching trees in situ on disturbance areas to increase organic content within the topsoil that was used directly on rehabilitation areas; and
- Reusing felled trees from disturbance areas on new rehabilitation areas to provide habitat.
- Locating stockpiles so as to reduce the requirement for re-handling;

Topsoil was placed and spread to an approximate depth of approximately 100 millimetres on rehabilitation areas where required. The newly spread topsoil surface was ripped on the contour prior to sowing to provide a suitable environment that encourages water infiltration in the soil. Volume of topsoil stripped during the reporting period, as well as other key materials produced, are presented in Table 34.

**Table 34: Key material production**

Material	FY25
Stripped topsoil (m3)	213,047
Rock / Overburden (m3)	132,842,367
Ore (Mt)	20,319,203
Reject Material (Mt)	5,283,268
Product (Mt)	15,035,935

### 8.1.1 Variations to the rehabilitation Schedule

MAC continues to be on target in the rehabilitation schedule. During the reporting period MAC completed (achieved Phase 4 – Ecosystem and Landuse Establishment) 137 hectares of rehabilitation. Some spatial variation occurred in rehabilitation of OPD occurred. schedule as per the FY25 Forward Program, available on the BHP website.

VD1 improvement revegetation works were delayed in favour of revegetation works completed on VD5. Broadleaf weed treatment focused on Drayton void was delayed in favour of slashing works in newly established pasture rehabilitation on OPD. Erosion repair works have been delayed allowing for scoping a broader erosion repair project. Construction of armoured drainage across following delays in supply of competent rock and detailed designs. Detailed soil assessments were delayed allowing for improvements in pasture ecological monitoring programs.

Weed treatment in some locations was delayed due to weather and resourcing issues.

## 8.2 Monitoring

### 8.2.1 Ecological Development Monitoring

Ecological development monitoring is reported in Section 6.5. Results for sites monitored in this reporting period are summarised as follows:

MS1 is at or above benchmark values for tree richness, grass and grass like cover, and leaf litter, and below benchmark for all other values. When compared to its reference site MA4, MS1 is at or above values for only tree richness, grass and grasslike cover, and leaf litter.

VB4 is below benchmark for all values, except for forb cover. When compared to its reference site MA6, VB4 is at or above values for shrub richness and forb cover, and below values for all other attributes for data collected in FY25.

VB5 is below benchmark for all values. When compared to its reference site MA6, VB5 is at or above values for only for cover, and below values for all other attributes.

VB6 is at or above benchmark values for tree richness, tree cover and leaf litter, and below benchmark for all other values. When compared to its reference site MA10, VB6 is at or above values for only tree richness and tree cover.

### 8.2.2 Pasture Development Monitoring

Generally, rehabilitation transects had comparable species diversity, including the presence of pasture grasses and legumes, to the grazing reference sites. The only notable difference among established rehabilitation transects is Dump 1 1-2. Transect Dump 1 1-2 had no legumes and only five grasses. Although, the density and biomass of 3P grasses present (standing dry matter of 5050 kg/ ha) exceeded most other transects and all reference sites. Even with lower species diversity, this area appears to represent a productive pasture.

No signs of insect attack or dieback in perennial pasture species was observed during the site assessment. Cover crop species at transects North Cut 1, Main Dam 1 and Saddlers N 2 had perished but these are annual species and had reached the end of their lifecycle prior to the assessment.

A summary of key pasture vegetation criteria is presented in Table 35.

### 8.2.3 Erosional Stability Monitoring

See Appendix 5 Rehabilitation Plan for the FY25 report. The majority of areas have erosion rates commensurate with the predicted loss for the respective age bracket. The exception to those is small areas of:

- Drayton Void;
- OPD; and
- North Cut Tailings.

### 8.2.4 Performance Issues

Ecological development monitoring identified weed coverage and lack of diversity in some sites as the main threat to woodland rehabilitation trajectory. To improve trajectory of the woodland monitoring sites assessed in FY25 monitoring weed treatment is scheduled and diversification work will be planned based on available resources.

Pasture development monitoring identified weed coverage and lack of mineralisation of nitrogen as key threats to pasture rehabilitation trajectory. Pasture areas require weed treatment and additional fertiliser in select locations with limited vegetation coverage is required. Higher erosion losses than predicted in OPD and North Cut Tailings Dam are the result of poorly established vegetation. Drayton Void Erosion is the result of drainage line requiring armouring (refer to Section 8.5 regarding sourcing competent rock from site).

**Table 35: Summary of key pasture vegetation criteria**

Transects ID	Total Species	Pasture Species (grasses and legumes)	Total Groundcover (%)	Perennial Grass Cover (%)	Weed cover (%)	Plant Dieback (severity)	Signs of Insect Attack
Drayton 1-1	19	10	91.5	89.5	2	Minor	Nil observed
Drayton 1-2	19	10	79	61	18	Minor	Nil observed
North Cut 1	16	6	28.5	20.5	8	Cover crop perished	Nil observed
Main Dam 1	17	7	31	17	14	Cover crop perished	Nil observed
Dump 11-1	23	12	67	57	10	Minor	Nil observed
Dump 11-2	19	5	65	55	10	Minor	Nil observed
Belmont North 1	14	6	90.5	66.5	24	Minor	Nil observed
OOPD 1	17	7	81.5	77.5	4	Minor	Nil observed
OOPD 2	20	7	94	86	8	Minor	Nil observed
MacDonalds East	19	7	84.4	77.4	7	Minor	Nil observed
MacDonalds West 2	27	10	61.3	43.3	18	Minor	Nil observed
Saddlers S 1	22	10	69.7	59.7	10	Minor	Nil observed
Saddlers N 1	24	8	44.3	14.3	30	Minor	Nil observed
Saddlers N 2	28	11	45	35	10	Cover crop perished	Nil observed
Reference 1	27	10	86.4	71.4	15	Minor	Nil observed
Reference 2	30	12	94.2	79.2	15	Minor	Nil observed
Reference 3	21	11	73.7	62.7	11	Minor	Nil observed
Reference 4	21	10	81.4	69.4	12	Minor	Nil observed
Reference 5	18	8	91.2	68.2	23	Minor	Nil observed

### 8.3 Maintenance

Weed control for rehabilitation maintenance and improvement occurred across:

- VDs 1, 4 and 5;
- CD1;
- Drayton Void;
- Saddlers North; and
- McDonald's South.

See Section 8.4 for details of weed treatment. Locations of rehab areas are presented in Figure 14.

Improvement works focussed on a targeted revegetation program in the VD5 area. The scope included:

- Slashing and ripping of planting beds;
- Tubestock diversification in Box Gum Woodland area of VD5 (Table 36) of approximately 10ha.

**Table 36: Diversity Tubestock mix used on VD5**

<b>Species</b>	<b>No. of individuals</b>
<i>Acacia Decora</i>	80
<i>Acacia Falcata</i>	133
<i>Acacia Implexa</i>	130
<i>Acacia Paradoxa</i>	120
<i>Acacia Parvipinnula</i>	80
<i>Allocasuarina luehmannii</i>	100
<i>Brachychiton Populneus</i>	1,169
<i>Bursaria Spinosa</i>	12
<i>Cassinia Quinquefaria</i>	47
<i>Dodonaea Viscosa</i>	1,160
<i>Dodonaea Viscosa Angustifolia</i>	163
<i>Eucalyptus Albens</i>	340
<i>Eucalyptus Albens X Moluccana</i>	111
<i>Eucalyptus Blakelyii</i>	240
<i>Eucalyptus Blakleyi X Tereticornis</i>	668
<i>Eucalyptus Crebra</i>	1,929
<i>Eucalyptus Moluccana</i>	1,040
<i>Eucalyptus Tereticornis</i>	166
<i>Indigofera Australis</i>	920
<i>Lomandra longifolia</i>	120
<i>Notelaea Microcarpa</i>	195
<i>Teucrium (Spartothamnella) Juncea</i>	257
<b>Total</b>	<b>9180</b>



**Figure 13 FY25 box woodland supplementary tubestock planting area showing rip lines.**

#### **8.4 Performance against rehabilitation objectives and rehabilitation completion criteria**

The annual ecological development monitoring program consists of vegetation community assessment and fauna surveys by independent consultants. The FY25 program highlighted high priority areas, identified invasive species and supported native populations establishing within the mining lease perimeter.

The works were in line with initially proposed management procedures and surveyed populations in almost every area of the mine site. Assessing monitoring data against draft that performance indicators suggest woodland rehabilitation is progressing through rehabilitation phases.

Maintenance and improvement activities are planned in areas where required to improve rehabilitation trajectory to draft completion criteria.

Pasture monitoring draft performance indicators suggests that pasture rehabilitation is generally comparable to pasture reference sites.

Stability monitoring suggests that rehabilitation is generally stable with maintenance activities planned to address areas where maintenance is required.



## Geospatial Tea Brishane

Scale: 1: 47,000  
0 1  
Transverse Mercator Projection  
GDA94 MGA Zone 56

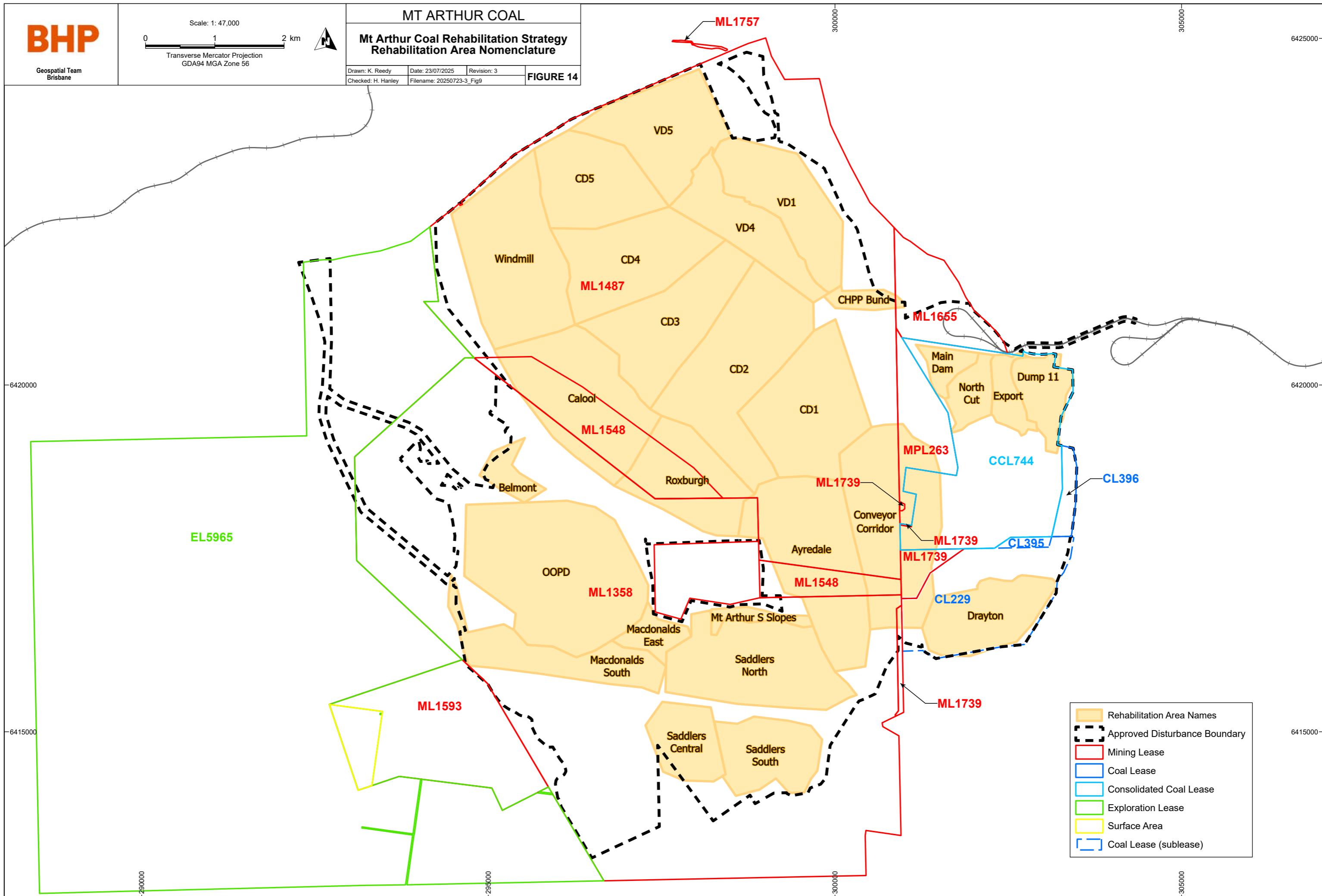
## MT ARTHUR COA

## **Mt Arthur Coal Rehabilitation Strategy Rehabilitation Area Nomenclature**

Drawn: K. Reedy Date: 23/07/2025 Revision: 3  
 Checked: H. Hanley Filename: 20250723-3\_Fig9

Checked: H. Hanley    Filename: 20230723-3\_1199

**FIGURE 1**



## 8.5 Rehabilitation Improvements

Mt Arthur Coal will continue using remote sensing to assess erosion, building on the work completed in FY25. The results focused on applying LiDAR to identify erosion gullies of specific depth and length and to classify them according to their rehabilitation risk.

The process of updating rehabilitation objectives and completion criteria continued in the reporting period with:

- Rehabilitation Objectives (ROBJs) submitted to NSW Resources Regulator in July 2025 following the approval of the Mt Arthur Coal Project Approval.

Improvement in landform establishment:

- Review of the specifications of competent rock for construction of rock drains;
- Sourcing of materials on site that meet the required specifications; and
- Detailed drain design and construction to that design for drains required in rehabilitation areas.

Mt Arthur Coal continued to improve the quality control and assurance of rehabilitation:

- Review and updating of the Inspection Test Plans in the MAC-STE-STD-214 Mine Rehabilitation Standard including the Quality Assurance and Quality Control Inspection and Test Plans as part of the continual improvement process. This update focussed on the improvement rock drain construction.

Mt Arthur Coal continued to improve the tracking of rehabilitation performance:

- Updating MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring to capture whole of woodland corridor rehabilitation;
- Updating MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring to update the pasture monitoring to include more frequent assessments (annual);
- Updating Trigger Action Response Plan (TARP) to capture updates to monitoring programs; and
- Development of draft performance indicators to assess woodland rehabilitation.

### 8.5.1 Trials

During the FY25 rehabilitation campaign Mt Arthur Coal undertook the following trial:

Assessing the viability of growth media alternatives:

- Growth media in the Saddlers North Woodland rehabilitation using a blend of topsoil (approximately 20mm depth), hay mulch and blood and bone; and
- This mix was spread via a tractor and ripped with either a tractor or dozer.

## 8.6 Rehabilitation Activities for Next Reporting Period

Next reporting period will see:

- Responding to regulator comments on ROBJs;
- Continued refinement of the draft Completion Criteria;
- Continued development of draft woodland performance indicators;
- Development of draft performance indicators for pasture areas;
- Improvements in the use of analogue sites in assessing rehabilitation performance;
- Improvements to pasture monitoring program;
- Continued improvement of the GIS rehabilitation tracking system:
  - Integration GIS monitoring data of TARP triggers; and
  - Tracking of TARP triggers in the rehabilitation contract.

## ANNUAL REVIEW FY25

Following the announcement of cessation of mining at Mt Arthur Coal in 2030, Mt Arthur will continue detailed studies into the closure of the mine. These studies are expected to improve rehabilitation practices at Mt Arthur.

Rehabilitation activities for the reporting period include the continuation of natural landform design rehabilitation techniques and the inclusion of habitat in new areas as they become available. FY25 has an annual rehabilitation area target of 70 hectares.

New rehabilitation of land will be carried out in accordance with:

- Mt Arthur Coal's Forward Program;
- Mt Arthur Coal's Rehabilitation Management Plan;
- MAC-ENC-MTP-047 Rehabilitation Strategy
- MAC-ENC-MTP-050 Biodiversity Management Plan
- MAC-TCS-STD-002 Landform Design; and
- MAC-STE-STD-214 Mine Rehabilitation Standard.

Rehabilitation maintenance activities for the next reporting period will include:

- Targeted spot weed treatment for woodland areas focusing on:
  - Newly established (FY24 and FY25) rehabilitation in Saddlers North and VD4;
  - Recently revegetated (tubestock and reseeding) areas in MacDonald's South
- Tubestock planting planned to occur in VD4 dependent on supply and weather conditions;
- Pest animal control programs will be carried out across site.
- Pasture maintenance work will be carried out in small areas of North Cut Tailings dam rehab to improve vegetation establishment.

## 9 Community

### 9.1 Community Engagement

Mt Arthur Coal continues to actively engage and build relationships with key stakeholders and the local community through its program of community engagement and consultation. Mt Arthur Coal's community engagement and consultation process was ongoing throughout the reporting period with the following consultation measures undertaken:

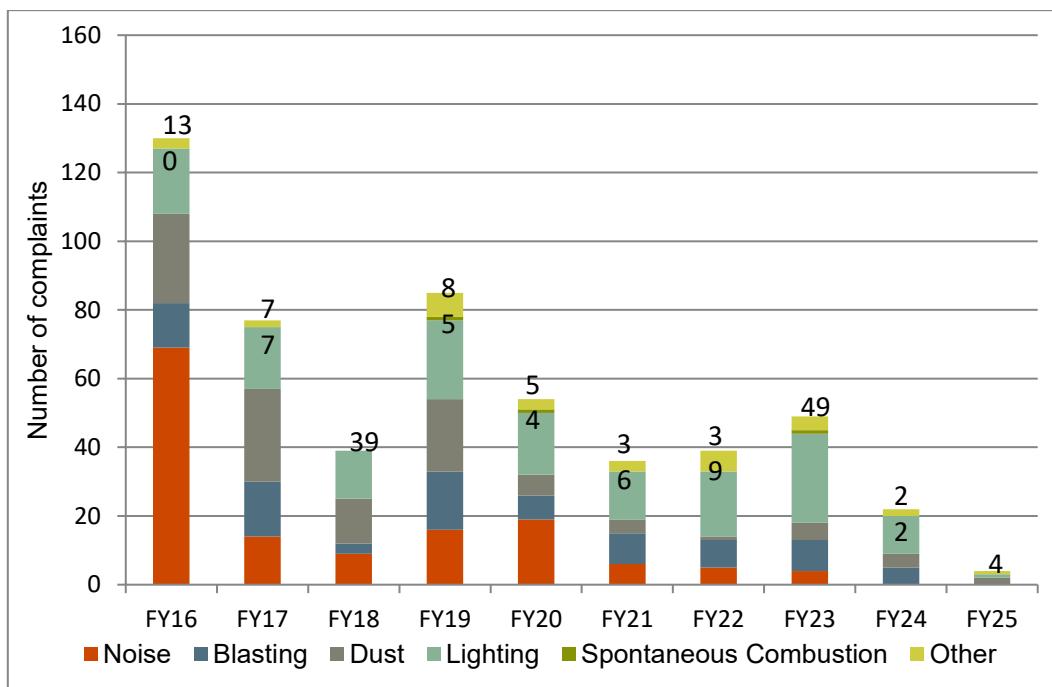
- Quarterly Community Consultative Committee (CCC) meetings
- MAC representatives' attendance at Muswellbrook Chamber of Commerce and Industry, Business Singleton and Business Hunter events
- Participation in the Upper Hunter Mining Dialogue and several of its working groups
- Telephone and face-to-face engagement with neighbouring landholders as well as written correspondence
- Site tours from school groups, universities and Government representatives
- 24-hour BHP Mt Arthur Coal Community Response Line: 1800 882 044
- Annual Community Perception Survey, conducted by independent research firm IPSOS, to provide the local community and key stakeholders with a way to provide feedback to Mt Arthur Coal on its business activities and key issues of concern for the community.
- Community engagement at key local events including Muswellbrook Cultural Spectacular, Singleton Show, Upper Hunter Show, Tocal Field Days, Scone Horse Festival, and Aberdeen Highland Games.
- Three Community Newsletters to update the community about the transition to closure as well as current relevant topics and provide information on how the community can provide input and feedback through various touch points.

Mt Arthur Coal invites feedback about its activities through a free-call 24-hour Community Response Line (1800 882 044) and/or a dedicated email address ([nswec.community@bhp.com](mailto:nswec.community@bhp.com)), which are advertised in the local newspaper, in community newsletters, at community events and on the BHP website at:

<https://www.bhp.com/sustainability/environment/regulatory-information/>

#### 9.1.1 Community Response Line

During the reporting period, Mt Arthur Coal received 4 complaints from community members and near neighbours. A comparison of complaints received during the reporting period against previous financial years is shown in Figure 15 and a complete register of complaints is presented in Appendix 3 Community Complaints.



**Figure 15: Comparison of complaints received during current and previous financial years**

#### 9.1.2 Q1 (July to September 2024)

Mt Arthur Coal received two (2) complaints during this period. Both complaints were related to dust.

#### 9.1.3 Q2 (October to December 2024)

Mt Arthur Coal received one (1) complaint during this period. The complaint was related to lighting and was from Roxburgh Rd.

#### 9.1.4 Q3 (January to March 2025)

Mt Arthur Coal received nil complaints during this period.

#### 9.1.5 Q4 (April to June 2025)

Mt Arthur Coal received one (1) complaint during this period. The complaint was not related to environmental impacts.

#### 9.1.6 Website

Mt Arthur Coal provides information about the operation through the BHP website at <https://www.bhp.com/sustainability/environment/regulatory-information/>, including project approval documents, blast schedules, coal transport information, CCC meeting minutes, community complaint records, environmental monitoring information, independent environmental audits, environmental management plans, EPBC compliance reports and Annual Reviews. Note that the Annual Coal Transport Report is now provided as part of this Annual Review in Appendix 4.

#### 9.1.7 Community Consultative Committee

During the reporting period, Mt Arthur Coal coordinated four CCC meetings in accordance with the Community Consultative Committee Guidelines (DPHI, formerly DPE, 2023) on:

- 14 August 2024
- 20 November 2024
- 12 February 2025
- 14 May 2025

## 9.2 Community Investment

During the reporting period Mt Arthur Coal voluntary contributed more than \$684,000 to the local community, including \$177,000 in one-off grants through the Benefiting My Community program and the Grassroots Sponsorship Grants program.

Central to Mt Arthur Coal's commitment to the local community is its Voluntary Planning Agreement (VPA) with Muswellbrook Shire Council, of which \$ 878,238 was provided in FY25 toward the Mt Arthur Coal Community Fund. Established under the *Environmental Planning and Assessment Act 1979*, the VPA is an annual commitment that contributes to public amenities and services that may be impacted by the growth of mining operations.

### 9.2.1 Local Buying Program

Mt Arthur Coal continues to engage and support eligible small, local and indigenous businesses by procuring goods and services through the Local Buying Program – a program delivered in partnership between BHP and C-Res, a cost-neutral entity. A record \$29,053,121 was spent in NSW in FY24, primarily in the shires of Muswellbrook, Singleton and Upper Hunter. Audited figures for FY25 are not yet available.

### 9.2.2 Local Buying Foundation

The Local Buying Foundation is an important element of the Local Buying Program; each time BHP procures goods and services through the Program additional funds are provided to the Local Buying Foundation. The Foundation directs these funds to programs, initiatives and events that focus on building stronger and more resilient local business communities.

FY24 saw a total investment of \$312,131 in NSW which supported key initiatives such as business development and capacity building programs in Muswellbrook, Singleton, and Scone. FY25 audited figures are not yet available.

## 10 Independent Audit

An Independent Environmental Audit (IEA) was undertaken at Mt Arthur Coal in during October 2023. The IEA covered the Mt Arthur Coal Complex. The IEA period was 7<sup>th</sup> October 2020 to 5<sup>th</sup> October 2023. The Department of Planning, Housing and Infrastructure (DPHI) endorsed the following IEA team in the letter dated 13 June 2023:

- Andrew Lewis – IEA Lead (ERM)
- Leanne Lee – IEA Assistant (ERM)
- Heather McKay – Project Manager (ERM)
- Robert Smith – Technical Oversight (ERM)
- Chris Gimber – Surface Water (ERM)
- Muller Retief – Groundwater (ERM)
- Keshav Dhayam – Blasting and Noise (ERM)
- Clayton Richards – Rehabilitation (Minesoils)
- Shane Lakmaker – Air Quality (Airen Consulting)

The IEA covered the requirements of Schedule 5 Condition 9 of the Project Approval (PA 09-0062).

The IEA included a series of specialists including surface water, groundwater, noise/blast, air and rehabilitation.

The IEA generally identified a high level of compliance with an improvement on the 2020 IEA non-compliances from 24 total non-compliances in 2020 to 16 (with 6 duplicates) identified in 2023.

As summarised in Table 37 the following non – compliances were observed:

- 13 instances of non-compliance with the Project Approval with 5 additional duplicate non-compliances
- 3 instances of non-compliance relating to the implementation and adequacy of management plans with one duplicate

This resulted in a total of 8 recommendations and two actions agreed with DPHI, both have now been completed.

**Table 37: Summary of IEA Non-Compliances and Recommendations**

Review	Non- Compliances (NC)	Observations (Obs NC)	Observations (Obs C)	Recommendations
Statutory Instruments	13 (+5 duplicates)	Nil	1	7
Implementation of Plans	3 (+1 duplicate)	Nil	Nil	1

**Table 38: 2023 Independent Environmental Audit Non-compliance Recommendations and Actions**

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status																																											
<b>Environment Protection Licence 11457</b>																																																
L1.1	Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.	Non - Compliant	Corrective actions have been implemented. No further action is required.	<p><b>Response Comments:</b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events. This included significant expenditure to upgrade the relevant infrastructure (export area dam and mine water pipelines) including the completion of Pollution Reduction Study and Program via the EPL.</p> <p><b>Proposed Action Due Date:</b></p> <p>Not applicable.</p>	<b>No action required</b>																																											
<b>L5.1</b>																																																
	<p>Noise generated at the premises must not exceed the noise limits presented in the table below.</p> <p>Residences referenced in this table are from Project Approval 09_0062 and summarised in EPA Re DOC19/1103289</p> <table border="1"> <thead> <tr> <th>Location</th> <th>Day L<sub>Aeq</sub> (15 minute) dBA</th> <th>Evening L<sub>Aeq</sub> (15 minute) dBA</th> <th>Night L<sub>Aeq</sub> (15 minute) dBA</th> <th>Night LA1 (1 minute) dBA</th> </tr> </thead> <tbody> <tr> <td>EPA Point 16</td> <td>37</td> <td>40</td> <td>38</td> <td>45</td> </tr> <tr> <td>EPA Point 17</td> <td>41</td> <td>40</td> <td>39</td> <td>45</td> </tr> <tr> <td>EPA Point 18</td> <td>39</td> <td>39</td> <td>39</td> <td>45</td> </tr> <tr> <td>EPA Point 19</td> <td>41</td> <td>40</td> <td>39</td> <td>45</td> </tr> <tr> <td>EPA Point 20</td> <td>35</td> <td>35</td> <td>35</td> <td>45</td> </tr> <tr> <td>EPA Point 21</td> <td>37</td> <td>36</td> <td>35</td> <td>45</td> </tr> <tr> <td>EPA Point 22</td> <td>37</td> <td>36</td> <td>35</td> <td>45</td> </tr> <tr> <td>EPA Point 23</td> <td>39</td> <td>38</td> <td>37</td> <td>45</td> </tr> </tbody> </table>	Location	Day L <sub>Aeq</sub> (15 minute) dBA	Evening L <sub>Aeq</sub> (15 minute) dBA	Night L <sub>Aeq</sub> (15 minute) dBA	Night LA1 (1 minute) dBA	EPA Point 16	37	40	38	45	EPA Point 17	41	40	39	45	EPA Point 18	39	39	39	45	EPA Point 19	41	40	39	45	EPA Point 20	35	35	35	45	EPA Point 21	37	36	35	45	EPA Point 22	37	36	35	45	EPA Point 23	39	38	37	45	<p><b>Response Comments:</b></p> <p>Mt Arthur varied EPL 11457 to remove Condition L5.3 e) in April 2023 thus aligning the requirements in Condition L5.3 to that those listed in Appendix 10 of Project Approval 09_0062. This variation has addressed the inconsistency that caused the non-compliance relevant to L5.1. The noise limits should not have applied given a category G temperature inversion was in place.</p> <p>Mt Arthur proposes that no further action is required. Note that compliance to the Noise Management Plan is captured in subsequent sections of this report.</p> <p><b>Proposed Action Due Date:</b></p> <p>Not applicable.</p>	<b>No action required</b>
Location	Day L <sub>Aeq</sub> (15 minute) dBA	Evening L <sub>Aeq</sub> (15 minute) dBA	Night L <sub>Aeq</sub> (15 minute) dBA	Night LA1 (1 minute) dBA																																												
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Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status
L6.5	The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:  10mm/second at any time; At either monitoring point 7, 8, 10 or 25 in Condition P1.4	Non - Compliant	Since the monitoring point has been relocated, no further action is recommended.	<p><b><u>Response Comments:</u></b> No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	No action required
O1.1	Licenced activities must be carried out in a competent manner.  This includes:  a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and  b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.	Non - Compliant	Identify measures to prevent hydrocarbon contamination migrating to stormwater or groundwater based on the Remedial Action Plan. Consider updating the Plan if required. The site should consult with subcontractor Thiess on such measures. Undertake periodic inspections to assess the performance of contamination prevention measures.	<p><b><u>Response Comments:</u></b> A Remedial Action Plan (RAP) established for the Bayswater (Thiess) area as per PA Schedule 3 Condition 35. This RAP will be updated in conjunction with Closure Studies program.</p> <p><b><u>Proposed Action:</u></b> MAC will consult with Thiess to establish a routine to complete periodic inspections to assess the performance of contamination prevention measures. This inspection routine will be scheduled in 1SAP work management system.</p> <p><b><u>Proposed Action Due Date:</u></b> Action Completed</p> <p>A monthly inspection regime was established. Inspections are scheduled and tracked in 1SAP work management.</p>	Complete

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status
O2.5 O2.6	<p>O2.5 The licensee must record each inspection, and any actions required or recommended by the technician including all results of tests performed on the sewage treatment system by the technician as required in Condition O2.4</p> <p>O2.6 The licensee must prepare a sewage treatment system maintenance program. The program must include:</p> <ul style="list-style-type: none"> <li>a) Certification from the system provider that the sewage treatment system is operating within its capacity;</li> <li>b) Date, time and results of all routine maintenance procedures undertaken to the sewage treatment system; and</li> <li>c) Provide written records or an electronic confirmation of each quarterly inspection</li> </ul>	Non - Compliant	No further actions required.	<p><b><u>Response Comments:</u></b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	<b>No action required</b>
07.1	All above-ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment in place.	Non - Compliant (Duplicate with O1.1)	As per O1.1	<p><b><u>Response Comments:</u></b></p> <p>A Remedial Action Plan (RAP) established for the Bayswater (Thiess) area as per PA Schedule 3 Condition 35. This RAP will be updated in conjunction with Closure Studies program.</p> <p><b><u>Proposed Action:</u></b></p> <p>MAC will consult with Thiess to establish a routine to complete periodic inspections to assess the performance of contamination prevention measures. This inspection routine will be scheduled in 1SAP work management system.</p>	<b>Complete</b>

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status										
		Non-Compliant		<p><b>Proposed Action Due Date:</b></p> <p>Action Completed</p> <p>A monthly inspection regime was established. Inspections are scheduled and tracked in 1SAP work management</p>											
M2.2	<p>Air monitoring requirements</p> <p>Point 11, 12, 13, 14</p> <p>POINT 11,12,13,14</p> <table border="1"> <tr> <td>Point</td> <td>11,12,13,14</td> <td>Date of issuance</td> <td>Frequency</td> <td>Sampling Method</td> </tr> <tr> <td>PM10</td> <td></td> <td>monogram per hour rate</td> <td>Continuous</td> <td>AM-22</td> </tr> </table>	Point	11,12,13,14	Date of issuance	Frequency	Sampling Method	PM10		monogram per hour rate	Continuous	AM-22	Non-Compliant	No further action required.	<p><b>Response Comments:</b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b>Proposed Action Due Date:</b></p> <p>Not applicable.</p>	No action required
Point	11,12,13,14	Date of issuance	Frequency	Sampling Method											
PM10		monogram per hour rate	Continuous	AM-22											
M6.1	<p>The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.</p>	Non-Compliant	<p>The Warning Letter identifies that measures aimed at preventing a recurrence have already been enacted to the satisfaction of the DPE.</p> <p>Therefore, no further action is recommended.</p>	<p><b>Response Comments:</b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b>Proposed Action Due Date:</b></p> <p>Not applicable.</p>	No action required										
M7.1	<p>For each discharge point or utilisation areas specified below, the licensee must monitor:</p> <ol style="list-style-type: none"> <li>The volume of liquids discharged to water or applied to the area;</li> <li>The mass of solids applied to the area;</li> </ol>	<p>Non-Compliant – Point 6 finding</p> <p>Observations (Obs C) – Point 15 finding</p>	<p>NC at Point 6:</p> <p>Since the flow meter was in working order during the discharge in July to November 2022, no further action is required.</p> <p>C (Obs) at Point 15:</p>	<p><b>Response Comments:</b></p> <p>NC at Point 6</p> <p>No further action is required as Auditor verified that corrective actions have been implemented for NC at Point 6.</p>											

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status												
	<p>c) The mass of pollutants emitted to the air; At the frequency and using the method and units of measure, specified below.</p> <p>POINT 6</p> <table border="1"> <thead> <tr> <th>Frequency</th> <th>Unit of Measure</th> <th>Sampling Method</th> </tr> </thead> <tbody> <tr> <td>Continuous during discharge</td> <td>Megalitres per day</td> <td>Weir structure and level sensor</td> </tr> </tbody> </table> <p>POINT 15</p> <table border="1"> <thead> <tr> <th>Frequency</th> <th>Unit Measure of</th> <th>Sampling Method</th> </tr> </thead> <tbody> <tr> <td>Continuous during discharge</td> <td>Kilolitres per day</td> <td>Flow meter and continuous logger</td> </tr> </tbody> </table>	Frequency	Unit of Measure	Sampling Method	Continuous during discharge	Megalitres per day	Weir structure and level sensor	Frequency	Unit Measure of	Sampling Method	Continuous during discharge	Kilolitres per day	Flow meter and continuous logger	Non-Compliant	<p>Auditors noted that the measurement at Point 15 is continuous, but the records are not saved automatically. It is recommended that the site investigate a logging system where at least daily measurement is recorded. Alternatively, ensure manual record of reading is logged regularly, at a reasonable frequency.</p>	<p>C (Obs) at Point 15:</p> <p>MAC will investigate options for a logging system where a more regular measurement of flow rate is recorded at Point 1 and provide an update in FY24 Annual Review.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Action Completed</p> <p>A new digital flow meter interface was installed at the discharge point during January 2024. The data from the flow meter has now been integrated into the on-site process control system where daily flow data is captured daily.</p>	Complete
Frequency	Unit of Measure	Sampling Method															
Continuous during discharge	Megalitres per day	Weir structure and level sensor															
Frequency	Unit Measure of	Sampling Method															
Continuous during discharge	Kilolitres per day	Flow meter and continuous logger															
R1.1	<p>The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:</p> <ol style="list-style-type: none"> <li>1 A Statement of Compliance</li> <li>2 A Monitoring and Complaints Summary</li> <li>3 A Statement of Compliance – Licence Conditions</li> <li>4 A Statement of Compliance – Load Based Fee</li> <li>5 A Statement of Compliance – Requirement to Prepare Pollution Incident Response Management Plan</li> <li>6 A Statement of Compliance – Requirement to Publish Pollution Monitoring Data; and</li> <li>7 A Statement of Compliance – Environmental Management Systems and Practices</li> </ol>	Non-Compliant	<p>Complete the Annual Returns as required.</p>	<p><b><u>Response Comments:</u></b></p> <p>Recommendation noted. MAC will complete comprehensive reviews prior to submitting annual reports.</p> <p>No proposed action.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	No action required												

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status
	At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.				
R2.1	<p>R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.</p> <p>R4.3 The Licensee must notify the EPA by telephoning the Environment Line service on 131 555 immediately after the Licensee becomes aware of any contravention or potential contravention of Condition L1 of the Licence.</p>	Non - Compliant	<p>Notify all incidents to the EPA Environment Line as required by this condition.</p>	<p><b><u>Response Comments:</u></b> Please note that the events referred to in Table 3.2 (Page 36) of the ERM Final Report are not relevant to this non-compliance; all three events were reported correctly to the EPA. The relevant non-compliance is referred to in the body of the Report - Section 3.3.</p> <p>This finding is noted with no further action proposed as reporting was completed within a very short period. Mt Arthur has reported correctly on several occasions with one event delayed.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	<b>No action required</b>
R4.2	The Licensee must report any exceedance of licence noise limits to the EPA Regulatory Operations Metro North at info@epa.nsw.gov.au as soon as practicable after the exceedance becomes known to the Licensee or to one of the Licensee's employees or agents.	Non - Compliant	Since the misalignment between EPL and Project Approval has been resolved, no further action is required.	<p><b><u>Response Comments:</u></b> No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	<b>No action required</b>
R5.5	The sewage treatment system maintenance program required by Condition O2.6 must be submitted annually to the EPA with the Annual Return.	Non - Compliant	No further action required.	<p><b><u>Response Comments:</u></b> No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p>	

ANNUAL REVIEW FY25

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response/ Agreed Action	Status
				<p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	No action required

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
<b>Ministers Conditions of Approval PA 09_0062</b>					
Sch 3 - 9	<p>The Proponent shall prepare and implement a Noise Management Plan for the Mt Arthur mine complex to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none"> <li>a) Describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;</li> <li>b) Describe the proposed noise management system in detail; and</li> <li>c) Include a monitoring program that: <ul style="list-style-type: none"> <li>• Evaluates and reports on: <ul style="list-style-type: none"> <li>-the effectiveness of the noise management system</li> <li>-compliance against the noise criteria in this approval; and</li> <li>compliance against the noise operating conditions</li> </ul> </li> <li>• Includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria in this approval and trigger for further attended monitoring); and</li> <li>• Defines what constitutes a noise incident and includes a protocol for identifying and notifying the Department and relevant</li> </ul> </li> </ul>	Non Compliant	<p>MAC has addressed the issue through additional training to the OCEs.</p> <p>No further action is required.</p>	<p><b><u>Response Comments:</u></b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p>In addition to the OCE training and in line with correspondence with DPE on the 18 October 2021 exceedance, Mt Arthur committed to upgrading the real-time noise monitoring network (to Environmental Noise Compass') to improve the quality of data by which decisions are made. The real time monitoring platform has also been upgraded to improve functionality and accessibility in the field for operational personnel. This work has been completed.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	No action required

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
	stakeholders of any noise incidents.				
Sch 3 - 27	Unless an EPL or the EPA authorises otherwise, the Proponent shall comply with Section 120 of the POEO Act and the Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002.	Non Compliant - (Duplicate with EPL L1.1)	<p>Remedial actions have already been undertaken and completed.</p> <p>No further action is recommended.</p>	<p><b><u>Response Comments:</u></b></p> <p>No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	No action required
Sch 3 - 29	<p>The Proponent shall prepare and implement a Water Management Plan for the Mt Arthur mine complex to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none"> <li>a) be prepared in consultation with NOW and the EPA; and</li> <li>b) include a:           <ul style="list-style-type: none"> <li>• Site Water Balance;</li> <li>• Erosion and Sediment Control Plan;</li> <li>• Surface Water Monitoring Program;</li> <li>• Groundwater Monitoring Program; and</li> <li>• Surface and Ground Water Response Plan.</li> </ul> </li> </ul>	Non Compliant -	<p>Implement an inspection and maintenance program so that dam capacities and pipeline infrastructure are maintained.</p>	<p><b><u>Response Comments:</u></b></p> <p>MAC would like to propose no further action is required as corrective actions in line with recommendation have been implemented. This included the completion of significant expenditure to upgrade the relevant infrastructure (export area dam and site mine water pipelines) including the completion of a Pollution Reduction Study and Program via the EPL. Please also refer to EPL Condition L1.1 response above.</p> <p>The PRP that was recently completed included upgrades and re-routing of pipelines with offsite discharge risk. At the completion of this work package, the pipeline and dam inspection requirements were transitioned into business as usual, which consists of pipeline and dam inspections on a routine basis and additional inspections during wet weather.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	No action required

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
Sch 5 - 1	<p>The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary. The strategy must:</p> <ul style="list-style-type: none"> <li>(a) provide the strategic framework for environmental management of the project;</li> <li>(b) identify the statutory approvals that apply to the project;</li> <li>(c) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;</li> <li>(d) describe the procedures that would be implemented to: <ul style="list-style-type: none"> <li>• keep the local community and relevant agencies informed about the operation and environmental performance of the project;</li> <li>• receive, handle, respond to, and record complaints;</li> <li>• resolve any disputes that may arise during the course of the project;</li> <li>• respond to any non-compliance;</li> <li>• respond to emergencies; and</li> </ul> </li> <li>(e) include: <ul style="list-style-type: none"> <li>• copies of the various strategies, plans and programs that are required under the conditions of this approval once they have been approved; and</li> <li>• a clear plan depicting all the monitoring to be carried out in relation to the project.</li> </ul> </li> </ul>	Non Compliant	<p>The Warning Letter identifies that measures aimed preventing a recurrence have already been enacted to the satisfaction of the DPE.</p> <p>Therefore, no further action is recommended.</p>	<p><b><u>Response Comments:</u></b> No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	No action required

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
Sch 5 - 5	<p>The Proponent shall establish and operate a CCC for the project to the satisfaction of the Secretary. This CCC must be established by the end of March 2011 and be operated in general accordance with the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007, or its latest version).</p> <p>Notes</p> <ul style="list-style-type: none"> <li>The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.</li> <li>In accordance with the Guideline, the Committee should comprise an independent chair and appropriate representation from the Proponent, affected councils and the general community.</li> </ul>	Non Compliant	<p>MAC uploaded the missing information once notified and have continued to maintain the required information, up to date on the website since the incident.</p> <p>Therefore, no further action is recommended.</p>	<p><b><u>Response Comments:</u></b> No further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	No action required
Sch 5 - 11	<p>From the end of December 2010, the Proponent shall:</p> <p>(a) make the following information publicly available on its website:</p> <ul style="list-style-type: none"> <li>a copy of all current statutory approvals for the project;</li> <li>a copy of the current environmental management strategy and associated plans and programs;</li> <li>a summary of the monitoring results of the project, which have been reported in accordance with the various plans and programs approved under the conditions of this approval;</li> </ul>	Non Compliant (Duplicate with Sch 5 - 5)	As per Sch 5 - 5	<p><b><u>Response Comments:</u></b> As per Sch 5 - 5 response, no further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b> Not applicable.</p>	No action required

ANNUAL REVIEW FY25

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
	<ul style="list-style-type: none"> <li>• a complaints register, which is to be updated on a monthly basis;</li> <li>• a copy of the minutes of CCC meetings;</li> <li>• a copy of any Annual Reviews (over the last 5 years);</li> <li>• a copy of any Independent Environmental Audit, and the Proponent's response to the recommendations in any audit;</li> <li>• any other matter required by the Secretary; and</li> </ul> <p>(b) keep this information up to date, to the satisfaction of the Secretary.</p> <p>(c) place a copy of the document/s on its website; and</p> <p>(d) remove superseded copies of strategies/plans/programs from its website.</p>	Non Compliant - Duplicate with EPL L1.1			

<b>Consolidated Coal Lease 744, Mining Leases 1358, 1548, 1593, 1655, 1739, 1757, 1487, Mining Purpose Lease 263 (7 October 2020 to 1 July 2022)</b>					
Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
CCL 744 (18) ML 1548 (16) ML 1593 (16)	CCL 744 (18), ML 1548 (16), ML 1593 (16)	Non Compliant - Duplicate with EPL L1.1	N/A, refer to EPL L1.1	<p><b>Response Comments:</b></p> <p>As per previous responses to EPL L1.1, no further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p>	<b>No action required</b>

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
	<p>Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan. For the purposes of this condition, water shall be taken to include any watercourse, waterbody or groundwaters. The lease holder must observe and perform any instructions given by the Director-General in this regard.</p> <p><u>ML 1655 (12)</u></p> <p>Prospecting operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution (including sedimentation) or soil contamination or erosion, unless otherwise authorised by a relevant approval, and in accordance with an accepted Mining Operations Plan.</p> <p><u>ML 1487 (25)</u></p>			<p><u>Proposed Action Due Date:</u></p> <p>Not applicable.</p>	

Schedule and Condition Number	Condition	Compliance Status	Recommendations	Mt Arthur Coal Response	Status
	The lease holder shall provide and maintain to the satisfaction of the Minister efficient means to prevent contamination, pollution, erosion or siltation of any river, stream, creek, tributary, lake, dam, reservoir, watercourse, groundwater or catchment area or any undue interference to fish or their environment and shall observe any instruction given or which may be given by the Minister with a view to preventing or minimising the contamination, pollution, erosion or siltation of any river, stream, creek, tributary, lake, dam, reservoir, watercourse, groundwater, or catchment area or any undue interference to fish or their environment.				
ML 1487 (33a)	Operations shall be carried out in such a way as not to cause any pollution of the Hunter River Catchment Area.	Non Compliant - (Duplicate with EPL L1.1)	N/A, refer to EPL L1.1	<p><b><u>Response Comments:</u></b></p> <p>As per previous responses to EPL L1.1, no further action is required as the Auditor verified that corrective actions have been implemented for relevant events.</p> <p><b><u>Proposed Action Due Date:</u></b></p> <p>Not applicable.</p>	<b>No action required</b>

## 11 Incidents and Non-compliances

### Blast Fume Incident – 8 August 2024

A blast fired on the 8 August 2024 at 3:23pm resulted in a fume rated Level 4B which was subsequently reported to DPHI in accordance with MAC-ENC-MTP-015 Blast Management Plan (BMP). The blast was initially scheduled to fire on Saturday 3 August 2024. However, the blast was postponed twice (Saturday 3 August 2024 and Monday 5 August) as loading of the shot could not be completed in time due to unexpected limitations. The blast was postponed again on Tuesday 6 August 2024 due to wet conditions within the area. The blast was then re-scheduled to Thursday 8 August 2024.

A Detailed Investigation Report was submitted to the DPHI in line with the Request for Additional Information as received on 12 August 2024 (RFI-74674263). HVEC completed all required due diligence checks in accordance with the BMP and subsequent documents. Wind conditions at the time of blast ensured that the fume remained on-site. No complaints were received, and given the location of the blast, there were no nearby sensitivities receptors requiring notification. The investigation report also detailed the improvements and mitigation measures identified to prevent recurrence of this event. An Actions Progress Update on the progress for implementation of these actions was submitted to the DPHI on 31 January 2025.

### After 5pm Blast – 6 January 2025

On Monday 6 January 2025 various issues (i.e. slumping, wiring disconnections) occurred. It took most of the day to rectify the issues. Further delaying of the shot to the next day would likely have resulted in an unacceptable safety risk due to risk of misfire, as well as a risk of a significant fume event due to the likely rain forecast to occur the next day. HVEC attempted to contact the DPHI on Monday 6 January 2025 when it appeared possible that the blast may fire after 5pm that day, however, were unsuccessful. The blast detonation process was initiated at 4:59pm on Monday 6 January 2025. The blast initiation was at 5:04:32pm (because the electronic code took approximately 4 minutes to complete a system process check).

The DPHI issued a formal Warning Letter for the breach on 16 May 2025 and determined that no formal action was warranted under the circumstances. This incident will be reported in the 2025 EPL annual return as a non-compliance to the L6.1 of the applicable EPL (L7.1 of the current EPL).

### After 5pm Blast – 26 March 2025

A blast originally scheduled for 25 March 2025 had various issues identified during pre-firing inspections that would have resulted in a potential misfire risk. As such, the blast was postponed to 26 March 2025. During pre-firing inspections further issues were identified that delayed firing of the shot. Delaying the blast further was expected to cause unacceptable safety risk from risk of misfire. The blast was initiated at 5:00pm on Wednesday 26 March 2025. The blast fired at 5:01:26pm (because the electronic code took 1 minute and 26 seconds to complete a system process check).

The DPHI issued a formal Warning Letter for the breach on 20 May 2025 and determined that no formal action was warranted under the circumstances. This incident will be reported in the 2025 EPL annual return as a non-compliance to the L6.1 of the applicable EPL (L7.1 of the current EPL).

### Overpressure Exceedance – 7 December 2024

Following a blast on the 7 December 2024 at approximately 11:41am, a blast overpressure result of 125.8 dBBL was recorded at the blast monitoring site (BP08 Edinglassie), exceeding the upper limit for overpressure of 120dBBL. The exceedance was subsequently reported to DPHI.

A Notice to Furnish Information and Records was issued on 4 April of 2025 by DPHI (INV-81605212). DPHI was investigating potential breaches to Section 4.2(1) of the Environmental Planning and Assessment Act 1979 (EP&A Act). In line with the Notice to Furnish (INV-81605212), HVEC provided information and records as requested. Following a thorough review of the documentation provided, DPHI determined that no breach of the Approval occurred, and the investigation was considered closed.

## Overpressure Exceedance – 2 January 2025

An elevated overpressure result was recorded at a blast monitoring site (BP07 Sheppard Ave) exceeding the criteria of 120dB<sub>L</sub> following a blast on 2 January 2025 at 15:24. The exceedance was subsequently reported to both the EPA and DPHI.

A third-party subject matter expert was engaged to investigate the overpressure exceedance. A scaling analysis was completed and confirmed the results were affected by wind and actual impacts of the blast would have been less than those recorded. The actual blast airblast overpressure levels recorded (107.5dB<sub>L</sub>) would have been below the criteria of 120dB<sub>L</sub>.

This incident was also reported in the 2025 Annual Return as a non-compliance to Condition L6.3 of the applicable EPL (L7.3 of the current EPL).

## Noise Exceedance (NP12) – 17 July 2024

As part of routine attended noise monitoring, independent consultants identified a potential exceedance at monitoring site NP12 when conducting routine monitoring on the night of 17 July 2024. During the initial measurement, starting at 23:50 on 17/07/2024, a site only LAeq of 38 dB was recorded. A 2dB low frequency modifying factor penalty was applicable to this measurement resulting in a total of site LAeq of 40 dBA. This exceeded the site criteria of 39 dBA. As per NMP, the Statutory Open Cut Examiner (OCE) on shift was contacted, the OCE completed a visual inspection from site to the noise monitoring site to identify the potential noise source and make changes to the operations.

Based on the outcome of the OCE's inspection, excavators and train operations including a very slowly moving train near HVEC and another approaching to the rail loop heading into HVEC site were considered as potentially contributors to the noise levels. As such, as reactive mitigation measures in response to the exceedance, two excavators in the Roxburgh Hills in an area of concern were shut down for a period.

Following the exceedance, a report was provided to the DPHI and investigations undertaken accordingly, however the EPA was notified one week after the exceedance occurred.

The exceedance report was closed out by the DPHI and EPA with no further action required.

## Noise Exceedance Not Reported to EPA

The exceedance recorded on 17 July 2024 as part of routine attended monitoring and further described above was notified to EPA one week after the exceedance occurred.

HVEC was made aware of the potential exceedance on the morning of 18 July 2024 and subsequently reported the event to DPHI. However, the notification to the EPA was not completed until 24 July 2024.

The EPA have considered the exceedance and do not propose further action.

## Noise Exceedance (NP15) – 15 April 2025

On 15 April 2025 an exceedance of the noise criteria of 36dB was recorded during the initial measurement as part of the monthly attended noise monitoring conducted by external consultants in accordance with the NMP. The conditions at the time did not require application of the Noise Policy for Industry (NPfI) 2dB low frequency modifying factor.

The OCE was contacted at the time of the exceedance and noise control measures were implemented to ensure the recorded exceedance was addressed and any subsequent noise was minimised. No noise complaints were received from surrounding landowners or any other individuals. A remeasure of noise levels was conducted 71 minutes later, with noise levels back within the approved limits. The results showed a decrease of site noise levels demonstrating that HVEC was able to minimise noise during operations on 15 April 2025.

The event was reported to both the EPA and DPHI as per the Project Approval. The exceedance report was closed out by the EPA and DPHI with no further action required.

## Air Quality Exceedances

During the reporting period, the short term 24-hour cumulative impact assessment criteria (50 µg/m<sup>3</sup>) was exceeded 19 times at statutory TEOM monitoring sites over a total of 15 days. All exceedances of the cumulative criteria were reported to the DPHI, as recorded in Table 13.

Investigations, in accordance with the Mt Arthur Coal Air Quality Management plan, determined that the exceedances were not caused by mining activities at Mt Arthur Coal. In accordance with the site Air Quality Management Plan and the Project Approval, Mt Arthur Coal employed all reasonable and feasible avoidance and mitigation measures and as such, they have not been captured in Section 1 Table 3 as non-compliances.

## Surface Water Trigger Exceedance

During the reporting period there was one reportable Surface Water trigger event. The event was reported to DPHI and is detailed in Section 7.3 and Appendix 1. Assessment determined that the trigger event was not caused by mining activities at Mt Arthur Coal and as such, it has not been captured in Section 1 Table 3 as a non-compliance.

Mt Arthur will continue to review trigger levels to ensure they are appropriate and where required revise the Site Water Management Plan.

## Groundwater Trigger Exceedances

During the reporting period there were four Groundwater Quality and three Water Level trigger events. All trigger events reported to DPHI and are detailed in Section 7.4 and Appendix 2. Assessment by expert groundwater consultants determined that the trigger events were not caused by mining activities at Mt Arthur Coal and as such, they have not been captured in Section 1 Table 3 as non-compliances.

Mt Arthur will continue to review trigger levels to ensure they are appropriate, and we are currently revising the Site Water Management Plan which includes the trigger levels.

## 12 Activities during Next Reporting Period

Mt Arthur Coal has established the following targets for the next reporting period:

- Mt Arthur Coal intends to assess dust and noise emission risk based on fleet positions by combining real-time fleet, meteorological and monitoring data to develop short-term dust and noise forecasting. This could support more effective reactive controls and reduce dust emissions.
- Mt Arthur Coal will continue installing additional water pipelines and associated pumps to support ongoing water management strategies.
- Mt Arthur Coal will be modifying the Environmental Dam spillway inlet in line with the current consequence category requirements.
- Mt Arthur Coal will progress long-term secondary flocculation improvements by installing additional spigot points.
- Mt Arthur Coal will progress approvals and a project planning to facilitate transfer of tailings to a Malabar void.
- Mt Arthur Coal will undertake a review of the Water Management Plan to revise groundwater and surface water triggers in accordance with groundwater investigation findings.
- Mt Arthur Coal will begin the final highwall strip, which is required prior to site closure in 2030
- Mt Arthur Coal will implement another vertebrate pest management program on site. Improvements in the management of additional pest animal species will be a particular focus, with expanded shooting, trapping and baiting programs to be completed to include rabbits, goats and pigs.
- Mt Arthur Coal will continue to investigate and, where feasible, implement projects to reduce fossil fuel energy consumption and greenhouse gas emissions in accordance with BHP's sustainability commitments, including the company's greenhouse gas emission targets.
- Mt Arthur Coal will deliver a number of external property upgrades.
- Mt Arthur Coal will continue focusing on completing rehabilitation at the mine.
- Mt Arthur Coal will undertake the next three yearly Independent Environmental Audit.

These targets will be closely monitored and an update on the status of each will be reported in the next Annual Review. Table 39 outlines a progress summary of Mt Arthur Coal's performance against targets set for the FY25 period.

**Table 39: Mt Arthur Coal's performance against targets for FY25**

Target	Status	Performance
Mt Arthur Coal is investigating the possibility of incorporating fleet data into the DCS which will enable assessment of dust and noise emission risk based on fleet positions. This could improve reactive controls and reduce dust and noise emissions.	Ongoing	As proposed in the last reporting period, fleet data has been integrated into the DCS, and Mt Arthur Coal intends to use this functionality to assess noise emission risks based on fleet positions.

## ANNUAL REVIEW FY25

Target	Status	Performance
Mt Arthur Coal will continue to investigate and, where feasible, implement projects to reduce fossil fuel energy consumption and greenhouse gas emissions in accordance with BHP's sustainability commitments, including the company's greenhouse gas emission targets.	Ongoing	Ongoing review across BHP for opportunities to reduce fossil fuel consumption and GHG emissions.
Mt Arthur Coal will finalise the multi-year project to install a new hydrocarbon remediation and management area.	Completed	New bio-remediation pad installed.
Mt Arthur Coal will continue to work through milestones for the project to replace and repair current boreholes and telemetry at boreholes for better monitoring capability.	Completed	Repair work and telemetry capabilities were installed at selected boreholes across groundwater monitoring network.
Mt Arthur Coal will update the Water Management Plan once the borehole upgrade project is to complete to ensure the most representative sampling and monitoring is being undertaken.	Ongoing	WMP is currently under review which will include review of the monitoring network and incorporate any MOD 2 requirements.
Mt Arthur Coal will continue to work on a project to install additional water meters to the site water network. These will improve the understanding of water movement on site and consumption. The data will improve water model accuracy and allow for improved planning strategies and efficiencies in the water management system.	Ongoing	Flowmeters have been installed around the pit. 90% have been commissioned and available in Citect the SCADA system. These flowmeters records both current flow and totaliser which enables better understanding of water transfers and improves efficiency both in record maintenance and operations.
Mt Arthur Coal will investigate and review the potential for a project to complete further tree planting for visual amenity purposes.	Ongoing	This project is expected to go into execution during FY26.
Mt Arthur Coal will work with the EPA to undertake the 5-year Environment Protection Licence review.	Completed	EPA licence review completed.

## Appendix 1 Surface Water Quality Monitoring Results

### Surface Water Quality Results

Site	Month	Date sampled	Flow (description)	Field pH	Field EC (uS/cm)	TSS (mg/L)
SW02	Jul-24	16/07/2024	Dry	-	-	-
	Aug-24	20/08/2024	Still	-	-	-
	Sep-24	11/09/2024	Dry	-	-	-
	Oct-24	9/10/2024	Dry	-	-	-
	Nov-24	13/11/2024	Dry	-	-	-
	Dec-24	6/12/2024	Still	-	-	-
	Jan-25	24/01/2025	Still	-	-	-
	Feb-25	25/02/2025	Still	-	-	-
	Mar-25	25/03/2025	Still	-	-	-
	Apr-25	15/04/2025	Still	-	-	-
	May-25	19/05/2025	Trickle	7.67	6,250	19
	Jun-25	17/06/2025	Trickle	7.75	7,880	65
	Impact Assessment Criteria Trigger Values		Stage 1 Trigger	6.5< >9.0	12,365	219
			Stage 2 Trigger		13,900	277
SW03	Jul-24	16/07/2024	Still	8.48	2,115	11
	Aug-24	20/08/2024	Still	8.19	3,033	6
	Sep-24	11/09/2024	Still	8.87	4,210	6
	Oct-24	9/10/2024	Still	8.18	6,770	10
	Nov-24	13/11/2024	Still	7.55	8,260	10
	Dec-24	6/12/2024	Still	7.75	7,510	8
	Jan-25	24/01/2025	Still	7.89	9,240	<5
	Feb-25	25/02/2025	Still	8.13	9,590	12
	Mar-25	25/03/2025	Still	8.1	10,000	<5
	Apr-25	15/04/2025	Still	8.29	9,120	42
	May-25	23/05/2025	Trickle	7.63	1,801	41
	Jun-25	17/06/2025	Still	7.89	1,113	8
	Impact Assessment Criteria Trigger Values		Stage 1 Trigger	6.5< >9.0	10,133	37
			Stage 2 Trigger		11,402	46
Site	Month	Date sampled	Flow (description)	Field pH	Field EC (uS/cm)	TSS (mg/L)
SW04	Jul-24	16/07/2024	Trickle	8.15	7,360	12
	Aug-24	20/08/2024	Trickle	7.99	7,160	<5
	Sep-24	11/09/2024	Still	8.03	7,180	6
	Oct-24	9/10/2024	Still	8.11	7,870	<5
	Nov-24	11/11/2024	Trickle	7.98	8,130	<5
	Dec-24	6/12/2024	Still	7.91	7,120	<5
	Jan-25	24/01/2025	Trickle	8.11	8,390	<5
	Feb-25	25/02/2025	Still	8.25	8,840	13

ANNUAL REVIEW FY25

Site	Month	Date sampled	Flow (description)	Field pH	Field EC (uS/cm)	TSS (mg/L)
SW12	Mar-25	25/03/2025	Still	8.45	9,200	14
	Apr-25	15/04/2025	Trickle	8.17	9,390	11
	May-25	19/05/2025	Slow	8.07	6,420	<5
	Jun-25	17/06/2025	Trickle	7.94	6,350	10
	Impact Assessment Criteria Trigger Values		Stage 1 Trigger	6.5< >9.0	13,959	82
			Stage 2 Trigger		15,509	104
	Jul-24	16/07/2024	Still	7.58	4,710	13
	Aug-24	23/08/2024	Still	7.5	5,250	12
	Sep-24	11/09/2024	Still	7.69	6,260	6
	Oct-24	9/10/2024	Still	7.69	6,400	<5
SW15	Nov-24	13/11/2024	Still	7.66	6,810	12
	Dec-24	6/12/2024	Still	7.48	6,570	9
	Jan-25	21/01/2025	Still, too low to sample	-	-	-
	Feb-25	25/02/2025	Still	7.69	11,800	10
	Mar-25	25/03/2025	Still	8.19	12,200	19
	Apr-25	15/04/2025	Still	7.59	2,920	<5
	May-25	19/05/2025	Still	7.68	4,070	10
	Jun-25	17/06/2025	Still	7.41	3,390	6
	Impact Assessment Criteria Trigger Values		Stage 1 Trigger	6.5< >9.0	6,659	555
			Stage 2 Trigger		7,153	708
SW34	Jul-24	15/07/2024	Dam	7.36	386	25
	Aug-24	23/08/2024	Dam	7.14	496	24
	Sep-24	10/09/2024	Dam	7.18	688	5
	Oct-24	8/10/2024	Dam, too low to sample	-	-	-
	Nov-24	11/11/2024	Dry	-	-	-
	Dec-24	3/12/2024	Dry	-	-	-
	Jan-25	21/01/2025	Dam	7.36	3,180	22
	Feb-25	24/02/2025	Dam, too low to sample	-	-	-
	Mar-25	24/03/2025	Dry	-	-	-
	Apr-25	14/04/2025	Dam	7.11	1,393	16
	May-25	19/05/2025	Dam	7.33	1,257	17
	Jun-25	17/06/2025	Dam	7.39	389	16
	Impact Assessment Criteria Trigger Values		Stage 1 Trigger	6.5< >9.0	7,128	103
			Stage 2 Trigger		8,262	130

ANNUAL REVIEW FY25

Site	Month	Date sampled	Flow (description)	Field pH	Field EC (uS/cm)	TSS (mg/L)
SW35	Apr-25	15/04/2025	Fast	8.21	452	7
	May-25	19/05/2025	Fast	8.06	435	23
	Jun-25	17/06/2025	Fast	8.12	397	14
	Impact Assessment Criteria Trigger Values		<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
	Jul-24	16/07/2024	Steady	8.34	614	7
	Aug-24	20/08/2024	Fast	8.13	443	34
	Sep-24	11/09/2024	Steady	8.40	890	12
	Oct-24	9/10/2024	Steady	8.20	837	17
	Nov-24	13/11/2024	Steady	8.50	915	44
	Dec-24	4/12/2024	Slow	8.38	861	34
	Jan-25	24/01/2025	Steady	7.98	436	30
	Feb-25	25/02/2025	Steady	8.25	947	18
	Mar-25	25/03/2025	Slow	8.10	639	25
	Apr-25	15/04/2025	Fast	8.21	460	<5
	May-25	19/05/2025	Fast	8.13	400	8
	Jun-25	17/06/2025	Fast	8.13	397	18
Impact Assessment Criteria Trigger Values		<b>Stage 1 Trigger</b>	<b>7.8&lt; &gt;8.5</b>	<b>893</b>	<b>54</b>	

## **Appendix 2 Ground Water Monitoring Results and Groundwater Level Drawdown Analysis**



# **BHP – Mt Arthur Coal**

Groundwater Annual Review – 2024/2025

**FINAL**

September 2025

## BHP – Mt Arthur Coal

Groundwater Annual Review – 2024/2025

**FINAL**

Prepared by  
Umwelt (Australia) Pty Limited

On behalf of  
BHP

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Report No.: 21576/R41  
Date: September 2025



This report was prepared using  
Umwelt's ISO 9001 certified  
Quality Management System.

# Acknowledgement of Country

Umwelt acknowledges the Traditional Owners of Country throughout Australia and their continuing values, culture and connection to the land, waters and sky.

We pay our respects to Elders past and present.

The below image is from the artwork *Yapung Maryiyang* (Pathway Forward) by Saretta Fielding.



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# Contents

<b>1.0</b>	<b>Introduction</b>	<b>1</b>
1.1	Overview	1
1.2	Groundwater Management Plan	1
<b>2.0</b>	<b>Hydrogeological Setting</b>	<b>3</b>
2.1	Climate	3
2.2	Terrain and Drainage	4
2.3	Hydrogeology	5
2.3.1	Hunter River Alluvium	5
2.3.2	Saddlers Creek Alluvium	5
2.3.3	Permian Coal Measures	6
<b>3.0</b>	<b>Groundwater Monitoring Program</b>	<b>7</b>
3.1	Groundwater Monitoring Network	7
3.2	Data Recovery	8
<b>4.0</b>	<b>Groundwater Levels</b>	<b>10</b>
4.1	Drawdown	11
4.2	Trigger Exceedances	12
<b>5.0</b>	<b>Groundwater Quality</b>	<b>19</b>
5.1	Field Water Quality Results	19
5.2	Laboratory Water Quality Results	22
5.3	Trigger Exceedances	22
<b>6.0</b>	<b>Trigger Investigations</b>	<b>25</b>
<b>7.0</b>	<b>Quality Assurance Review</b>	<b>26</b>
<b>8.0</b>	<b>Cut-off Wall Performance</b>	<b>30</b>
<b>9.0</b>	<b>Numerical Model Predictions Review</b>	<b>32</b>
<b>10.0</b>	<b>Recommendations</b>	<b>38</b>
<b>11.0</b>	<b>References</b>	<b>39</b>

# Figures

Figure 2.1	SILO Monthly Rainfall and CRD	4
Figure 2.2	Hunter River Flow and Daily Rainfall Over Monitoring Period	5
Figure 3.1	Groundwater Monitoring Network	9
Figure 4.1	Total Groundwater Drawdown to June 2024 – Alluvium	13
Figure 4.2	Total Groundwater Drawdown to June 2024 – Shallow Permian Coal Measures (Regolith)	14
Figure 4.3	Total Groundwater Drawdown to June 2024 – Permian Coal Measures	15
Figure 4.4	VWP07 – Trigger Levels	17
Figure 4.5	VWP07 – Modelled and Observed Water Levels	17
Figure 4.6	X1 – Trigger Levels	18
Figure 4.7	X1 – Modelled and Observed Water Levels	18
Figure 5.1	X14MB-2D – pH	24
Figure 8.1	Groundwater Levels in Permian Coal Measures Adjacent to the Cut-off Wall	31
Figure 8.2	Groundwater Levels in the Hunter River Alluvium Adjacent to the Cut-off Wall	31
Figure 9.1	Predicted Maximum Drawdown in Unconsolidated – Approved Operations MOD2 (Source: SLR, 2023)	35
Figure 9.2	Predicted Maximum Drawdown in Ramrod Creek Seam – Approved Operations MOD2 (Source: SLR, 2023)	36
Figure 9.3	Modelled Versus Measured Heads – June 2025	37

# Tables

Table 1.1	Surface Water and Groundwater Exceedance Protocol (BHP, 2023)	1
Table 2.1	Monthly Rainfall (mm)	3
Table 4.1	Groundwater Level Monitoring Results Over Reporting Period	10
Table 4.2	Groundwater Level Trigger Exceedances	16
Table 5.1	Groundwater Quality Monitoring Results Over the Reporting Period	20
Table 5.2	Groundwater Quality Trigger Exceedances	23
Table 6.1	Summary of Investigations Undertaken Over Reporting Period	25
Table 7.1	Summary of Groundwater Quality Assurance Review	28

# Appendices

- Appendix A** Groundwater Monitoring Network and Trigger Levels
- Appendix B** Groundwater Level Graphs
- Appendix C** Groundwater Level Monitoring Data
- Appendix D** Groundwater Quality Data
- Appendix E** Groundwater Quality Graphs

# 1.0 Introduction

## 1.1 Overview

The Mt Arthur Coal (MAC) mine is located approximately 5 km southwest of Muswellbrook within the Muswellbrook Shire Local Government Area (LGA) in the Upper Hunter Valley of NSW. MAC sits within 15 mining leases and consists of open cut pits, tailings storage facilities, a coal handling preparation plant, a rail loop and associated rail loading facilities, in addition to an approved underground operation. Over 2024 and 2025 open cut mining continued at MAC, progressing down-dip to the southwest. Mining occurred in the Windmill, Calool, Roxburgh, Ayredale and Saddlers pits.

The Water Management Plan (WMP) (MAC-ENC-MTP-034, V3) (BHP, 2023) covers approval commitments in Project Approval 09\_0062 and conditions of Environment Protection Licence 11457. This includes requirements for the monitoring of groundwater, assessment of potential impacts and reporting.

Umwelt (Australia) Pty Ltd (Umwelt) have been engaged to undertake a review of the groundwater monitoring data collected from 1 July 2024 to 30 June 2025 (reporting period). This report has been prepared to address conditions of approval relating to groundwater, and as a requirement of MAC's 2024/2025 Annual Review.

## 1.2 Groundwater Management Plan

The WMP includes a Groundwater Monitoring Program, in accordance with Schedule 3 Condition 29 and 33 of Project Approval 09\_0062. The Groundwater Monitoring Program outlined in Section 9.3 of the WMP details the monitoring methodology, monitoring locations, frequency impact assessment criteria (water levels and quality), mine inflows/licensing, impacts to private bores and groundwater dependent ecosystems (GDEs), cut-off wall and flood levee monitoring and monitoring records.

In 2020 an updated numerical groundwater model was developed by SLR (2020), which was calibrated with observation data to June 2020. The predictions for approved operations from the 2020 numerical model were used to inform the water level triggers specified in the WMP.

The groundwater monitoring locations, schedule and triggers from the WMP are presented in **Appendix A** and discussion on the network included in **Section 3.1**.

The threshold criteria as outlined in Section 10 Response Plan of the WMP is included in **Table 1.1**.

**Table 1.1      Surface Water and Groundwater Exceedance Protocol (BHP, 2023)**

Impact Assessment Criteria	Exceedance Criterion	Exceedance Response
<b>pH surface water or groundwater quality</b>	Measured values that are outside the trigger level shall trigger the exceedance response.	<p>Step 1: Quality assurance check of the sampling procedure and analytical data acquired, reported and entered.</p> <p>Step 2: For a single exceedance of the trigger value, no further action is required other than to record the exceedance. If the trigger value of the same parameter is exceeded at the same location for three consecutive monitoring periods, then the actions required for exceedance of the trigger values should be carried out.</p> <p>Step 3: Consult with the DPE to determine if a written report on the exceedance will be required and implement identified corrective/preventative actions.</p>
<b>pH surface water or groundwater quality</b>	pH values recorded outside the trigger level range for three consecutive monitoring periods shall trigger the groundwater quality exceedance response.	<p>Step 1: Notify the DPE of an 'interim exceedance' as soon as practicable after becoming aware of the exceedance and relevant information required for the notification is confirmed (including preliminary quality assurance of information).</p> <p>Step 2: If quality assurance check of the sampling procedure and analytical data acquired, reported and entered, and the trigger level is still exceeded, then an investigation of the exceedance should be carried out and reasons for the exceedance identified.</p> <p>Step 3: Consult with the DPE to determine if a written report on the exceedance will be required and implement identified corrective/preventative actions.</p>
<b>Electrical Conductivity (EC) Stage 1 surface water or groundwater quality</b>	Measured values that are above the Stage 1 trigger level shall trigger the exceedance response.	<p>Step 1: Quality assurance check of the sampling procedure and analytical data acquired, reported and entered.</p> <p>Step 2: For a single exceedance of a 1st stage trigger value, no further action is required other than to record the exceedance. If the 1st stage trigger value of the same parameter is exceeded at the same location for three consecutive monitoring periods, then the actions required for exceedance of the 2nd stage trigger values should be carried out.</p>
<b>Electrical Conductivity (EC) Stage 2 surface water or groundwater quality</b>	<p>Measured values above Stage 1 trigger levels for three consecutive monitoring periods shall trigger the exceedance response.</p> <p>Measured values above Stage 2 trigger levels for two consecutive monitoring periods shall trigger the exceedance response.</p>	<p>Step 1: Notify the DPE of an 'interim exceedance' as soon as practicable after becoming aware of the exceedance and relevant information required for the notification is confirmed (including preliminary quality assurance of information).</p> <p>Step 2: If quality assurance check of the sampling procedure and analytical data acquired, reported and entered, and the trigger level is still exceeded, then an investigation of the exceedance should be carried out and reasons for the exceedance identified.</p>

Impact Assessment Criteria	Exceedance Criterion	Exceedance Response
		Step 3: Consult with the DPE to determine if a written report on the exceedance will be required and implement identified corrective/preventative actions.
<b>Total Suspended Solids</b>	Measured values that are above the Stage 1 trigger level shall trigger the exceedance response.	Step 1: Quality assurance check of the sampling procedure and analytical data acquired, reported and entered.
<b>Stage 1 surface water</b>		Step 2: For a single exceedance of a 1st stage trigger value, no further action is required other than to record the exceedance. If the 1st stage trigger value of the same parameter is exceeded at the same location for three consecutive monitoring periods, then the actions required for exceedance of the 2nd stage trigger values should be carried out.
<b>Total Suspended Solids</b>	Measured values above Stage 1 trigger levels for three consecutive monitoring periods shall trigger the exceedance response.	Step 1: Notify the DPE of an 'interim exceedance' as soon as practicable after becoming aware of the exceedance and relevant information required for the notification is confirmed (including preliminary quality assurance of information).
<b>Stage 2 surface water</b>	Measured values above Stage 2 trigger levels for two consecutive monitoring periods shall trigger the exceedance response.	Step 2: If quality assurance check of the sampling procedure and analytical data Acquired, reported and entered, and the trigger level is still exceeded, then an investigation of the exceedance should be carried out and reasons for the exceedance identified.
	Step 3: Consult with the DPE to determine if a written report on the exceedance will be required and implement identified corrective/preventative actions.	
<b>Groundwater Level</b>	Any monitoring bore groundwater level or vibrating wire piezometer groundwater head pressure recorded below the trigger level for three consecutive monitoring periods shall trigger the groundwater level exceedance response.	Step 1: Notify the DPE of an 'interim exceedance' as soon as practicable after becoming aware of the exceedance and relevant information required for the notification is confirmed (including preliminary quality assurance information).
		Step 2: If quality assurance check of the sampling procedure and analytical data acquired, reported and entered, and the trigger level is still exceeded, then an investigation of the exceedance should be carried out and reasons for the exceedance identified.
		Step 3: Consult with the DPE to determine if a written report on the exceedance will be required and implement identified corrective/preventative actions.

*Note: The Department of Planning and Environment (DPE) is now the Department of Planning, Housing and Infrastructure (DPCI)*

## 2.0 Hydrogeological Setting

### 2.1 Climate

The climate within the MAC area is sub-tropical, with temperatures, rainfall and evaporation highest over the summer months of January to May. Climate data was obtained from the Scientific Information for Land Owners (SILO) database of historical climate records for Australia hosted by the Department of Energy and Climate. This service interpolates raw rainfall and evaporation records obtained from the Bureau of Meteorology (BoM), with data gaps addressed through data processing in order to provide a spatially and temporally complete climate dataset.

Climate data was obtained for a SILO grid point (Latitude -32.35, Longitude 150.85) at MAC between 01/01/1900 to 30/06/2025. A summary of rainfall data for SILO is presented in **Table 2.1**. The historical average rainfall data indicates slightly higher rainfall over the warmer months, from November to February. Based on the SILO dataset, the historical average annual rainfall is 611.7 mm.

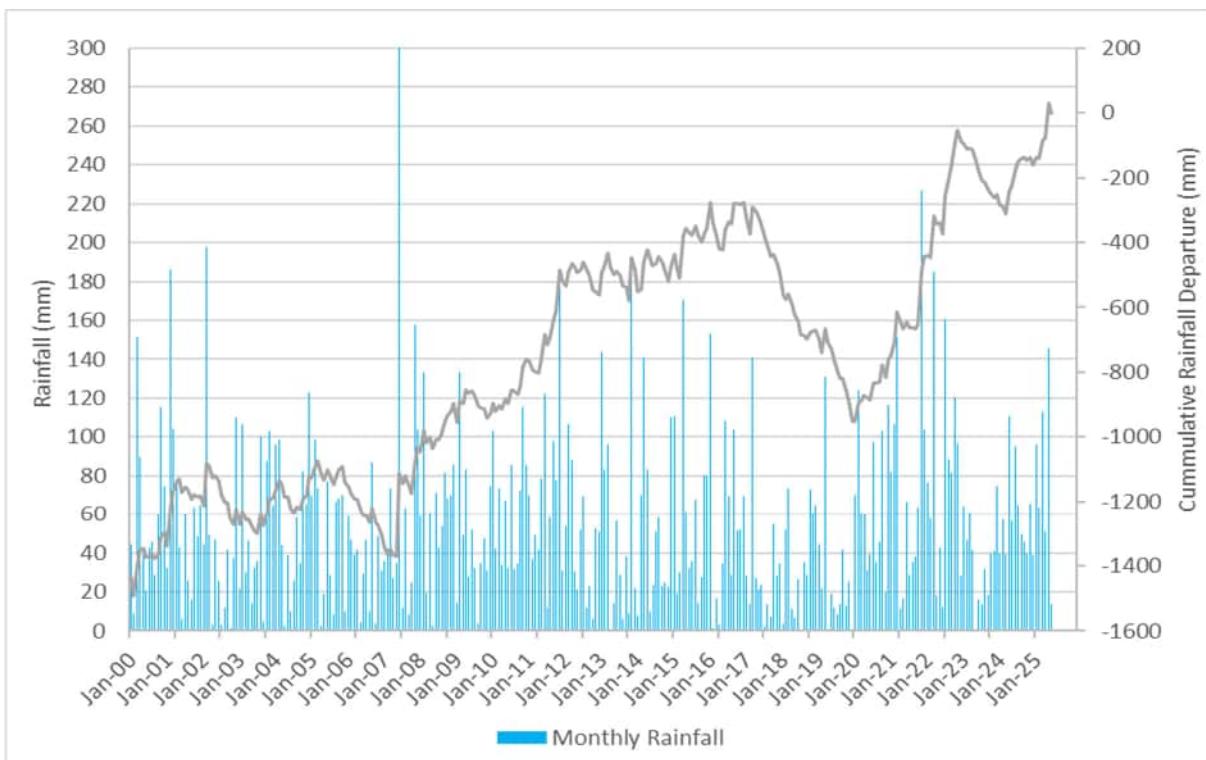
**Table 2.1** Monthly Rainfall (mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<b>Historical Average</b>	72.3	65.2	57.3	43.1	37.4	45.8	43.3	37.2	41.8	49.2	57.4	61.7	<b>611.7</b>
<b>2024</b>	-	-	-	-	-	-	64.5	49.8	45.3	40.0	65.4	38.5	<b>792.3</b>
<b>2025</b>	95.4	70.3	111.9	51.4	146.1	13.7	-	-	-	-	-	-	

*Note: Based on SILO dataset date range January 1900 to June 2025*

The SILO database provides the most complete long-term dataset and is therefore the most useful for assessing long term rainfall trends in the vicinity of MAC. Monthly records from the SILO dataset were used to calculate the Cumulative Rainfall Departure (CRD). The CRD shows graphically trends in recorded rainfall compared to long-term averages and provides a historical record of relatively wet and dry periods. A rising trend in slope in the CRD graph indicates periods of above average rainfall, whilst a declining slope indicates periods when rainfall is below average. A level slope indicates average rainfall conditions.

**Figure 2.1** shows the CRD and total monthly rainfall. The graph indicates the area has generally experienced a period of relatively average rainfall from 2000 to 2005 followed by below average rainfall until 2007. Above average rainfall was experienced from 2007 to 2017. From 2017 to 2020 the area experienced below average rainfall and between the start of 2020 and the end of 2022 area experienced above average rainfall, followed by below average rainfall until March 2024. The area experienced above average rainfall from April 2024 to June 2025.



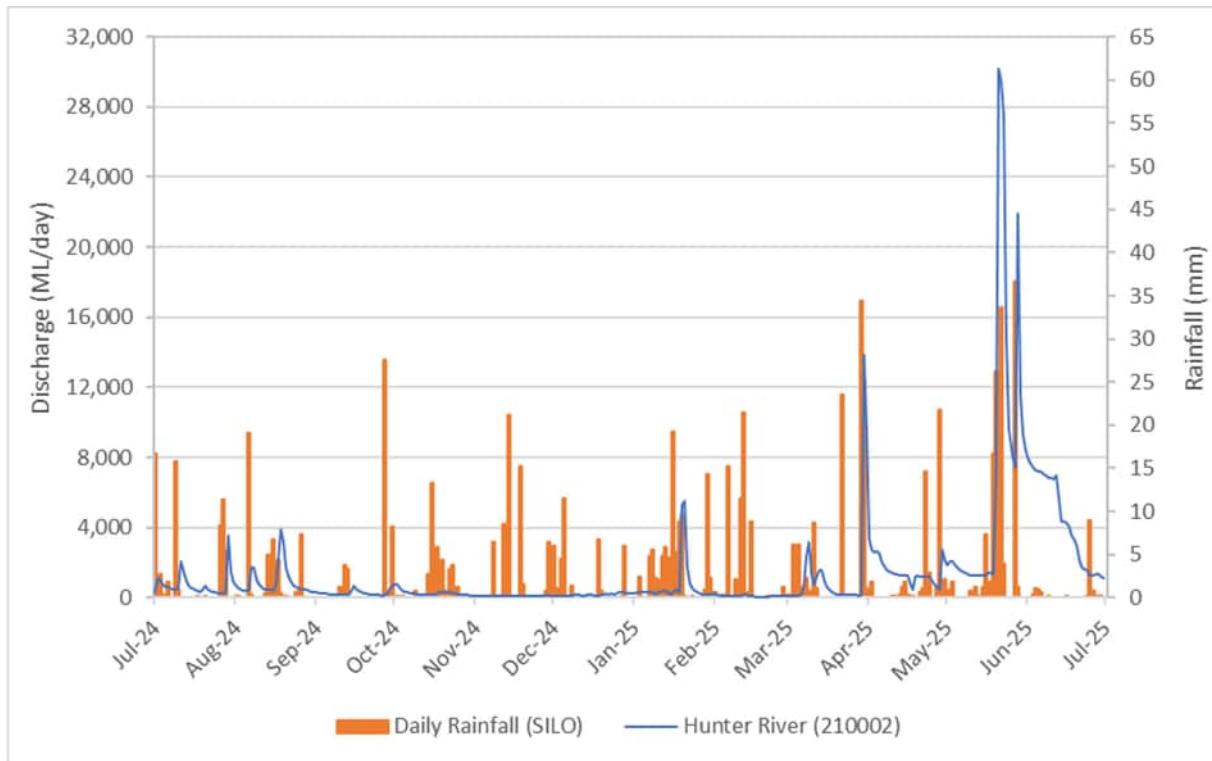
**Figure 2.1** SILO Monthly Rainfall and CRD

## 2.2 Terrain and Drainage

The surface topography at MAC varies between approximately 127 metres (m) Australian Height Datum (AHD) to the northwest of the site along Whites Creek and rises up to a maximum of approximately 465 mAHD on the top of Mt Arthur to the south of the site. Within MAC, the surface areas are primarily drained by Quarry Creek, Whites Creek and Ramrod Creek which all flow to the north towards the Hunter River and Saddlers Creek, and its tributaries, which flows to the southwest.

Saddlers Creek is an ephemeral creek that is around 5 m to 10 m wide and consists of sand, silt and scattered woody debris (EcoLogical, 2019). Historical mining at Drayton truncated the upper reaches of Saddlers Creek, which previously had a catchment of approximately 78 km<sup>2</sup>. The creek bed is dry much of the year, with shallow (20 cm) isolated pools of water (Hydrosimulations, 2019). Historically, high flow events occurred in response to rainfall events, with available data indicating the majority of stream flow occurred in the summer months, from January to March, with negligible flows from July to December.

Within the region, the Hunter River is around 20 m to 50 m wide and flows in a predominantly southerly direction with meanders to the east and west. Flows within the Hunter River are monitored at gauging stations under the Hunter Integrated Telemetry System (HITS) operated by WaterNSW. Based on flow data recorded between 1913 and 2025, the Hunter River has perennial flows, ranged between 0 ML/day and 171,422 ML/day, with an average flow of 806 ML/day. Over the reporting period flows recorded at HITS gauging station 210002 ranged between 39 ML/day and 30,176 ML/day, with an average flow of 1,467 ML/day. There were seven high flow/flood events, with flows over 10,000 ML/day, during the reporting period. Notably, a major flood event in May 2025 saw discharge rise to over 30,000 ML/day. Hunter River water levels and daily SILO rainfall data are presented in **Figure 2.2**.



**Figure 2.2 Hunter River Flow and Daily Rainfall Over Monitoring Period**

## 2.3 Hydrogeology

### 2.3.1 Hunter River Alluvium

The Hunter River alluvium generally comprises surficial clays underlain by sands and gravels. The alluvium can be variably saturated spatially and temporally, with unconfined groundwater conditions and fresh to brackish water quality. The alluvium is recharged from rainfall and streamflow. The water levels in the alluvium are generally 5 to 10 m below surface and approximately 2 m below the base of the Hunter River, indicating variable losing conditions depending on peak flood events. There is also potential for upward seepage from the underlying Permian coal measures where gradients enable this.

Groundwater flow in the alluvium generally follows the Hunter River flow direction and topography.

### 2.3.2 Saddlers Creek Alluvium

The Saddlers Creek alluvium is unconfined and recharged from occasional streamflow and rainfall, with potential recharge from water storage in localised areas. The alluvium also potentially receives upward seepage from the underlying coal measures, with coal seams occurring at subcrop beneath the alluvium.

The water levels in the alluvium have been recorded around 3 m to 10 m below surface, indicating losing conditions. However, gaining conditions can occur downstream near the confluence with the

Hunter River. The water quality in the alluvium along Saddlers Creek has been characterised as moderately saline.

### **2.3.3 Permian Coal Measures**

The Permian coal measures include the hydraulically 'tight' interburden sequences of siltstone and sandstone, and the coal seams that exhibit secondary porosity associated with the fractures and cleats in the coal. The coal measures occur at subcrop in the north and east of MAC where groundwater conditions are semi-confined, becoming confined with depth. The coal measures are recharged by rainfall and downward seepage from overlying alluvium, regolith and spoil. Groundwater flow in the coal measures is locally influenced by mining at MAC, Drayton and Bengalla, but is generally towards the south. The water quality is moderately saline.

## 3.0 Groundwater Monitoring Program

### 3.1 Groundwater Monitoring Network

The groundwater monitoring network at MAC is comprised of a series of monitoring bores and vibrating wire piezometers (VWPs).

The groundwater monitoring network outlined within the WMP, shown in **Figure 3.1** and detailed in **Appendix A** includes:

- 22 monitoring bores, including:
  - Two bores along Saddlers Creek alluvium
  - Six bores within Hunter River alluvium
  - Three bores in the Saddlers Creek shallow Permian (regolith)
  - Eleven monitoring bores predominantly targeting coal seams down to the Ramrod Creek Seam.
- Six VWPs with sensors in the interburden and coal seams, including:
  - Two sites around the mapped F4 fault with a sensor in the fault zone at 216.5 mbgl (VWP2\_P1), and a sensor in the Edinglassie Seam at 227 mbgl (VWP3\_P1)
  - Four sites (VWP05, VWP06, VWP07 and X1) southwest of MAC open cut with sensors in the different coal seams.

Monitoring of groundwater levels and groundwater quality is undertaken at the bores detailed in the WMP, and defined below:

- Groundwater Level (28 sites):
  - Manual groundwater elevation/depth to groundwater every three months.
  - Timeseries groundwater level data is recorded with data loggers installed in selected alluvial bores, as indicated in **Appendix A**.
  - VWP data logger download, and verification and validation of instrument drift and correction.
- Groundwater Quality Analysis (19 bores):
  - Standard – quarterly: Field readings of water temperature, pH and EC, as well as laboratory analysis of pH, EC, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), dissolved iron, sulphate, chloride, calcium, magnesium, potassium, sodium, carbonate and bicarbonate.
  - Comprehensive – annually: the standard analyses with the addition of total phosphorus, aluminium, antimony, arsenic, barium, boron, cadmium, chromium, copper, lead, mercury, molybdenum, selenium and zinc. All metals and metalloids required as dissolved analytes.

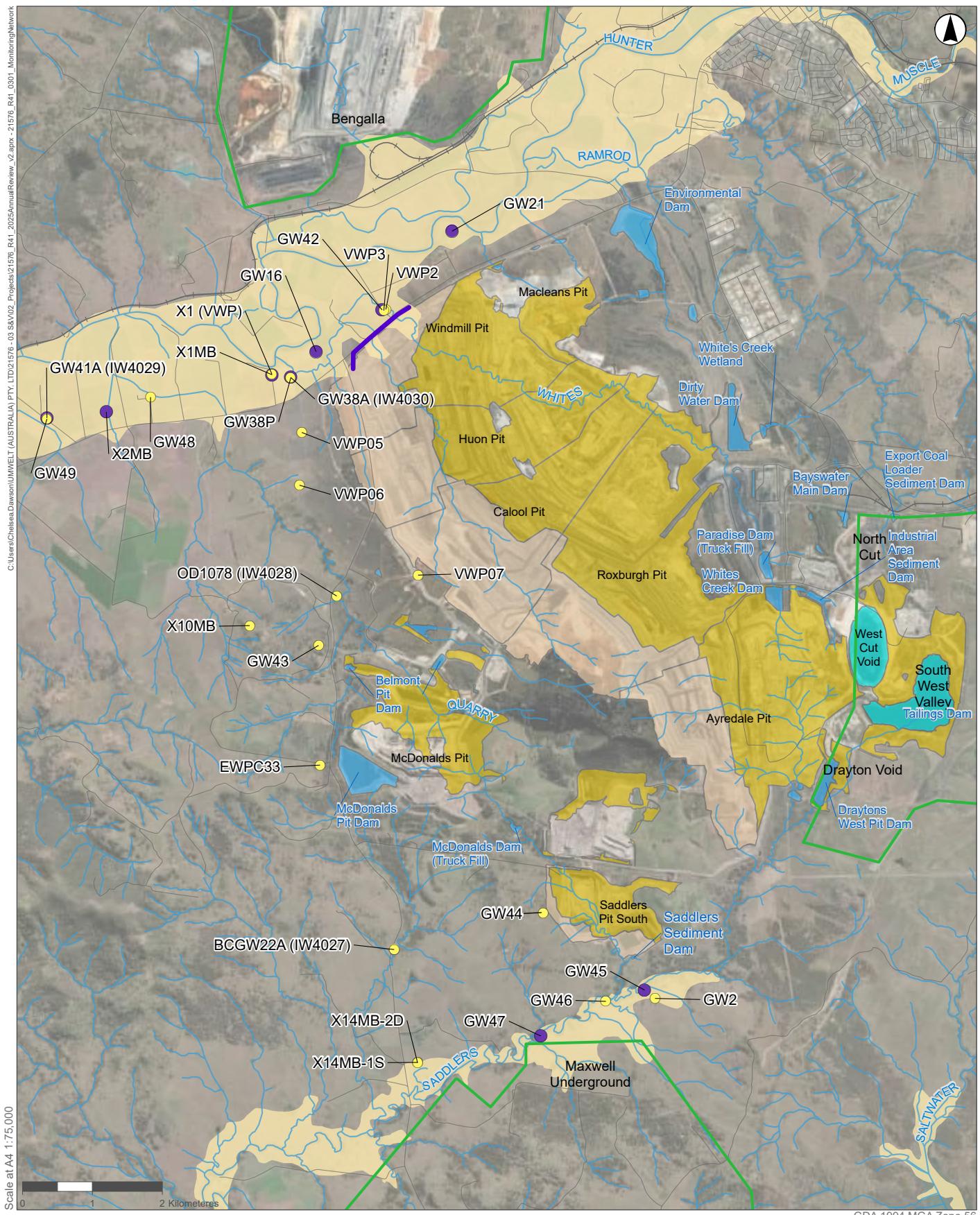
Groundwater quality sampling is undertaken quarterly by external contractor CBased Environmental Pty Ltd (CBE) in accordance with AS 5667.1-1998, *Guidance on the Sampling of Groundwater's*. Field sheets, detailing the sample location, date, time, field EC, field pH and water level below top of casing are completed by CBE during each monitoring round. The field sheets and database compiled by CBE have been reviewed by Umwelt for this report.

## 3.2 Data Recovery

The WMP specifies the monitoring frequency and trigger levels for groundwater level and groundwater quality for the monitoring network. This includes water quality monitoring at 19 bores and water level monitoring at 28 sites, which includes 22 bores and six VWPs.

Groundwater levels in all of the 22 monitoring bores specified in the WMP were monitored over the reporting period. VWP sites VWP2, VWP3, VWP05, VWP06, VWP07 and X1 were operational over the reporting period. It is noted that the sensor monitoring the Ramrod Creek Seam (418) in VWP07 has been recording erroneous data since November 2024.

Of the 19 bores included for water quality monitoring schedule, 19 were sampled.



#### Legend

- Surrounding Mines
- Active Mining Area (Open cut void)
- Overburden Emplacement Area
- Water Management - Dam
- Tailings Storage Facility
- Alluvium Extent
- Alluvium Monitoring Bore
- Cut-off Wall
- Railway
- Roads
- Watercourse
- Permian Coal Measure Monitoring Bore



**FIGURE 3.1**  
Groundwater Compliance  
Monitoring Network (July  
2024 to June 2025)

## 4.0 Groundwater Levels

Groundwater levels for the WMP compliance bore network, as shown in **Figure 3.1** are summarised in **Table 4.1**. Details of the compliance bore network presented in **Appendix A** summarises:

- Bore details including surveyed location, elevation, depth and target formation.
- Groundwater levels measured in each bore (initial measurement, July 2024 and June 2025).
- Change in groundwater levels since records commenced and for the period July 2024 to June 2025.
- Groundwater levels predicted by the numerical model for July 2024 to June 2025.
- Difference in groundwater levels predicted by the numerical model and measured in the monitoring network.

Groundwater level graphs showing manual dip and continuous logger data are presented in **Appendix B**.

**Table 4.1** **Groundwater Level Monitoring Results Over Reporting Period**

Bore ID	Depth to Water (mAHD)				
	Trigger Level	Q1	Q2	Q3	Q4
<b>Hunter River Alluvium</b>					
GW16	119.0	122.42	122.11	122.17	123.61
GW21	118.3	126.88	126.06	126.36	128.28
GW38A (IW4030)	119.7	122.08	121.81	121.96	123.22
GW41A (IW4029)	116.7	119.43	119.38	119.37	119.39
X1MB	118.7	121.56	121.35	121.32	123.29
X2MB	117.9	120.30	120.24	120.20	120.27
<b>Saddlers Creek Alluvium</b>					
GW45	137.7	142.80	142.08	141.73	143.10
GW47	126.9	130.16	129.77	129.63	129.85
<b>Saddlers Creek Shallow Permian</b>					
BCGW22A (IW4027)	136.6	140.77	140.40	140.12	140.70
GW46	132.5	136.69	135.90	135.58	135.37
X14MB-1S	114.5	119.36	119.28	119.21	119.40
<b>Permian Coal Measures</b>					
EWPC33	190.4	198.61	198.54	198.56	198.51
GW2	140.0	145.08	144.96	144.30	144.29
GW38P	117.3	121.68	121.35	121.34	123.25
GW39P-25mm	117.2	119.31	119.29	119.24	119.89
GW43	166.8	170.89	171.01	170.80	171.00
GW44	65.6	96.61	94.05	94.22	94.30
GW48	115.9	119.56	119.62	119.40	119.72
GW49	115.8	119.33	119.17	119.09	119.28
OD1078 (IW4028)	132.9	135.21	136.55	136.41	136.24
X10MB	179.6	186.44	186.33	186.01	185.67
X14MB-2D	116.1	123.77	88.73	120.73	124.75

Bore ID	Trigger Level	Depth to Water (mAHD)			
		Q1	Q2	Q3	Q4
<b>Permian Coal Measures - VWPs</b>					
VWP2_P1	-64.4	-2.53	-1.60	-1.63	-1.41
VWP3_P1	-46.5	-13.15	-13.37	-16.22	-14.90
VWP05_164	-46.2	36.46	37.16	37.32	37.27
VWP05_192	-29.1	32.14	31.08	30.64	29.77
VWP05_227	-74.1	27.84	26.74	26.15	24.89
VWP06_269	-15.3	49.39	45.60	43.24	38.63
VWP06_304	-59.8	36.21	33.15	31.22	26.78
VWP06_366	-4.5	39.49	36.79	35.63	32.28
VWP07_223	64.7	74.20	72.60	70.00	69.29
VWP07_271	57.3	71.20	69.00	65.80	65.45
VWP07_286	-17.1	68.30	66.90	64.40	63.10
VWP07_326	-91.3	66.40	65.30	63.30	62.72
VWP07_418	142.3	66.51	65.18	ND	ND
X1_S-1 (35)	97.6	99.21	99.05	98.98	98.76
X1_S-2 (59)	91.0	90.28	90.22	89.25	89.07
X1_S-3 (128.5)	24.6	55.96	55.77	55.75	55.71
X1_S-4 (164)	16.1	38.29	38.00	37.52	36.87
X1_S-5 (215)	-31.7	55.02	50.86	50.00	49.23
X1_S-6 (255)	-55.6	-25.98	-27.97	-32.62	-32.28
X1_S-7 (276.5)	-64.6	-31.27	-32.10	-38.77	-37.13

Note:

ND – no data

\* Exceedance based on 2023 Impact Assessment Criteria (less than 3 readings)

\* Exceedance based on 2023 Impact Assessment Criteria (3 consecutive readings)

## 4.1 Drawdown

The calculated total drawdown is based on the difference between the first recorded groundwater level compared to levels recorded in June 2025 measured at each bore, as shown in the table in **Table 4.1**. A negative value represents a decline in water levels, while a positive value represents a rise in water levels. **Figure 4.1** shows the change in groundwater levels in the alluvium, **Figure 4.2** shows the change in groundwater levels within the shallow Permian and **Figure 4.3** shows the change in groundwater levels the Permian coal measures.

There has generally been a slight increase in water levels within the Hunter River alluvium, as shown in **Figure 4.1**. However, there was spatial variance in the total drawdown with bore X1MB recording a 2.5 m increase in levels since November 2020

Bores located east of Quarry Creek, closer to mining operations at MAC (GW21, GW16, X1MB and GW38A) recorded a higher increase in water levels than bores located west of the creek, further from MAC (GW41A(IW4029) and X2MB). It should be noted that the total drawdown recorded in bores GW16 and GW21 covers a much larger time frame (26 years) compared to bores GW38A (IW4030) and GW41A (IW4029) (nine years) and X1MB and X2MB (five years).

Groundwater levels in the alluvial bores along Saddlers Creek have fluctuated over time and appear to be in response to rainfall trends, with an overall increasing trend in groundwater levels since the end of 2020. However, since monitoring began in 2016 there has been an overall minor decline in water levels (drawdown) within the Saddlers Creek alluvium (**Figure 4.1**). It should be noted that this is less than predicted by the 2020 groundwater model and the model update by SLR (2023).

Total drawdown varied spatially, with bore GW45, located in the upper reaches of Saddlers Creek, recording the most drawdown in the Saddlers Creek alluvium. The model predicted drawdown of 3.29 m between 2016 and 2025 for GW45 while the total measured drawdown over the same period was 0.93 m, a difference of 2.36 m. Therefore, the model predicted more drawdown than has occurred.

There was an increase in water level at GW45 between July 2024 and June 2025 of 1.43 m. This increase in water level is due to the significant rainfall events experienced in 2025, particularly in May. It is likely this significant rainfall event contributed to the contrasting predicted and measured drawdown levels in 2025. Bore GW47, also screened within the Saddlers Creek Alluvium and located approximately 1.6 km downstream of GW45, also had a higher predicted drawdown than recorded values. The model predicted drawdown between 2016 and 2025 was 2.14 m while measured drawdown over this period was 0.81 m, a difference of 1.33 m.

There has been a decline in groundwater levels within the Saddlers Creek shallow Permian (regolith) since monitoring began, as shown in **Figure 4.2**. Bore X14MB-1S, located to the north of Saddlers Creek, recorded the most drawdown (-4.88 m). In comparison, deeper paired bore X14MB-2D screened within the Glen Munro Seam, recorded an increase in water levels (i.e., no drawdown).

**Figure 4.3** shows, with the exception of bores EWPC33, GW38P, GW43, GW48, GW49, X10MB and X14MB-2D, there was a general decline in groundwater levels within the Permian coal measures to the southwest of open cut operations, showing a response to the progression of mining to the southwest. Bores GW38P, GW48 and GW49 are located to the west of operations near the Hunter River. Bores EWPC33 and GW43 are near in-pit water storage (Belmont and MacDonald dams) which potentially buffers the extent of drawdown in localised areas.

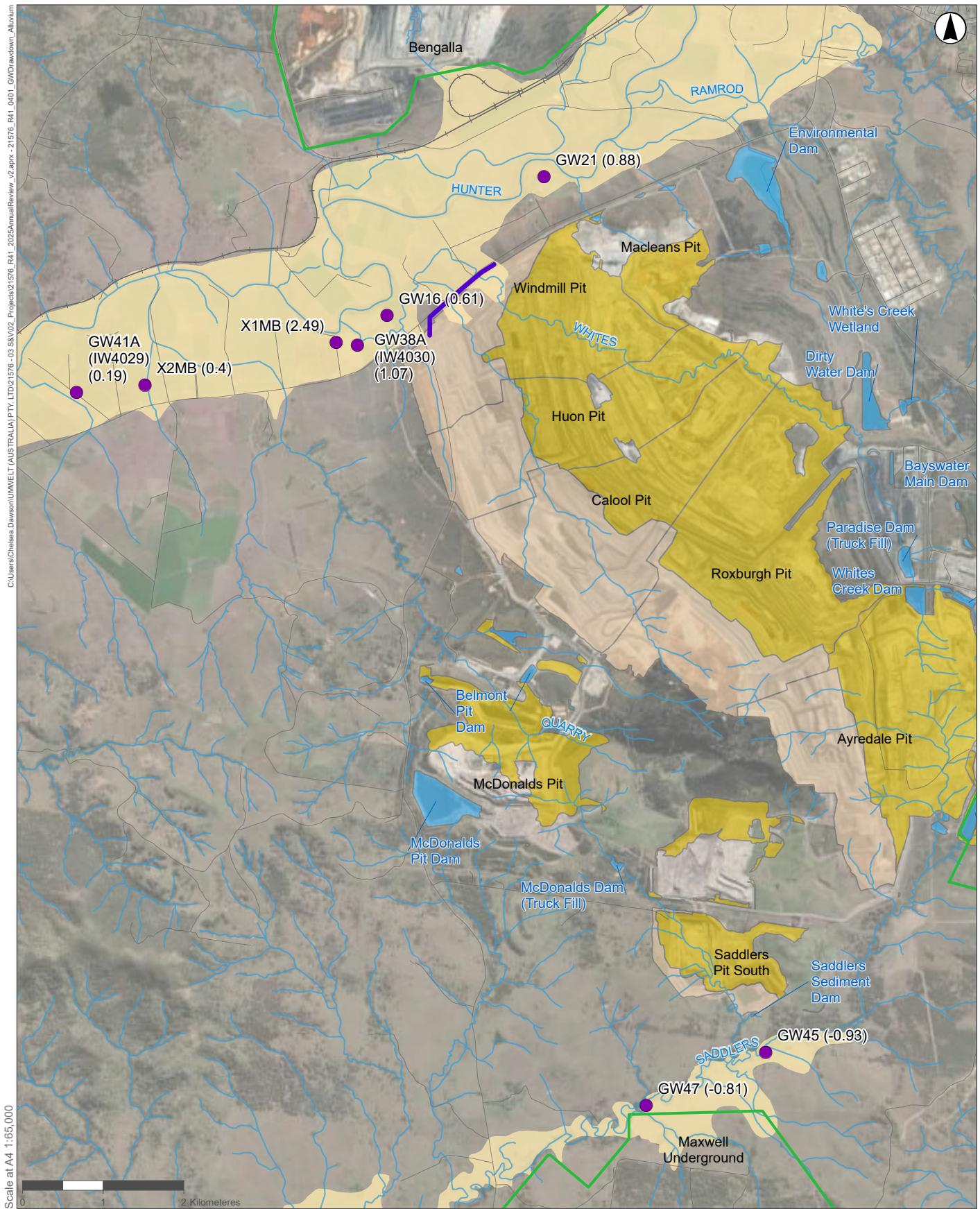
## 4.2 Trigger Exceedances

Groundwater level data collected over the reporting period have been compared to the trigger levels outlined in the WMP. Over the reporting period two VWP's recorded water levels below the trigger level.

The sensor in VWP X1 monitoring the Mt Arthur Seam (S-2) recorded water levels below the trigger level. They are consecutive water level readings recorded below the trigger level and constitute an exceedance.

The sensor in VWP07 monitoring the Ramrod Creek Seam (418), recorded exceedances up November 2024, at which time the sensor likely failed recording erroneous data. The VWP surface unit and sensor connection was checked and replaced in early 2025; however, the data is still erroneous and the sensor downhole has likely failed.

A summary of the exceedances is presented in **Table 4.2**.

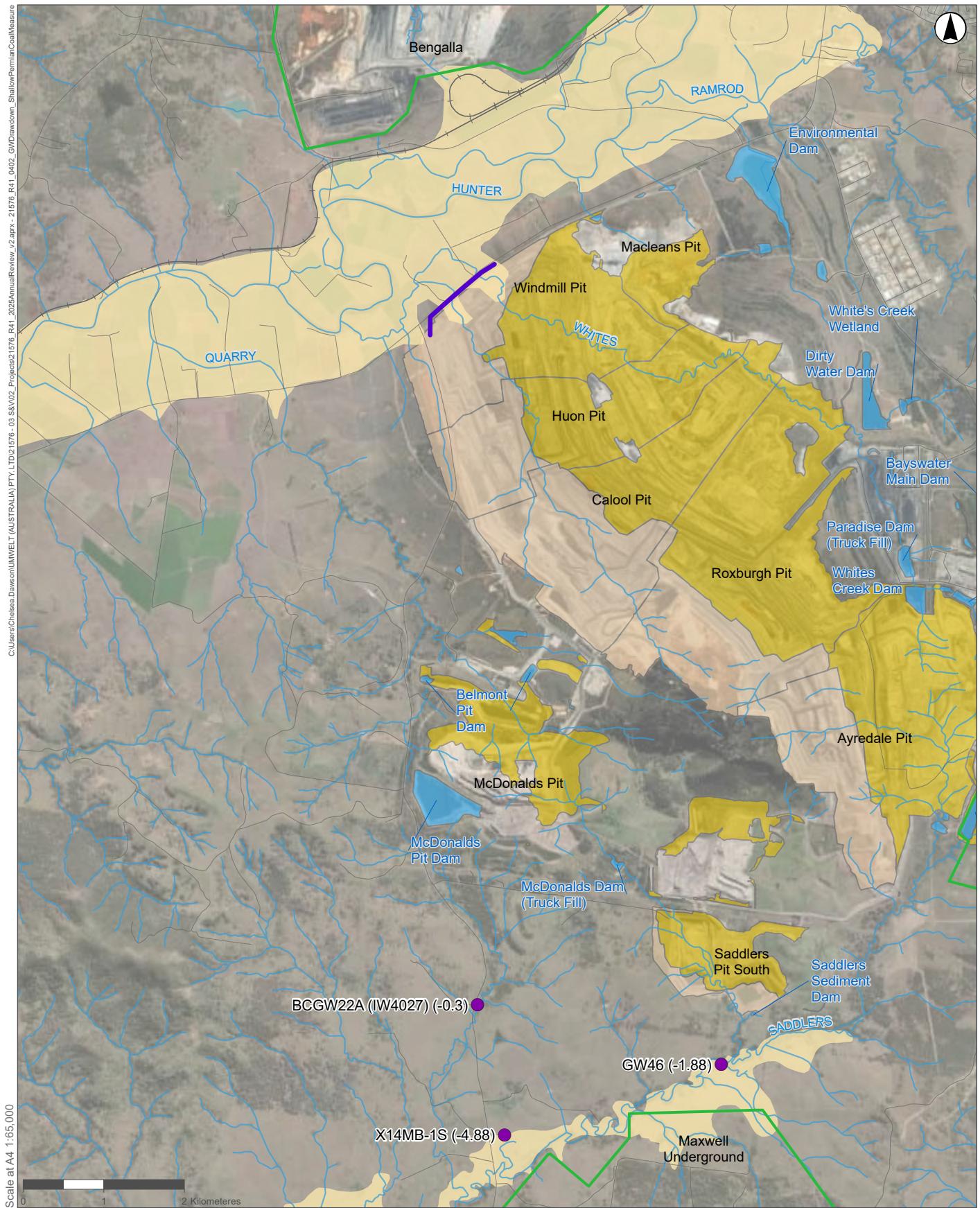


#### Legend

- Surrounding Mines
- Cut-off Wall
- Alluvium Extent
- Alluvium Monitoring Locations
- Railway
- Roads
- Watercourse
- Active Mining Area (Open cut void)
- Overburden Emplacement Area
- Water Management - Dam

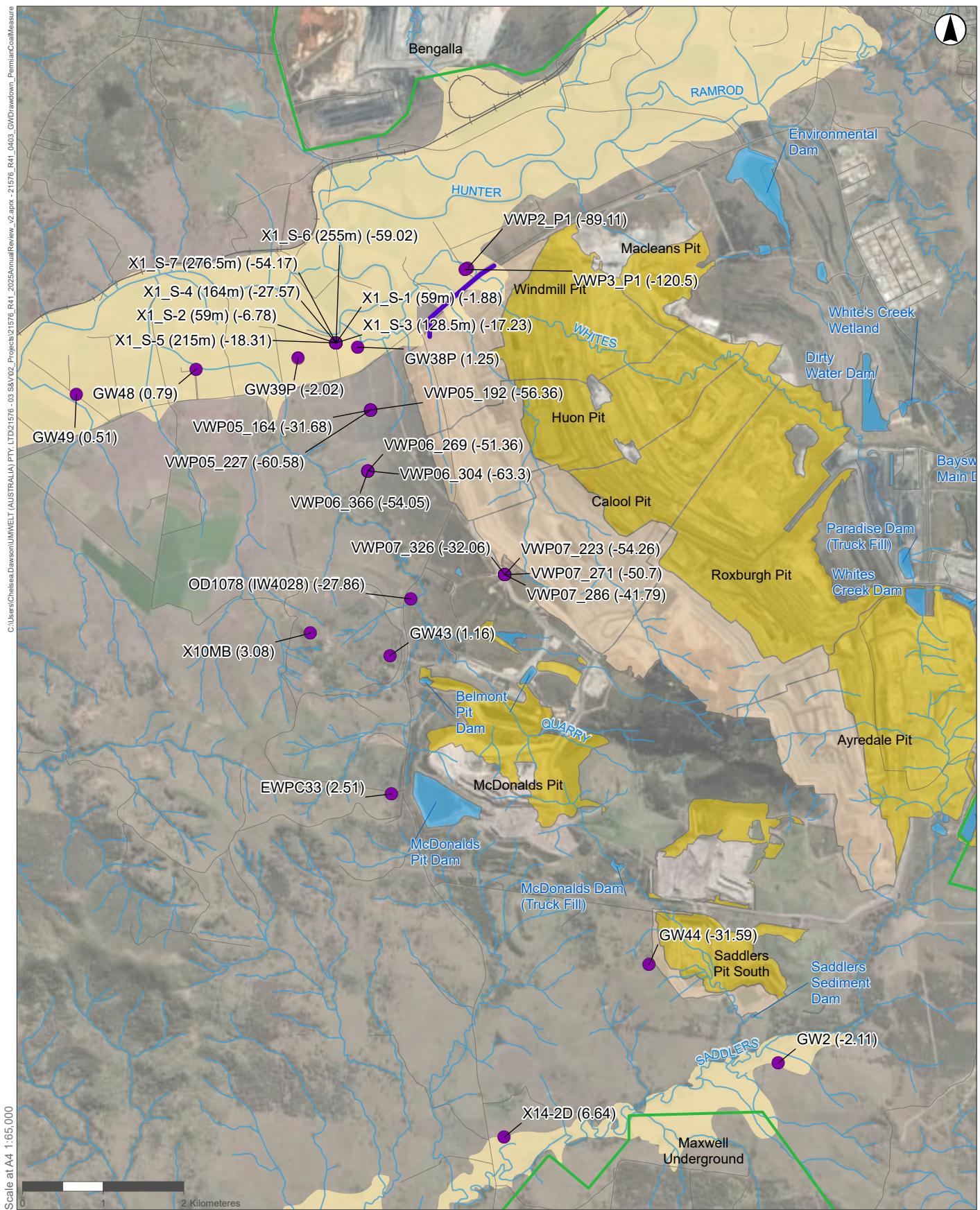


**FIGURE 4.1**  
Total Groundwater  
Drawdown to June 2025 –  
Alluvium



 umwelt

**FIGURE 4.2**  
Total Groundwater Drawdown  
to June 2025 – Shallow  
Permian Coal Measures  
(Regolith)

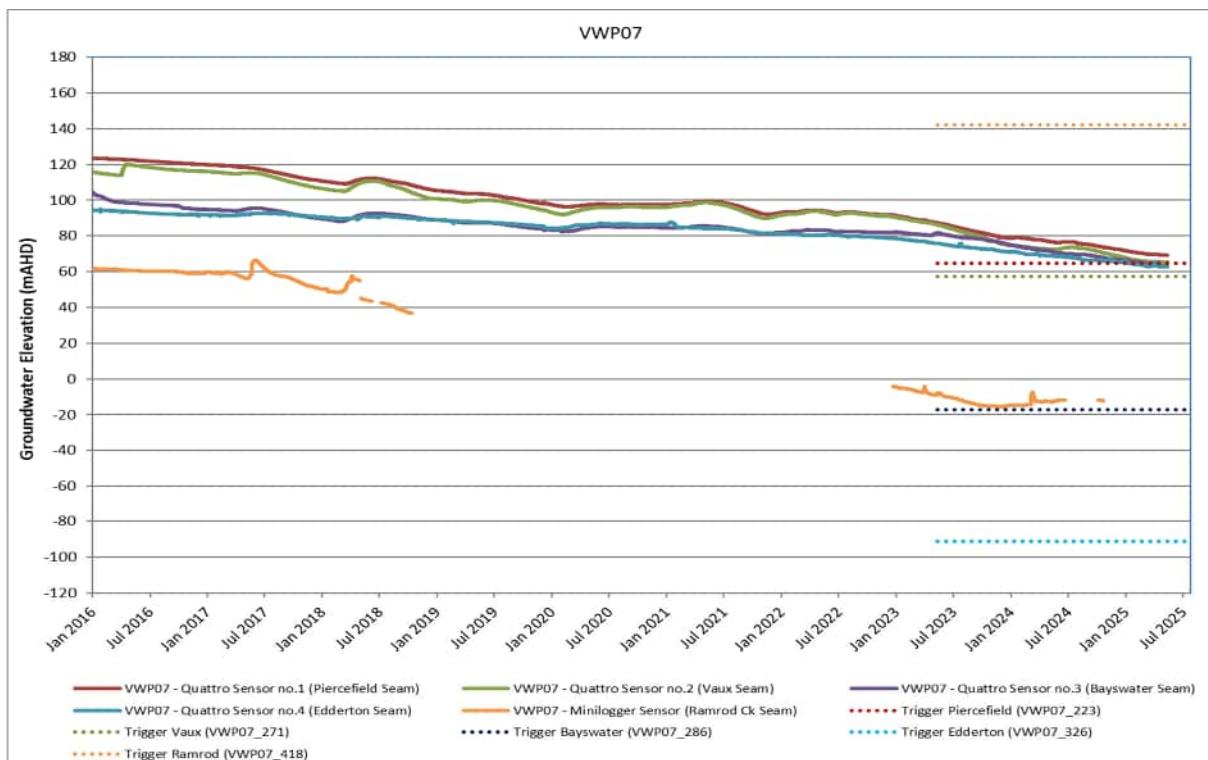


 umwelt

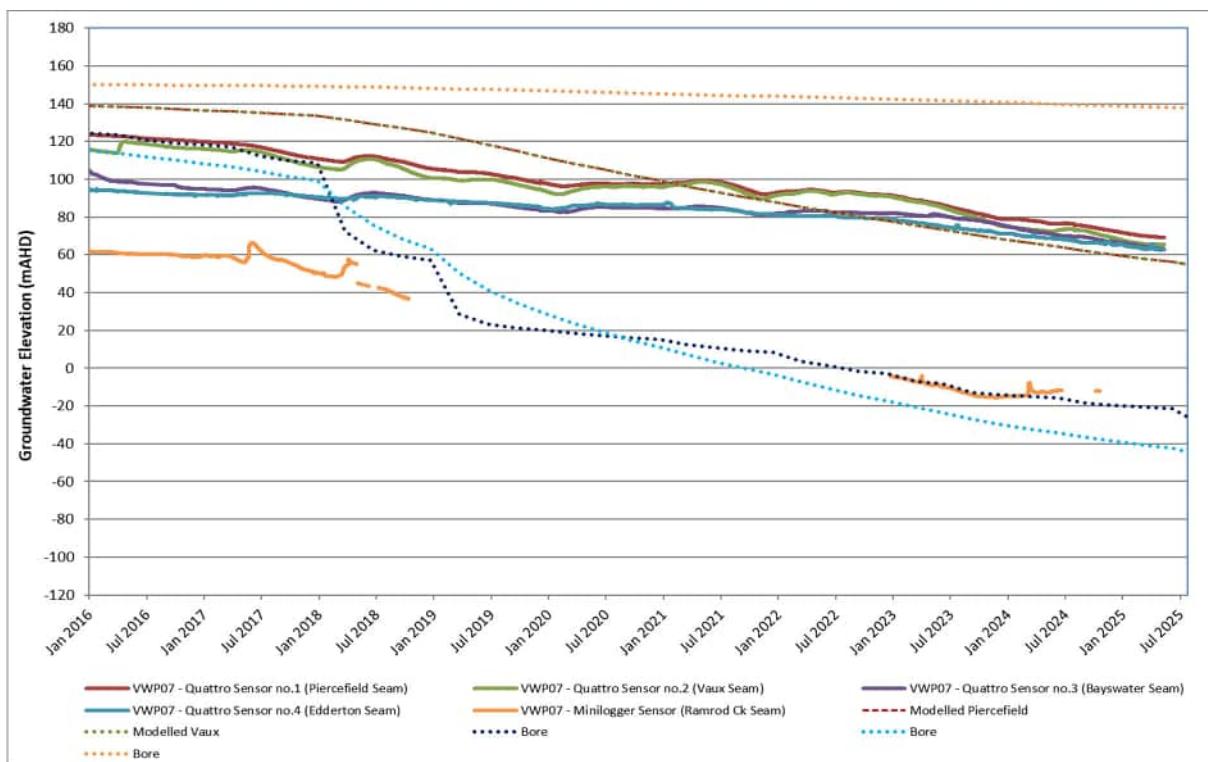
**FIGURE 4.3**  
Total Groundwater  
Drawdown to June 2025 –  
Permian Coal Measures

**Table 4.2** **Groundwater Level Trigger Exceedances**

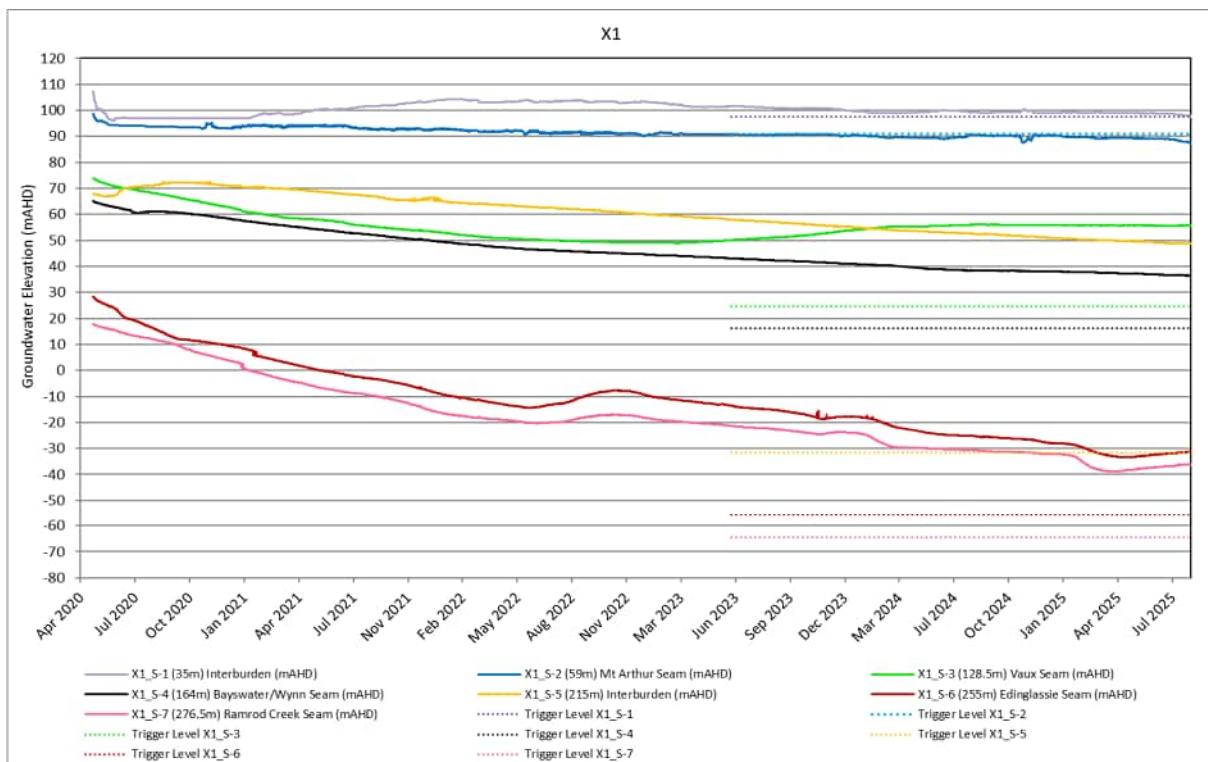
Bore ID	Exceedance	Screened Lithology	Location	Comment	Action
VWP07_418	Pressure level reading below trigger level of 142.3 mAHD since June 2023.	Ramrod Creek Seam	On site, 200 m west of MAC open pit (Windmill Pit)	<p>Levels in the Ramrod Creek Seam, recorded in VWP07_418, have exceeded the trigger level since June 2023, when the revised trigger level was implemented (refer <b>Figure 4.4</b>).</p> <p>The SLR (2020) model predicted continued drawdown in this area with simulated water levels in all seams (refer <b>Figure 4.5</b>). The SLR (2020) model predicted higher starting heads in this location but does capture the trend of declining groundwater levels over time consistent with the observed data.</p> <p>A preliminary desktop review of the water level exceedance was undertaken by Umwelt (Umwelt, 2025a) in March 2025. The investigation identified that the continued declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020).</p> <p>The sensor connection in the surface unit was replaced in early 2025; however, the data is erroneous and the sensor downhole has likely failed.</p>	<p>Water level readings have exceeded the trigger threshold and DPHI were notified in March 2025.</p> <p>As the downhole sensor has likely failed, it is recommended that the sensor is removed from the monitoring program and from the WMP in the next revision.</p>
X1_S-2 (59)	Pressure level reading below trigger level of 91.0 mAHD since June 2023.	Mt Arthur Seam	On site, approximately 1.2 km west of MAC open pit and 100 m south of the Hunter River	<p>VWP X1 was installed in April 2020. Levels in the Mt Arthur Seam, recorded by X1_S-2 (59), have exceeded the trigger level since June 2023, when the new trigger level was implemented (refer <b>Figure 4.6</b>).</p> <p>The declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020) (refer <b>Figure 4.7</b>). The SLR (2020) model predicted higher starting heads in this location but does capture the trend of declining groundwater levels over time consistent with the observed data. The model under predicts drawdown in all layers in this area indicating the area was less saturated than predicted.</p> <p>A preliminary desktop review of the water level exceedance was undertaken by Umwelt (Umwelt, 2025b) in June 2025. The investigation identified that the continued declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020).</p>	<p>Water level readings have exceeded the trigger threshold and should be notified.</p> <p>Initial review indicates no adverse impacts beyond those predicted for the approved operations.</p> <p>The current trigger level is based on the predicted levels and trends from the SLR (2020) groundwater model. The model has been updated as part of MOD2.</p> <p>Revised model predictions can be used to the revise trigger levels.</p>



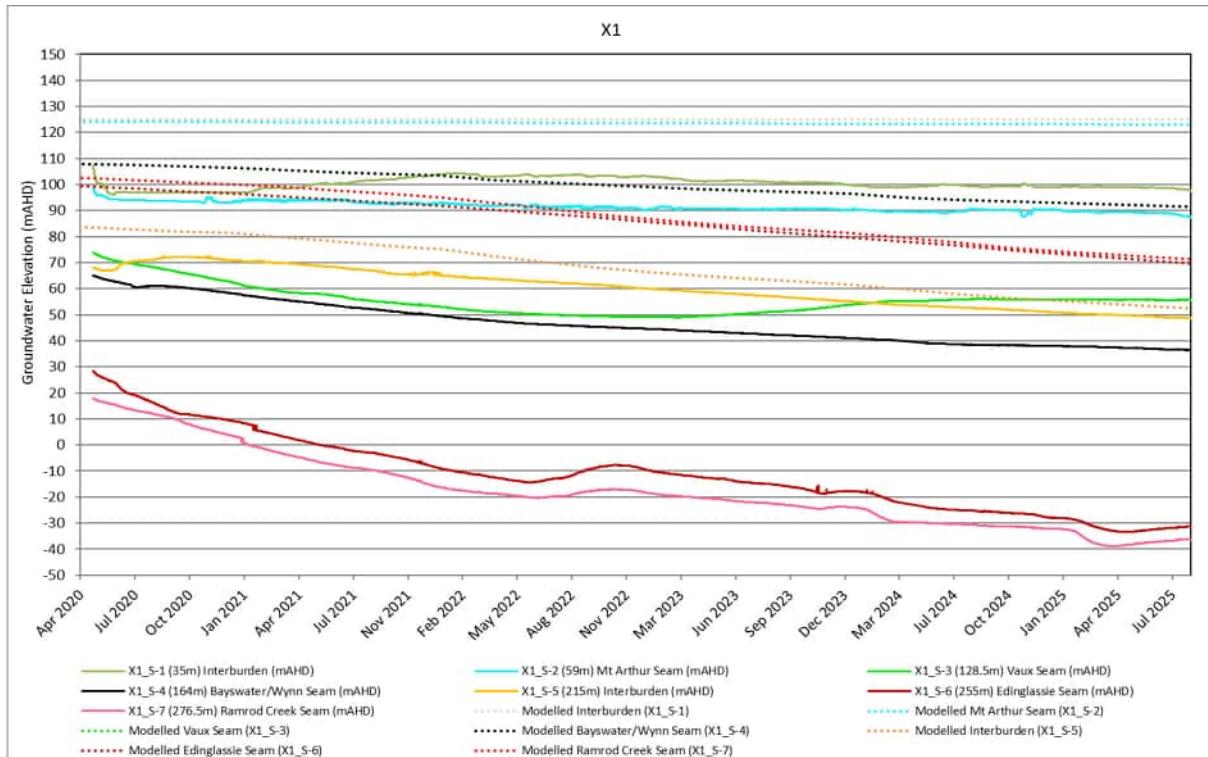
**Figure 4.4** **VWP07 – Trigger Levels**



**Figure 4.5** **VWP07 – Modelled and Observed Water Levels**



**Figure 4.6 X1 – Trigger Levels**



**Figure 4.7 X1 – Modelled and Observed Water Levels**

## 5.0 Groundwater Quality

Groundwater quality monitoring is conducted to identify any impacts from mining of coal measures to alluvial aquifers. Under the WMP, standard groundwater quality monitoring is required quarterly, and a comprehensive water quality analysis is required annually for 19 of the monitoring bores within the network, as outlined in **Appendix A**.

### 5.1 Field Water Quality Results

A summary of groundwater quality (field pH and field EC) for the reporting period is presented in **Table 5.1**. A detailed summary of groundwater quality results for the reporting period is summarised in **Appendix D** with water quality (pH and EC) graphs presented in **Appendix E**.

**Table 5.1** Groundwater Quality Monitoring Results Over the Reporting Period

Bore ID	Field pH						Field EC (µS/cm)					
	Lower Trigger (5th %ile)	Upper Trigger (95th %ile)	Q1	Q2	Q3	Q4	Stage 1 EC Trigger (95th %ile)	Stage 2 EC Trigger (Max. Value)	Q1	Q2	Q3	Q4
<b>Hunter River Alluvium</b>												
GW16	6.9	7.7	7.38	7.32	7.26	7.26	5228	9090	3080	3050	3140	3057
GW21	6.9	7.7	7.02	7.04	7.03	7.02	5228	9090	1047	3950	884	791
GW38A (IW4030)	6.9	7.7	7.25	7.19	7.22	7.35	5228	9090	3790	2365	3860	3390
GW41A (IW4029)	6.9	7.7	7.22	7.32	7.25	7.17	5228	9090	5100	4940	4920	4630
X1MB	6.9	7.7	7.26	7.42	7.64	7.44	5228	9090	1700	3760	3610	3750
X2MB	6.9	7.7	7.30	7.36	7.25	7.43	5228	9090	4190	4250	4440	3250
<b>Saddlers Creek Alluvium</b>												
GW45	6.6	7.6	7.35	7.32	7.38	7.39	8783	11380	1183	1250	1258	1139
GW47	6.6	7.6	6.99	7.01	7.08	7.04	8783	11380	4250	3900	4130	4180
<b>Saddlers Creek Shallow Permian</b>												
BCGW22A (IW4027)	6.7	7.1	6.91	6.89	6.90	6.91	14800	21480	10400	10600	10800	11600
GW46	6.7	7.1	6.94	6.88	6.94	6.82	14800	21480	6360	7480	8240	7610
X14MB-1S	6.7	7.1	6.94	6.85	6.88	6.86	14800	21480	10100	9810	10400	9900
<b>Permian Coal Measures</b>												
EWPC33	6.8	7.5	7.05	6.94	6.98	6.95	2973	3040	2548	2584	2591	2643
GW2	7.0	8.5	7.65	7.60	7.63	7.57	4802	5810	3920	3500	3720	3740
GW38P	7.2	8.1	7.59	7.57	7.59	7.67	6170	9170	2347	4770	2427	2434
GW39P-25mm	No Trigger		7.57	7.56	7.53	7.58	No Trigger		4880	4880	4780	4940
GW43	7.0	8.5	7.11	7.12	7.00	6.93	4802	5810	4240	4240	4430	4480
GW44	No Trigger		Not Required			No Trigger		Not Required				

Bore ID	Field pH						Field EC (µS/cm)					
	Lower Trigger (5th %ile)	Upper Trigger (95th %ile)	Q1	Q2	Q3	Q4	Stage 1 EC Trigger (95th %ile)	Stage 2 EC Trigger (Max. Value)	Q1	Q2	Q3	Q4
GW48	6.8	7.7	7.59	7.68	7.54	7.49	7891	8300	3480	3480	3620	3510
GW49	6.7	8.9	6.88	7.02	6.92	6.82	7831	8210	6230	5770	5840	5580
OD1078 (IW4028)	No Trigger		Not Required				No Trigger		Not Required			
X10MB	6.7	8.3	7.05	7.17	7.53	6.90	11200	14710	4100	4070	3980	4220
X14MB-2D	6.7	8.3	9.36	10.02	10.05	10.14	11200	14710	5520	4660	5280	5240

Note:

\* Exceedance based on 2023 Impact Assessment Criteria (less than 3 readings)

\* Exceedance based on 2023 Impact Assessment Criteria (3 consecutive readings)

\* EC exceedance based on 2023 Impact Assessment Criteria - Stage 2 (1 reading)

## 5.2 Laboratory Water Quality Results

Groundwater quality samples are submitted quarterly to ALS for laboratory analysis of TDS, TSS, iron, sulphate, chloride, calcium, magnesium, potassium, sodium, carbonate and bicarbonate. Annual groundwater quality samples are submitted for total phosphorus, aluminium, antimony, arsenic, barium, boron, cadmium, chromium, copper, lead, mercury, molybdenum, selenium and zinc. Review of the data indicates that over the reporting period most bores have recorded relatively consistent concentrations of TDS, TSS, iron and major ions (sulphate, chloride, calcium, magnesium, potassium, sodium, carbonate and bicarbonate). A summary of the field parameters and major ion data is shown in **Appendix D**.

## 5.3 Trigger Exceedances

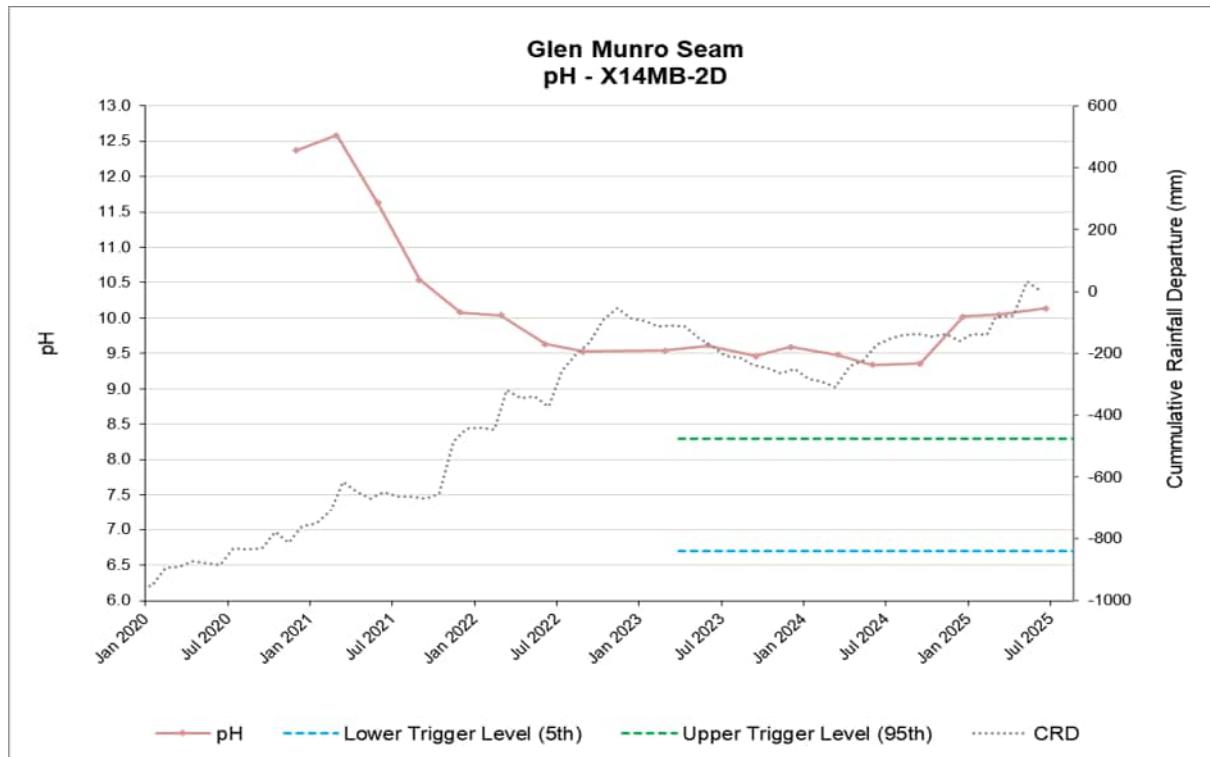
Water quality data collected over the reporting period have been compared to the trigger values outlined in the WMP. As specified in the WMP (BHP, 2023), bores that recorded pH or EC levels outside of the trigger level range over the reporting period are highlighted in **Table 5.2**.

Bore GW43 recorded a pH reading in June 2025 below the lower pH trigger level specified in the WMP. However, it is not a consecutive reading and therefore not considered an exceedance. During the reporting period, bore X142MB-2D recorded four consecutive readings above the upper pH trigger level constituting a reportable exceedance. An analysis of the trigger exceedance is summarised in **Table 5.2**.

Trigger exceedances have been reviewed by comparing groundwater levels and climate indicated by the cumulative rainfall departure plot (refer **Figure 2.1**). Graphs of pH and EC for all monitoring bores are presented in **Appendix E**.

**Table 5.2** **Groundwater Quality Trigger Exceedances**

Bore ID	Exceedance	Screened Lithology	Location	Comment	Action
X14MB-2D	Nine consecutive pH readings above the upper trigger level of 8.3 since June 2023	Glen Munro Seam	On site, approximately 5 km south of McDonalds Pit Dam and 3.5 km southwest of Saddlers Pit	<p>The purpose of the bore is to monitor the Glen Munro Seam near an unnamed tributary of Saddlers Creek, between McDonalds Pit Dam and Saddlers Creek.</p> <p>The bore was installed in July 2020 to assess any impact from mining activities adjacent to mining areas to the southwest of MAC. A paired bore with X14MB-1S to assess the hydraulic gradient between the regolith and Glen Munro Seam. Bore X14MB-2D was added to the groundwater compliance monitoring network in the revised WMP, which came into effect in April 2023.</p> <p>The pH of groundwater recorded within the bore has ranged from 9.34 (June 2024) to 12.60 (November 2020), with an average pH of 10.26. The pH declined from June 2021 until around July 2022 and then remained stable until December 2024. The most recent Q4 2025 reading of 10.14 shows a slight increase following development of the bore. The pH level has been above the revised Glen Munro Seam pH trigger level since the trigger was implemented in April 2023, as shown in <b>Figure 5.1</b>. It should be noted that the trigger level in the current WMP is based on grouped data from all bores monitoring the Glen Munro Seam. At the time of trigger derivation, in 2022, only eight water quality samples had been collected from bore X14MB-2D. In comparison, pH has ranged between 7.04 and 9.97 in bore X10MB which also monitors the Glen Munro Seam and is located approximately 8 km to the north of X14MB-2D.</p> <p>The condition of bore X14MB-2D was checked in September 2024 with a downhole camera. The footage indicates potential issues with the casing joints at 50 m to 60 m depth with indications of a chemical buildup at the joints. The buildup at the casing joints is potentially from grout contamination. The high pH levels recorded are likely due to grout contamination. In early December 2024 Umwelt redeveloped the bore to flush out any drilling fluids or grout contamination from the bore and annulus. The pH reading of 10.02 was collected at the end of December. It is noted that groundwater levels had not fully recovered by the time the sample was collected and may not be representative of the surrounding groundwater. The bore was checked again with a downhole camera in March 2025 and showed that the buildup at the casing joints remains following redevelopment of the bore. The pH of 10.14 recorded in Q4 indicates grout contamination is potentially still affecting the condition of the bore.</p>	<p>The pH level recorded in Q4 is the ninth consecutive reading above the upper trigger level and should be notified.</p> <p>Due to the condition of the bore, it is recommended that the inclusion of the bore in the monitoring network is reviewed in the next revision of the WMP.</p>



**Figure 5.1 X14MB-2D – pH**

## 6.0 Trigger Investigations

As specified in the WMP, MAC are required to report on the effectiveness of the WMP in the MAC Annual Groundwater Review, which includes a summary of management/mitigation measures undertaken in the event of a confirmed exceedance of the impact assessment criteria and the effectiveness of the management/mitigation measures. A number of exceedances have been identified during routine monitoring, which have already been reported to DPHI over the reporting period, as summarised in **Table 6.1**. There were no detailed trigger investigations undertaken over the reporting period.

**Table 6.1** Summary of Investigations Undertaken Over Reporting Period

Bore ID	Background	Investigations Completed	Action Being Undertaken
<b>X14MB-2D</b>	<p>The purpose of the bore is to monitor the Glen Munro Seam near an unnamed tributary of Saddlers Creek, between McDonalds Pit Dam and Saddlers Creek.</p> <p>Nine consecutive pH readings above the upper trigger level of 8.3 since June 2023.</p>	<p>The initial review of the trigger exceedance indicates that pH exceedances are likely due to grout contamination within the bore. Recent investigations with a downhole camera completed in March 2025 indicate that the chemical buildup at the casing joints is still prevalent despite the bore being redeveloped in early December 2024. Bore contamination is still impacting groundwater quality results.</p>	<p>Due to the condition of the bore, it is recommended that the inclusion of the monitoring bore in the monitoring network is reviewed in the next revision of the WMP.</p>
<b>VWP07_418</b>	<p>Water levels in the Ramrod Creek Seam, recorded in VWP07_418, have exceeded the trigger level since June 2023, when the new trigger level was implemented in the updated WMP.</p>	<p>Initial review indicates no adverse impacts beyond those predicted for the approved conditions. The continuing declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020).</p>	<p>Although the surface unit connection was replaced in early 2025, the downhole sensor has likely failed, and it is recommended that the sensor is removed from the monitoring program and from the WMP in the next revision.</p>
<b>X1_S-2</b>	<p>VWP X1 was installed in April 2020. Levels in the Mt Arthur Seam, recorded by X1_S-2, have exceeded the trigger level since June 2023, when the new trigger level was implemented in the updated WMP.</p>	<p>Initial review indicated no adverse impacts beyond those predicted for the approved operations. The declining groundwater level trend represents mining induced depressurisation as predicted for the approved operations by SLR (2020).</p>	<p>The current trigger level is based on the predicted levels and trends from the SLR (2020) groundwater model. The model has been updated as part of MOD2. Revised model predictions can be used to the revise trigger levels.</p>

## 7.0 Quality Assurance Review

An assessment of the quality assurance measures implemented by CBE for groundwater sampling is required as part of the WMP to identify potential errors with either the sampling methodology or laboratory techniques. This review includes:

- Comparison of duplicate samples and calculation of Relative Percentage Difference (RPD) for the laboratory analysis results for each sampling round.
- Review of the CBE groundwater sampling field sheets for assessment of field parameter stabilisation and purging volume for collection for a representative water sample. Review of equipment calibration records.
- Review of sample holding times prior to being dispatched to the Australian Laboratory Services Pty Ltd (ALS).

The quality assurance review results are summarised in **Table 7.1** and detailed in **Appendix D**. The results of the quality assurance review, with recommendations, are summarised below:

- CBE provided sample stabilisation data for all sampling events with the acceptable deviations for temperature set at ( $\pm 0.2^{\circ}\text{C}$ ), pH ( $\pm 0.1$  pH units) and EC ( $\pm 5\%$ ). Stabilisation was achieved in most bores prior to water quality samples being collected.
- With the exception of GW2, EWPC33 and BCGW22A(IW4027), on average, three bore volumes were purged from each bore before sampling. Where less than three volumes were purged, the field sheets note that it was due to dry bores, slow recovery or when hand bailing was implemented. Where hand bailing is required in smaller diameter bores, it is recommended a small diameter pump is used (e.g. GW39P-25mm).
- No sample batches received by ALS were above the recommended temperature of  $4^{\circ}\text{C}$ .
- In each monitoring round the bores were monitored in a consistent manner and the samples are considered representative of the aquifer at each monitoring location. However, equipment calibration sheets were not provided by CBE for review.
- Most samples were within the specified holding times for the parameters analysed. The following analytes recorded exceptions to this:
  - Laboratory pH where holdings time breaches ranged from one to three days. All of the samples were also analysed for field pH, which is considered a more reliable source of data and has been used for the trigger level review in this report.
  - Total dissolved solids (TDS) where holding times breaches were two or three days.
  - Additionally, the QA/QC compliance sheet for submission ES2439128 identified holding time exceedances for pH (8 days), alkalinity (8 days), sulphate (9 days), chloride (9 days), major cations (8 days), SAR and harness calculations (8 days), mercury (10 days) and total phosphorous (8 days). However, upon review of the associated field sheet and Chain of Custody (CoC), it appears that there has been an error in the QAQC lab sheet, likely in the date 'due for analysis'. This should be confirmed with the laboratory.
- Duplicate samples were collected and field parameters for pH, EC, and temperature were recorded for each duplicate sample. The following RPDs greater than 20% were:

- Q1 (September 2024): Total suspended solids, chloride and calcium.
- Q2 (December 2024): pH.
- Q4 (June 2025): Zinc, nickel, boron, barium, potassium and calcium.
- These differences indicate variation in the laboratory analysis between the primary and duplicate samples. This is potentially influenced by sampling methodology and timing between the samples, which can influence results. The RPDs do not correlate to any reported trigger exceedances for the reporting period.

**Table 7.1** Summary of Groundwater Quality Assurance Review

Monitoring Round	Field Data	Field Parameter Stabilisation	Frequency of Analyses	Analysis Parameters	Holding Time (days)	Duplicate Sample	Relative Percentage Difference (RPD)	Comments
<b>Sep-24 (Q1)</b>	WL, T (°C), pH, EC	X10MB was outside of the stabilisation range for temperature	Quarterly	All samples: pH, EC, TSS, TDS, Cl, Ca, Mg, K, Na, SO4, Alkalinity, Dissolved Fe.	Lab Quality Control Report indicates five sample submissions were outside the specified holding times for pH. Two sample submissions were outside the holding time for TDS.	GW2	Total suspended solids, chloride and calcium had RPDs of 92.3%, 31.7% and 21.1% respectively	<p>All bores were purged 3 x the bore volume, except for GW2. In addition, several bores could not be purged sufficiently due to slow recharge rates (X14MB-1S and X14MB-2D) or hand bailing.</p> <p>All of the sample submissions reached the lab below the specified temperature of 4 °C.</p> <p>Field calibration sheets not provided.</p>
<b>Dec-24 (Q2)</b>	WL, T (°C), pH, EC	GW21 and GW47 were outside of the stabilisation range for temperature	Quarterly	All samples: pH, EC, TSS, TDS, Cl, Ca, Mg, K, Na, SO4, Alkalinity, Dissolved Fe.	Lab Quality Control Report indicates three sample submissions were outside the specified holding times for pH. One submission (ES2439128) was outside the specified holding times for pH, alkalinity, sulphate, chloride, major cations, SAR and harness calculations, mercury and total phosphorous. However, upon review of the field sheet and Chain of Custody (CoC), it appears that there has been an error in the QAQC lab sheet.	GW56	pH RPD was 27.2%. No others were above 20%.	<p>All bores were purged 3 x the bore volume, except for GW2. In addition, several bores could not be purged sufficiently due to slow recharge rates (X14MB-1S and X14MB-2D) or hand bailing.</p> <p>All of the sample submissions reached the lab below specified temperature of 4 °C.</p> <p>Field calibration sheets not provided.</p>

Monitoring Round	Field Data	Field Parameter Stabilisation	Frequency of Analyses	Analysis Parameters	Holding Time (days)	Duplicate Sample	Relative Percentage Difference (RPD)	Comments
Mar-25 (Q3)	WL, T (°C), pH, EC	X1MB was outside the stabilisation range for temperature	Quarterly	All samples: pH, EC, TSS, TDS, Cl, Ca, Mg, K, Na, SO4, Alkalinity, Dissolved Fe.	Lab Quality Control Report indicates four sample submissions were outside the specified holding times for pH.	GW51	No RPDs greater than 20%	<p>All bores were purged 3 x the bore volume, except for BCGW22A(IW4027) and EWPC33. In addition, several bores could not be purged sufficiently due to slow recharge rates (X14MB-1S and X14MB-2D) or hand bailing.</p> <p>All of the sample submissions reached the lab below specified temperature of 4 °C.</p> <p>Field calibration sheets not provided.</p>
Jun-25 (Q4)	WL, T (°C), pH, EC	X14MB-1S was outside of the stabilisation range for temperature	Quarterly/ Annually	All samples: pH, EC, TSS, TDS, Cl, Ca, Mg, K, Na, SO4, Alkalinity, Dissolved Al, Sb, As, Ba, Ca, Cr, Cu, Ni, Pb, Zn, Mo, Se, B, Fe, Hg, Total P.	Lab Quality Control Report indicates three sample submissions were outside the specified holding times for pH.	GW2	Zinc and Nickel 200% RPD. Boron and Barium were 30.8% and 23.3% respectively. Potassium and Calcium were 28.6% and 25.6% respectively.	<p>All bores were purged 3 x the bore volume, except for BCGW22A(IW4027). In addition, several bores could not be purged sufficiently due to slow recharge rates (X14MB-1S and X14MB-2D) or hand bailing.</p> <p>All of the sample submissions reached the lab below specified temperature of 4 °C.</p> <p>Field calibration sheets not provided.</p>

Note: The laboratory analyses for all bores sampled (compliance and operational) have been included in the quality assurance review

## 8.0 Cut-off Wall Performance

The alluvial cut-off wall is a bentonite barrier wall constructed between the Hunter River and the Windmill Open Cut pit, close to the F4 fault. The cut-off wall was extended to the west in November 2020 ahead of the progression of active mining towards the west. The purpose of the cut-off wall is to minimise drawdown within the Hunter River alluvium.

To monitor drawdown within the Hunter River alluvium, VWP sensors were installed near the cut-off wall to monitor the Permian coal measures underlying the Hunter River alluvium. The location of the VWP sensors is shown in **Figure 3.1**. The VWP sensors monitor:

- VWP2 – F4 fault at 216.5 m depth (-81.1 mAHD).
- VWP3 – Sensor 1 – Edinglassie Seam (hanging wall) at 227.0 m depth (-91.6 mAHD).

Continuous data has been captured by the VWP sensors since December 2013. However, the footwall of the Edinglassie Seam is no longer monitored as VWP1 has been decommissioned due to sensor failure in 2020. VWP3 Sensor 2 (Ramrod Creek) also failed in June 2020. **Figure 8.1** shows groundwater levels have declined 90 m in the F4 fault and 124 m in the Edinglassie Seam since installation in 2011.

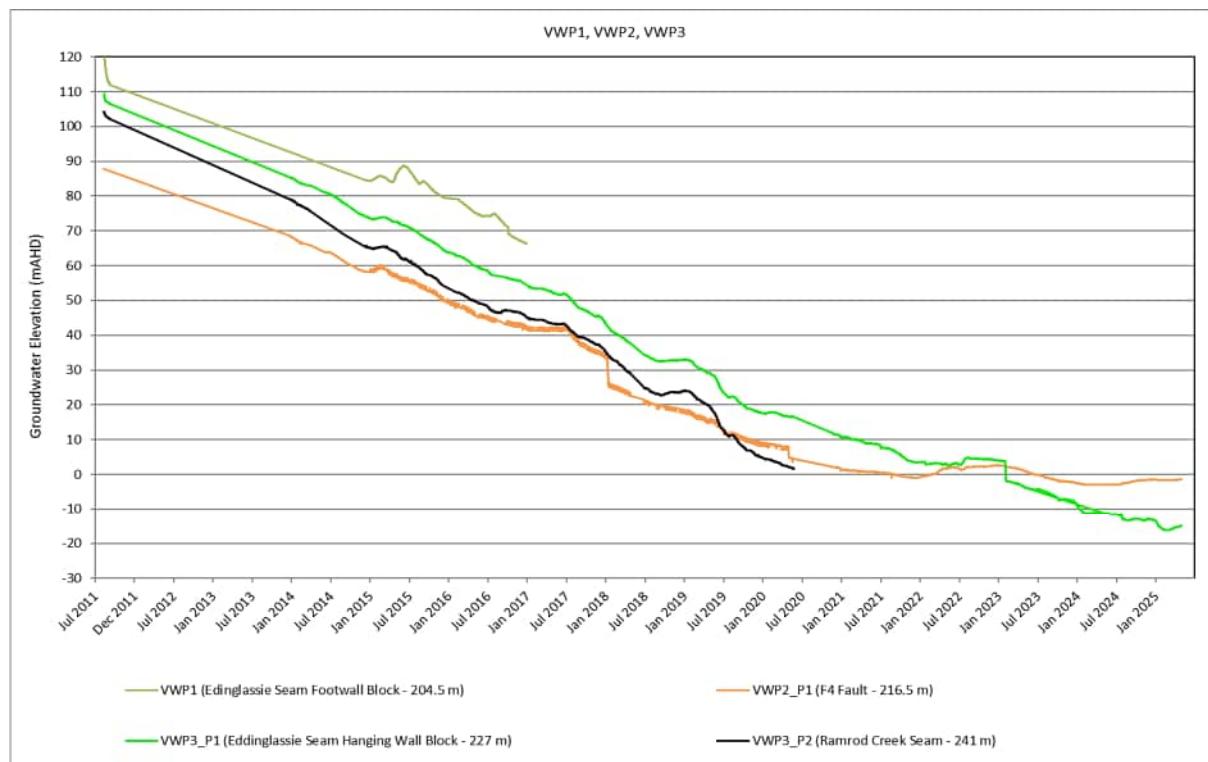
The Hunter River alluvium and shallow weathered sandstone (regolith) lay above the Permian coal measures near the cut-off wall. The closest alluvium monitoring bores are GW42, which is located adjacent to the VWP sensors, and bore GW16 located approximately 400 m to the northwest of the cut-off wall. Due to the condition of GW42 it was recommended in 2022 that the bore should be replaced and has been removed from the current WMP. A replacement bore (GW58) was installed in April 2024 and is located 15 m to the southwest of GW42. Bore GW58 has been used to compare trends in the coal seams and alluvium, as a substitute for GW42 over the reporting period and GW16 has been included to review historical trends.

In November 2020, six additional monitoring bores were also installed (VB1, VB2, VB3, VB4, VB5 and VB6) in fill/regolith forming the cut-off wall extension to monitor the effectiveness of the barrier wall extension.

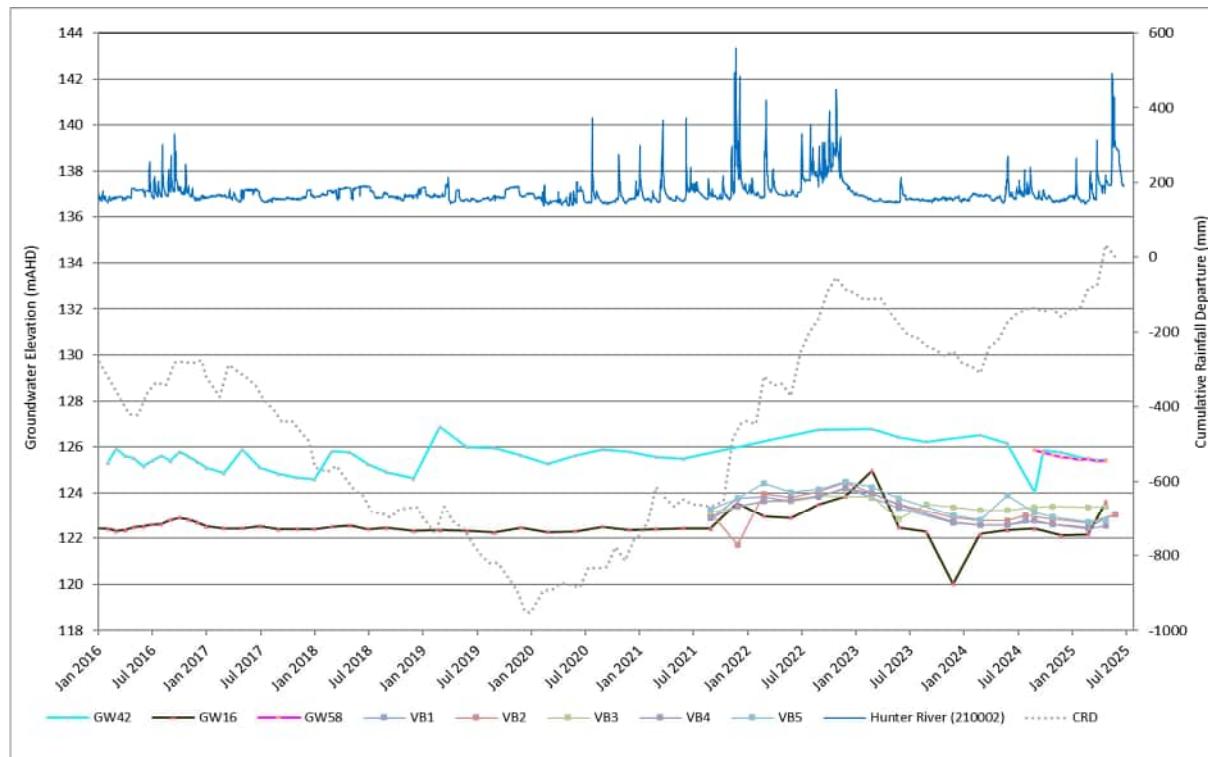
Groundwater levels in GW16 have fluctuated over time but have remained relatively stable, with a slight increase of 0.09 m between February 2008 and September 2021. This was followed by an increase of over 1 m by March 2023, followed by a sharp decline of almost 5 m by December 2023 in response to below average rainfall followed by an increase of over 2 m by March 2024. Over the reporting period groundwater levels remained relatively stable until March 2025, followed by an increase of 1.44 m in response to above average rainfall as shown in **Figure 8.2**. Groundwater levels in GW58 remained relatively stable. In general, the fluctuations in groundwater levels appear to be a response to increased rainfall and flows within the Hunter River. Depressurisation observed in the Permian coal measures has not impacted the Hunter River alluvium groundwater levels observed in bore GW16 or GW58.

Groundwater levels have also been monitored in the VB series of bores since September 2021. Over the reporting period groundwater levels remained relatively stable, with a minor decline to March 2025 followed by a minor increase in response to climatic events, similar to surrounding alluvium monitoring bores. Levels ranged between 122.41 mAHD (VB4) and 123.40 mAHD (VB3). Groundwater levels were recorded at a lower elevation compared to nearby bore GW58. Bore VB6 has been dry since installation and is the closest bore to active mining.

The relatively stable groundwater level trends shown in the alluvial bores indicate that the depressurisation observed in the Permian coal measures does not appear to have impacted the Hunter River alluvium groundwater levels. Monitoring of the Hunter River alluvium shows no adverse impact from mining activities on alluvial groundwater conditions and beneficial use of groundwater.



**Figure 8.1** **Groundwater Levels in Permian Coal Measures Adjacent to the Cut-off Wall**



**Figure 8.2** **Groundwater Levels in the Hunter River Alluvium Adjacent to the Cut-off Wall**

## 9.0 Numerical Model Predictions Review

The WMP requires a review of groundwater level predictions, which are calculated using a groundwater model to support current mining. To validate the model, the predictions are compared on an annual basis to the measured groundwater level data obtained from the monitoring program.

As summarised in SLR (2020), the groundwater assessment conducted by AGE (2013) concluded that approved operations at MAC would drawdown groundwater levels within 2 km of active mining operations. AGE (2013) also found that drawdown associated with operations at Bengalla Mine, directly to the north of MAC, would not interact with drawdown at MAC. There were no reported potential impacts on GDEs as a result of MAC (AGE, 2013).

A review of the groundwater model was conducted by AGE (2020) and found that improvements could be made. BHP engaged SLR (2020) to develop a numerical groundwater model for MAC that included calibration of measured groundwater levels to June 2020. The model was developed in MODFLOW-USG with steady state and transient calibration with a good fit to historical water level and mine inflow data. The updated model by SLR (2020) predicted negligible groundwater drawdown in the Saddlers Creek alluvium and localised drawdown of up to 5 m within the alluvium along Hunter River. There were no predicted impacts on landholder bores and negligible reductions in surface water flows/balance resulting from changes in groundwater baseflows to surface stream systems in Saddlers Creek. The updated model predictions by SLR (2020) were consistent or slightly lower than previously predicted impacts on groundwater by AGE (2013).

In 2023, the model was updated by SLR as part of Modification 2 (MOD2) and was calibrated using observation data to December 2022. MOD2 extended mining to June 2030 and included a reduction in the approved open cut mining rate from 32 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal to a maximum of 25 Mtpa ROM and an overall reduction (387 hectares) in approved disturbance (SLR, 2023). MOD2 included an update of the existing groundwater model, which included revision of the grid, updates to the layers, update of calibration data, and update of the model boundary. Maximum incremental drawdown was derived by comparing the Approved scenario and the MOD2 scenario. The maximum drawdown is a combination of the maximum drawdown at the end of calibration (January 2023) and six months after the end of mining (December 2030).

The updated model by SLR (2023) predicted:

- There is an insignificant additional loss of water from the alluvium as a result of MOD2, with no incremental drawdown in the alluvium predicted.
- Drawdown due to MOD2 is limited to a small area along the western boundary of the MAC pit with drawdown remaining within the site boundary.
- The extent of maximum predicted depressurisation within the Permian coal measures is limited to approximately 500 m to the west and 1 km to the southwest of MAC.
- Total groundwater inflows to the MAC open cut of approximately 475.9 ML/year on average (between 2023 and 2031) and ranging up to a peak in the order of 649.5 ML/year in 2024. The predicted inflow is largely consistent with the previously predicted average inflows by AGE (2013), which ranged between 712 ML/year to 912 ML/year from 2020 to 2026.
- All direct groundwater take by MOD2 is from the Sydney Basin North Coast Groundwater Source, up to 86.3 ML/year (average 16.3 ML/year).

- The predicted average take of water from the Hunter Regulated River Alluvial Water Source, Jerrys Water Source and the Muswellbrook Water Source is considered negligible.
- There are no water supply bores identified with incremental drawdown greater than 1 m predicted due to MOD2.

Further details on the updated groundwater model are included in the model report by SLR (2023).

Predicted maximum drawdown in unconsolidated sediments (alluvium and regolith) is shown in **Figure 9.1**. Predicted maximum drawdown in the Permian coal measures (Ramrod Creek Seam) is shown in **Figure 9.2**.

Measured groundwater level elevations for June 2025 were compared to groundwater levels predicted in the current SLR (2023) site model from July 2024 to June 2025. The difference between the model prediction and measured levels (residuals) are shown in **Figure 9.3**. Positive values indicate the model predicted higher groundwater levels (i.e., less drawdown) than is observed (measured). Negative values indicate the model predicted lower groundwater levels (i.e., more drawdown) than was observed (measured).

The groundwater model predictions in the Hunter River alluvium compare well to the measured levels as shown in **Figure 9.3**. Overall, the residual in the Hunter River alluvium is less than 5 m as shown in bores GW16, GW21, GW38A (IW4030), GW41A (IW4029), X1MB and X2MB.

Bore GW16 intersects alluvium and regolith on the north side of the alluvium barrier wall that separates MAC from the Hunter River alluvium. At the same location modelled groundwater levels in underlying coal seams show a fairly good fit with measured depressurisation within the F4 Fault (VWP2). However, the model underpredicts the degree of groundwater level drawdown in the Edinglassie Seam measured by VWP3 (Sensor 1 – Edinglassie Seam) by 15.93 m compared to observed data between July 2024 and June 2025.

It is noted that the model replicates a downward gradient in the coal measures, which aligns with current observed groundwater trends. However, groundwater levels prior to the influence from mining indicates more confined conditions in the deeper coal seams (Ramrod Creek Seam) that is not captured in the model. This may relate to parameterisation and the change in hydraulic properties with depth (depth dependence function).

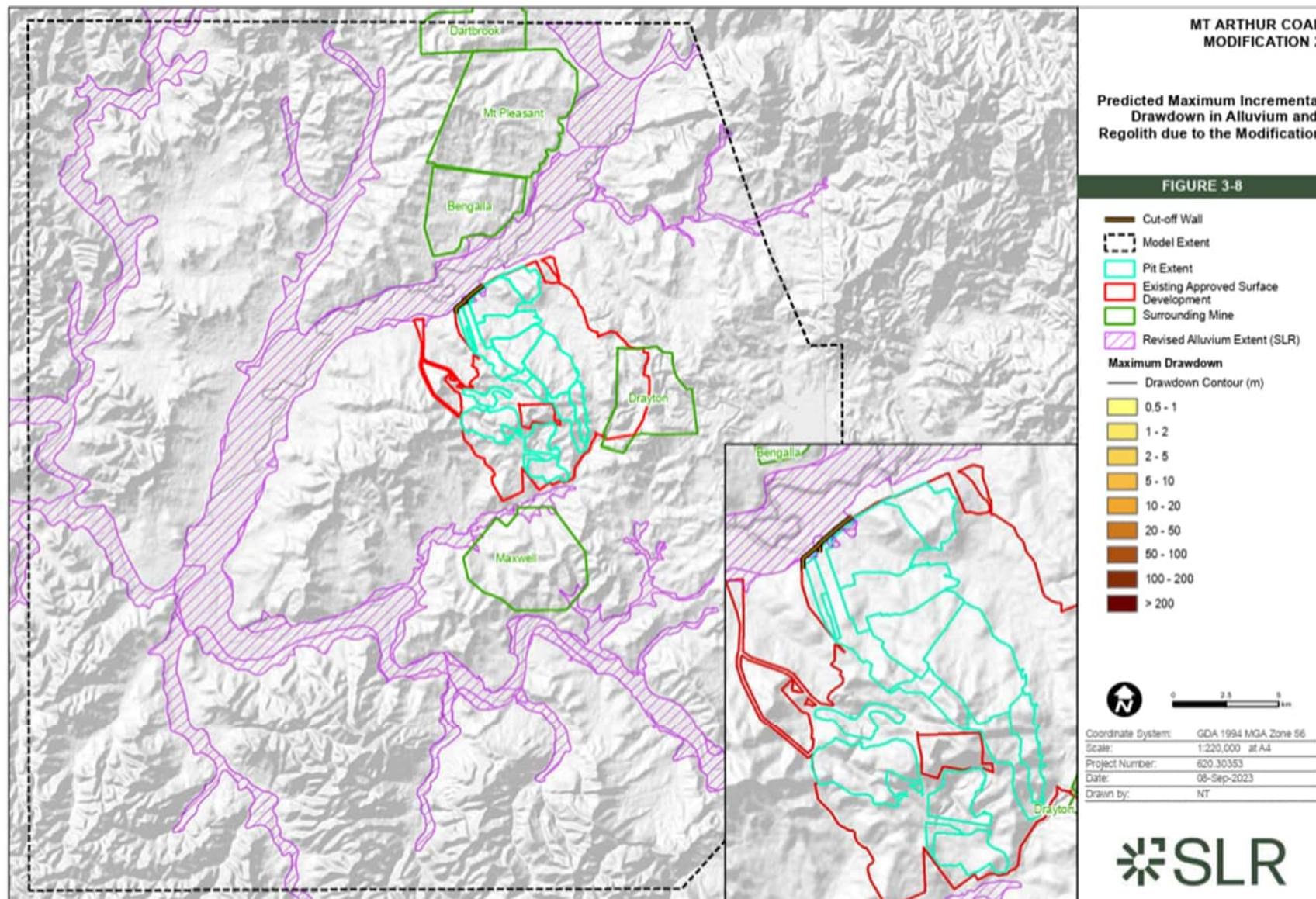
The model also shows a fairly good fit for the bores within the Saddlers Creek alluvium and Saddlers Creek shallow Permian (regolith) to the southwest of active mining. The modelled heads for bores GW45, GW46, GW47 and X14MB-1S are within 5 m of measured levels.

With the exception of VWPX1 and VWP3, the response to mining is well represented in the Permian coal measure monitoring sites located along the Hunter River and show a fairly good fit with modelled heads within 5 m of measured levels. The modelled heads in VWPX1 are greater than 5 m of the measured levels. The model under predicted drawdown in all layers in X1 (Interburden, Mt Arthur, Vaux, Bayswater/Wynn, Interburden above Bengalla, Edinglassie and Ramrod Creek seams) indicating the area was less saturated than predicted. The modelled heads in VWP3 (15.93 m residual) are greater than 5 m of the measured levels, under predicting drawdown in the Edinglassie Seam indicating the area was less saturated than predicted.

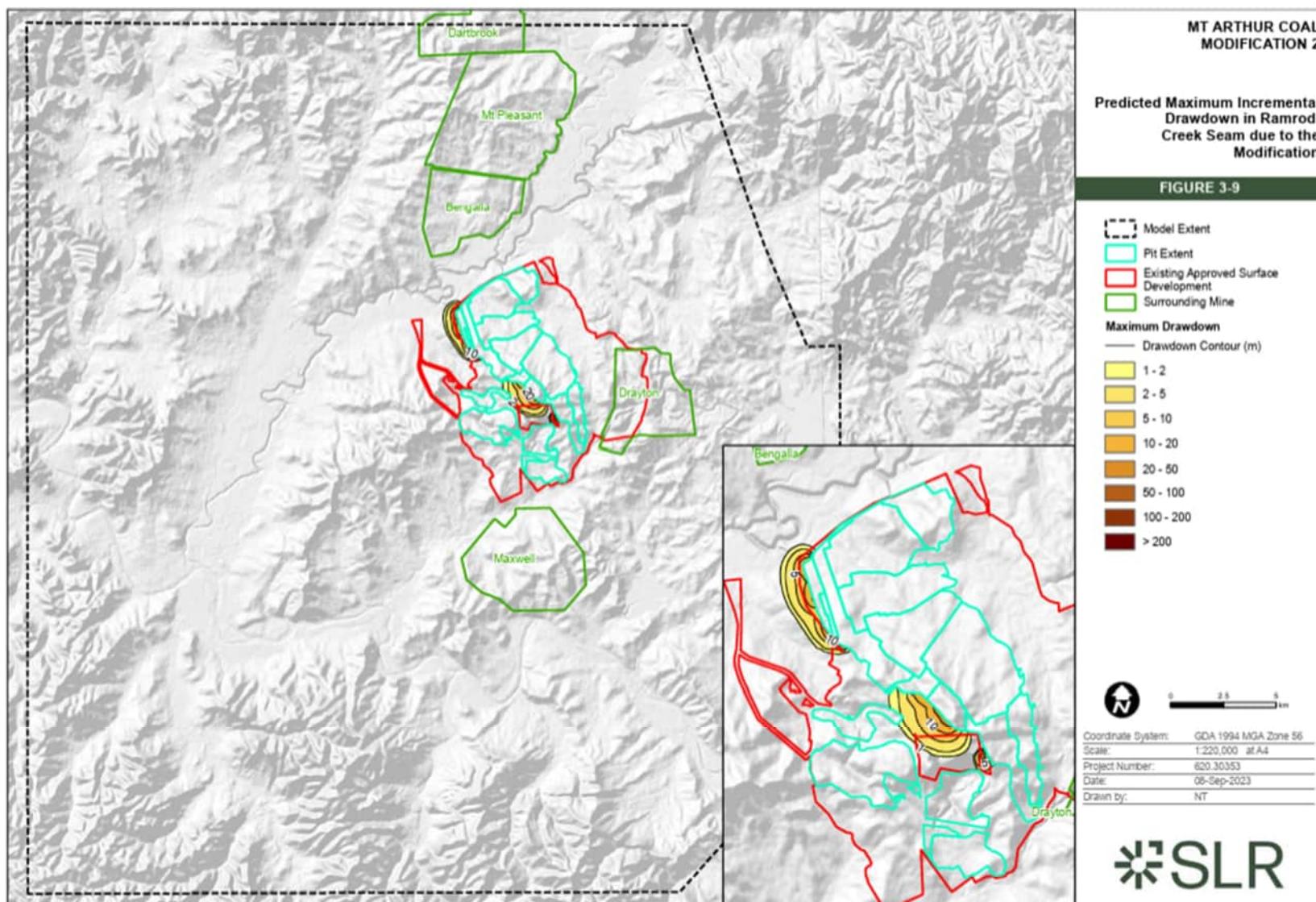
The model under predicted drawdown west of the open cut (Windmill Pit, Huon Pit and Calool Pit) in some layers at VWP05 (Baywater and Edderton seams), VWP06 (all seams) and OD1078 (IW4028). In contrast, the model over predicted drawdown in VWP07 (all seams). However, this response is variable and likely reflects the simplified vertical discretisation in the model layers compared to the VWP sensor intervals.

To the southwest of mining at GW2 and X14MB-2D near Saddlers Pit, where the model predicted levels more than 5 m below measured levels. This likely relates to influence of modelled in-pit water storage in the area, which may not accurately replicate actual dam water storage levels.

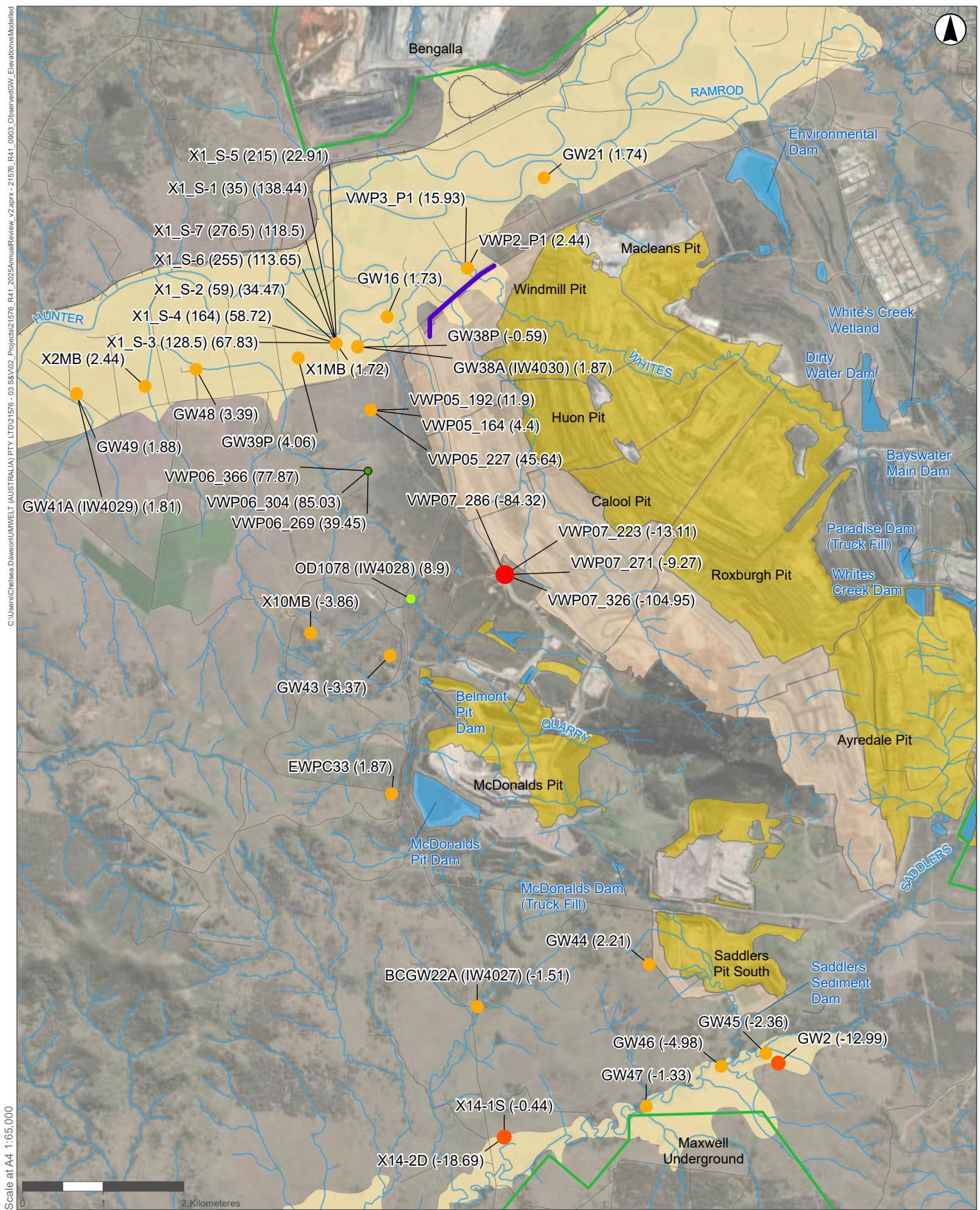
In 2025 Umwelt was engaged to complete the five yearly review of the numerical groundwater model review as required in Condition 33 (e) of the site WMP. This work is documented in the *Mt Arthur Coal Groundwater Model Review* (Umwelt, 2025c) and included an audit of the model setup and performance in representing observed trends and impacted due to Approved operations. The review identified that while the model typically reflects regional stratigraphic units well, there are discrepancies between modelled and observed results, particularly at locations of bores installed in 2024 and other bores which were not included in the model calibration. Umwelt recommended a number of model improvements including a review of model layering to reflect new data and updates to the Recharge (RCH), Evapotranspiration (EVT) and River (RIV) packages.



**Figure 9.1 Predicted Maximum Drawdown in Unconsolidated – Approved Operations MOD2 (Source: SLR, 2023)**



**Figure 9.2 Predicted Maximum Drawdown in Ramrod Creek Seam – Approved Operations MOD2 (Source: SLR, 2023)**



 **bluemwelt**

**FIGURE 9.3**  
Modelled Versus  
Measured Heads – June  
2025

## 10.0 Recommendations

The following improvements to the groundwater monitoring program are recommended:

- **X14MB-2D** - The pH level recorded in Q4 is the ninth consecutive reading above the upper trigger level and should be notified. Due to the condition of the bore, it is recommended that the inclusion of the bore in the monitoring network is reviewed in the next revision of the WMP.
- **X1\_S-2 (59)** – Water level readings have exceeded the trigger threshold and should be notified. Initial review indicates no adverse impacts beyond those predicted for the approved operations. The current trigger level is based on the predicted levels and trends from the SLR (2020) groundwater model. The model has been updated as part of MOD2. Revised model predictions can be used to revise trigger levels.
- **VWP107\_418** – Water level readings have exceeded the trigger threshold and DPHI were notified in March 2025. As the downhole sensor has likely failed, it is recommended that the sensor is removed from the monitoring program and from the WMP in the next revision.

The following improvements to the field monitoring and sampling programme by CBE are recommended:

- Recommend using a small diameter pump in bores where hand bailing is required due to the diameter of the bore (e.g. GW39P-25mm).
- Supply equipment calibration sheets for quality review.
- Set logger frequency to 6 am/12 pm/6 pm/12 am, on the hour, in all water level loggers to ensure consistency of logger data.
- Ensure samples are provided to the laboratory to enable holding times to be achieved for all parameters.

## 11.0 References

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Umwelt Social and Environmental Consultants Pty Ltd (Umwelt), 2025c. Mt Arthur Coal Groundwater Model Review – 2025. Prepared for BHP Billiton. 32396/R01, 19 June 2025.

## Appendix A

# Groundwater Monitoring Network and Trigger Levels

## 2023 WMP Compliance Monitoring Network

Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
									Installed									
<b>BCGW22A (IW4027)</b>	295314	6414210	MB	143.8	143.45	14.65	129.3–135.3	Saddlers Creek Shallow Permian (regolith)	Y	Monitoring of regolith in unnamed tributary of Saddlers Creek, between McDonalds Pit/Void and Saddlers Creek. To assess any impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	2	136.6	7.20	6.8-7.1	14800	21480
<b>EWPC33</b>	294253	6416847	MB	230.32	229.32	56.38	175.6–178.6	Blakefield Seam	Y	Monitoring of Blakefield Seam to the west of McDonalds Pit/Void (mined to Blakefield seam) and monitor the impact of mining activities adjacent to mining areas in the area west of MAC.	D/Q	Q/A	2	190.4	39.92	6.8-7.5	2973	3040
<b>GW2</b>	299045	6413511	MB	153.84	153.47	112.63	40.8–43.8	Woodlands Hill Seam	Y	Monitoring of Woodlands Hill Seam in the Saddlers Creek area. A paired bore with GW45 and GW46 to assess vertical hydraulic gradient between Permian Coal measures (Woodlands Hill seam) and alluvium, and the impact of mining activities adjacent to mining areas in the Saddlers Creek area.	D/Q	Q/A	2	140.0	13.84	7.0-8.5	4802	5810
<b>GW16</b>	294197	6422759	MB	131.71	131.57	12.76	120.5–126.5	Hunter River Alluvium	Y	Monitoring of Hunter River alluvium between the Hunter River and northwest end of MAC to identify any leakage from the Hunter River alluvium due to adjacent mining activities at MAC.	D/Q	Q/A	2	119.0	12.71	6.9-7.7	5228	9090
<b>GW21</b>	296141	6424483	MB	136.96	136.96	16.00	122.4–128.4	Hunter River Alluvium	Y	Monitoring of Hunter River alluvium between the Hunter River and north end of MAC to identify any leakage from the Hunter River alluvium due to adjacent mining activities at MAC.	D/Q	Q/A	2	118.3	18.66	6.9-7.7	5228	9090
<b>GW38A (IW4030)</b>	293831	6422393	MB	131.71	131.1	10.76	108.7–131.7	Hunter River Alluvium	Y	Monitoring of Hunter River alluvium close to the Hunter River and northwest end of main pit. A paired bore with GW38P to assess vertical hydraulic gradient between Permian Coal measures (Warkworth Seam) and alluvium, as well as any impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	2	119.7	12.01	6.9-7.7	5228	9090
<b>GW38P</b>	293832	6422384	MB	131.16	131.16	22.52	98.6–131.6	Warkworth Seam	Y	Monitoring of Warkworth Seam close to the Hunter River and northwest end of main pit. A paired bore with GW38A (IW4030) to assess vertical hydraulic gradient between Permian coal measures (Warkworth Seam) and alluvium, and the impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	1	117.3	13.86	7.2-8.1	6170	9170

Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor (mAHD)	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
									Installed									
GW39P-25mm	293094	6422251	MB	130.72	130.3	41.74	88.1–91.1	Warkworth Seam	Y	Monitoring of Hunter River alluvium close to the Hunter River and northwest end of the main pit. To assess any impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	-	1	117.2	13.52	-	-	-
GW41A (IW4029)	290348	6421810	MB	126.48	125.91	7.44	112.5–126.5	Hunter River alluvium	Y	Monitoring of Hunter River alluvium. A paired bore with GW49 to assess vertical hydraulic gradient between Permian coal measures (Arrowfield Seam) and alluvium, as well as any impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	1	116.9	9.58	6.9-7.7	5528	9090
GW43	294233	6418560	MB	197.33	196.83	68.50	133.8–139.8	Woodlands Hill Seam	Y	Monitoring of Woodlands Hill Seam, northwest of Belmont Pit/Void (mined to Glen Munro Seam). To assess any impact of mining activities adjacent to mining areas to the west of MAC.	D/Q	Q/A	1	166.8	30.53	7.0-8.5	4802	5810
GW44	297445	6414733	MB	211.03	210.5	132.47	80.5–86.5	Woodlands Hill Seam	Y	Monitoring of Woodlands Hill Seam to the west of Saddlers Central Pit and to monitor the impact of mining activities adjacent to mining areas in the Saddlers Creek area.	D/Q	-	1	65.6	145.43	-	-	-
GW45	298890	6413630	MB	152.41	151.89	14.49	138.9–141.9	Saddlers Creek alluvium	Y	Monitoring of Saddlers Creek alluvium in the Saddlers Creek area. A paired bore with GW2 and GW46 to assess vertical hydraulic gradient between Permian coal measures (Woodlands Hill Seam) and alluvium, and the impact of mining activities adjacent to mining areas in the Saddlers Creek area.	D/Q	Q/A	2	137.7	14.71	6.6-7.6	8783	11380
GW46	298337	6413469	MB	144.14	143.63	20.49	126.1–129.1	Saddlers Creek Shallow Permian (regolith)	Y	Monitoring of Saddlers Creek alluvium in the Saddlers Creek area. A paired bore with GW2 and GW45 to assess vertical hydraulic gradient between Permian coal measures (Woodlands Hill Seam) and alluvium, as well as any impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	2	132.5	11.64	6.7-7.1	14800	21480
GW47	297409	6412974	MB	137.00	136.51	17.51	120.5–123.5	Saddlers Creek alluvium	Y	Monitoring Saddlers Creek alluvium to the south of Saddlers Creek and monitor the impact of mining activities adjacent to mining areas in the Saddlers Creek area.	D/Q	Q/A	2	126.9	10.10	6.6-7.6	8783	11380
GW48	291830	6422111	MB	129.62	129.07	35.6	95.0–98.0	Bowfield Seam	Y	Monitoring of Bowfield Seam and any impact from mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	1	115.9	13.72	6.8-7.7	7891	8300

Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor (mAHD)	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
									Installed									
<b>GW49</b>	290346	6421798	MB	126.62	126.02	35.47	92.1–95.1	Arrowfield Seam	Y	Monitoring of Arrowfield Seam. A paired bore with GW41A (IW4029) to assess vertical hydraulic gradient between Permian coal measures (Arrowfield Seam) and alluvium, and the impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	Q/A	1	115.8	10.82	6.7-8.9	7831	8210
<b>OD1078 (IW4028)</b>	294491	6419265	MB	171.26	171.26	64.82	107.3–110.3	Arrowfield Seam	Y	Monitoring of Arrowfield Seam close to an old channel of Quarry Creek, to the northwest of Belmont Pit/Void (mined to Glen Munro Seam).	D/Q	-	2	132.9	38.36	-	-	-
<b>X1MB</b>	293566	6422429	MB	131.47	131.47	13.30	65.0–118.2	Hunter River Alluvium	Y	Monitoring of Hunter River alluvium between the Hunter River and north end of MAC to identify any leakage from the Hunter River alluvium due to adjacent mining activities at MAC.	D/Q	Q/A	2	118.7	12.77	6.9-7.7	5228	9090
<b>X2MB</b>	291196	6421899	MB	127.36	126.84	15.00	113.92–119.92	Hunter River Alluvium	Y	Monitoring of Hunter River alluvium between the Hunter River and north end of MAC to identify any leakage from the Hunter River alluvium due to adjacent mining activities at MAC.	D/Q	Q/A	2	117.9	9.46	6.9-7.7	5228	9090
<b>X10MB</b>	293247	6418841	MB	248.19	248.19	80.60	166.93–169.93	Glen Munro Seam	Y	Monitoring of Glen Munro Seam.	D/Q	Q/A	1	179.6	68.59	6.7-8.3	11200	14710
<b>X14MB-1S</b>	295649	6412596	MB	127.58	127.58	20.00	108.08–111.08	Saddlers Creek shallow Permian (regolith)	Y	Monitoring of regolith in unnamed tributary of Saddlers Creek, between McDonalds Pit/Void and Saddlers Creek. To assess any impact of mining activities adjacent to mining areas to the north of MAC. A paired bore with X14MB-2D to assess the hydraulic gradient between the regolith and Permian coal measures (Glen Munro Seam).	D/Q	Q/A	2	114.5	13.08	6.7-7.1	14800	21480
<b>X14MB-2D</b>	295648	6412592	MB	128.06	127.48	75.5	52.28–55.28	Glen Munro Seam	Y	Monitoring of Glen Munro Seam near an unnamed tributary of Saddlers Creek, between McDonalds Pit/Void and Saddlers Creek. To assess any impact of mining activities adjacent to mining areas to the north of MAC. A paired bore with X14MB-1S to assess the hydraulic gradient between the regolith and Permian coal measures (Glen Munro Seam).	D/Q	Q/A	2	116.1	11.96	6.7-8.3	11200	14710
<b>VWP2_P1</b>	295195	6423364	VWP	135.41	135.41	216.5	-81.09	F4 Fault	Y	Targeting F4 Fault zone to monitor any variations in water levels within the fault and coals seams either side of, and displaced by, fault movement. Also, to monitor the effectiveness of cut off wall	D/Q	Q/A	1	-64.4	-	-	-	-

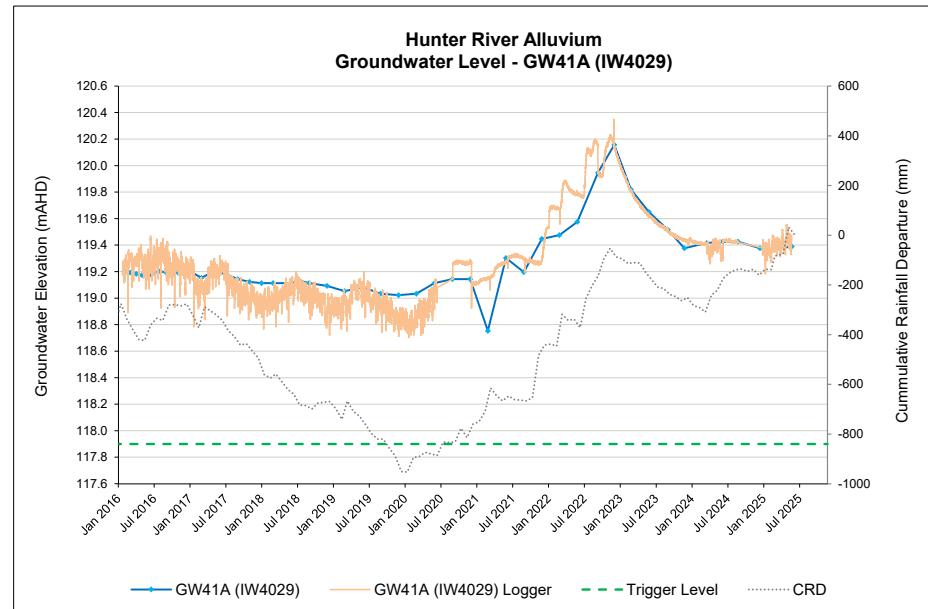
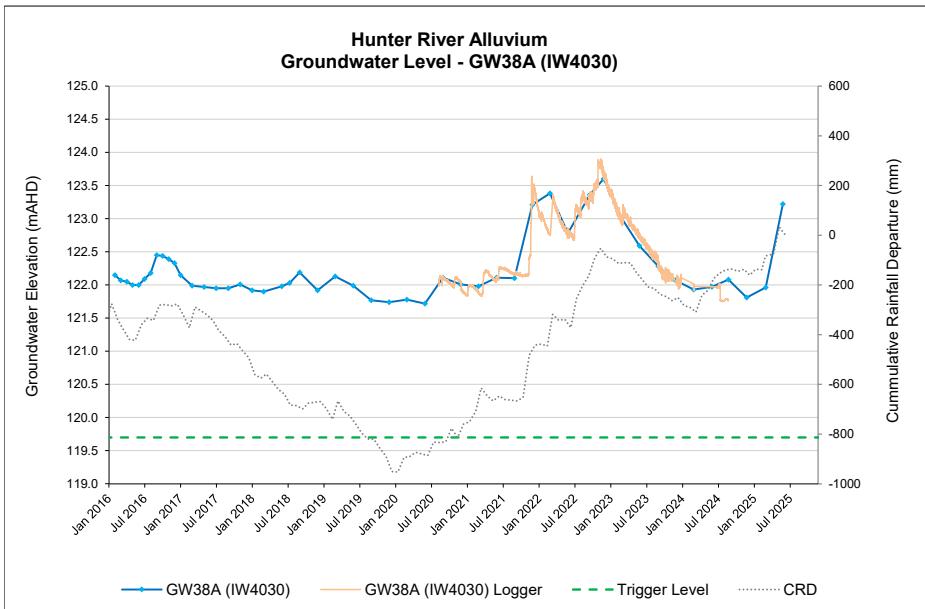
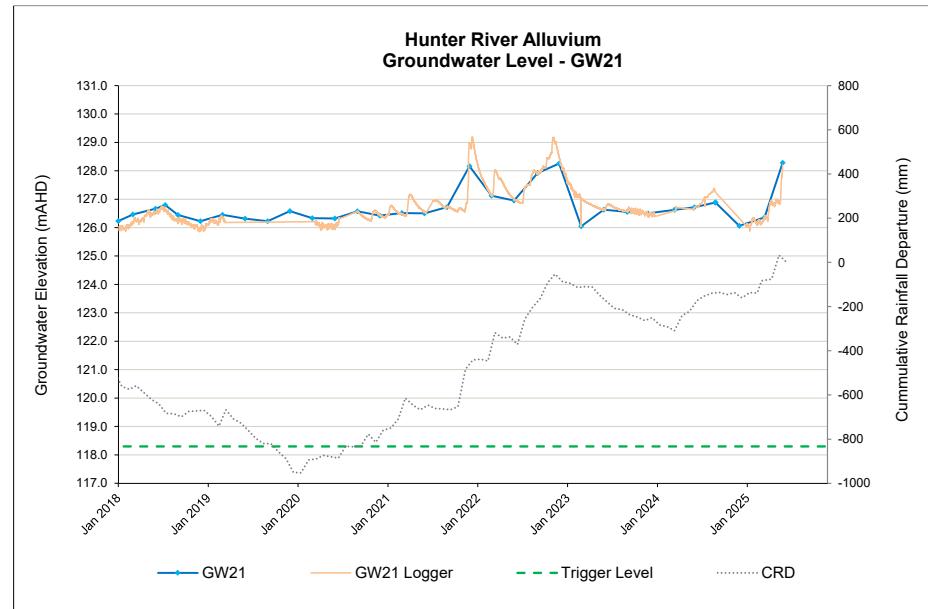
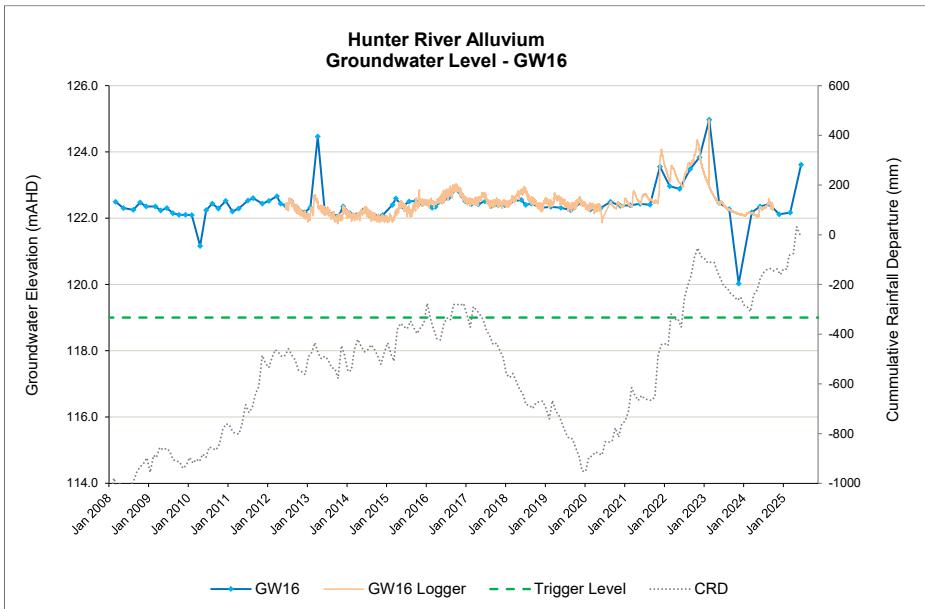
Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor (mAHD)	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
									Installed									
																located between the Hunter River and the northern end of MAC. A paired bore with GW42 and VWP3 to assess vertical hydraulic gradient between Permian Coal measures and alluvium, and the impact of mining activities adjacent to mining areas to the north of MAC.		
VWP3_P1	295166	6423349	VWP	135.38	135.38	227.0	-91.62	Edinglassie Seam	Y	Targeting Edinglassie Seam, above F4 fault on footwall, to monitor any variations in water levels within the fault and coals seams either side of, and displaced by, fault movement. Also, to monitor the effectiveness of cut off wall located between the Hunter River and the northern end of MAC. A paired bore with GW42 and VWP2 to assess vertical hydraulic gradient between Permian Coal measures and alluvium, and the impact of mining activities adjacent to mining areas to the north of MAC.	D/Q	-	1	-46.5	-	-	-	-
VWP05_164	293993	6421605	VWP	161.40	161.40	164.0	-2.60	Vaux Seam	Y	Monitoring any depressurisation in Vaux Seam due to mining activities at MAC.	D/Q	-	1	-46.2	-	-	-	
VWP05_192						192.0	-30.60	Bayswater Seam	Y	Monitoring any depressurisation in Bayswater Seam due to mining activities at MAC.	D/Q	-	1	-29.1	-	-	-	
VWP05_227						227.0	-65.60	Edderton Seam	Y	Monitoring any depressurisation in Edderton Seam due to mining activities at MAC.	D/Q	-	1	-74.1	-	-	-	
VWP06_269	293960	6420850	VWP	179.64	179.64	269.0	-89.36	Broonie Seam	Y	Monitoring any depressurisation in Broonie Seam due to mining activities at MAC.	D/Q	-	1	-15.3	-	-	-	
VWP06_304						304.0	-124.36	Edderton Seam	Y	Monitoring any depressurisation in Edderton Seam due to mining activities at MAC.	D/Q	-	1	-59.8	-	-	-	
VWP06_366						366.0	-186.36	Edinglassie Seam	Y	Monitoring any depressurisation in Edinglassie Seam due to mining activities at MAC.	D/Q	-	1	-4.5	-	-	-	
VWP07_223	295656	6419565	VWP	215.95	215.95	223.0	-7.05	Piercefield Seam	Y	Monitoring of Piercefield Seam to assess vertical hydraulic gradient between Permian Coal measures (Vaux, Bayswater, Edderton and Ramrod Creek seams), and the impact of mining activities adjacent to mining areas to the northwest of MAC.	D/Q	-	1	64.7	-	-	-	

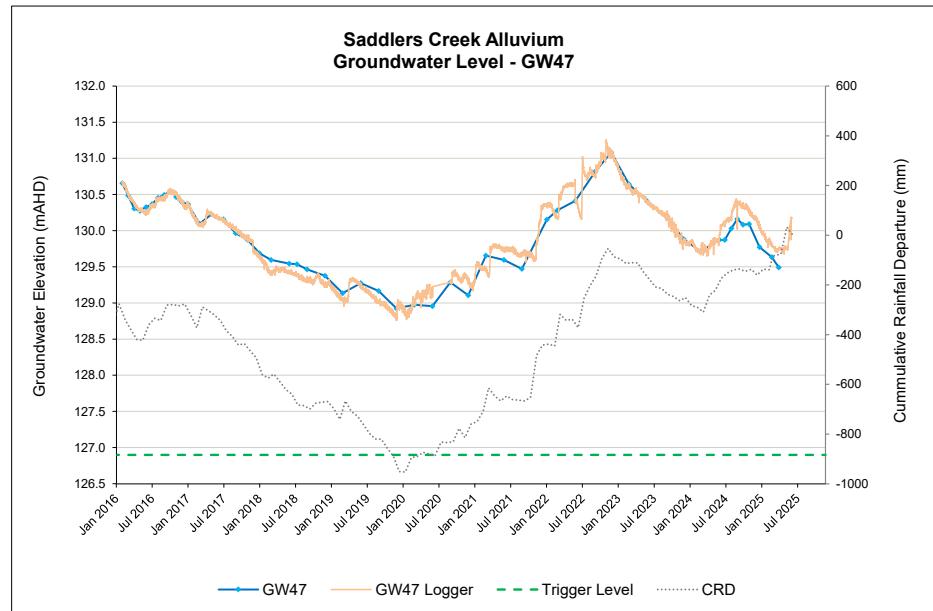
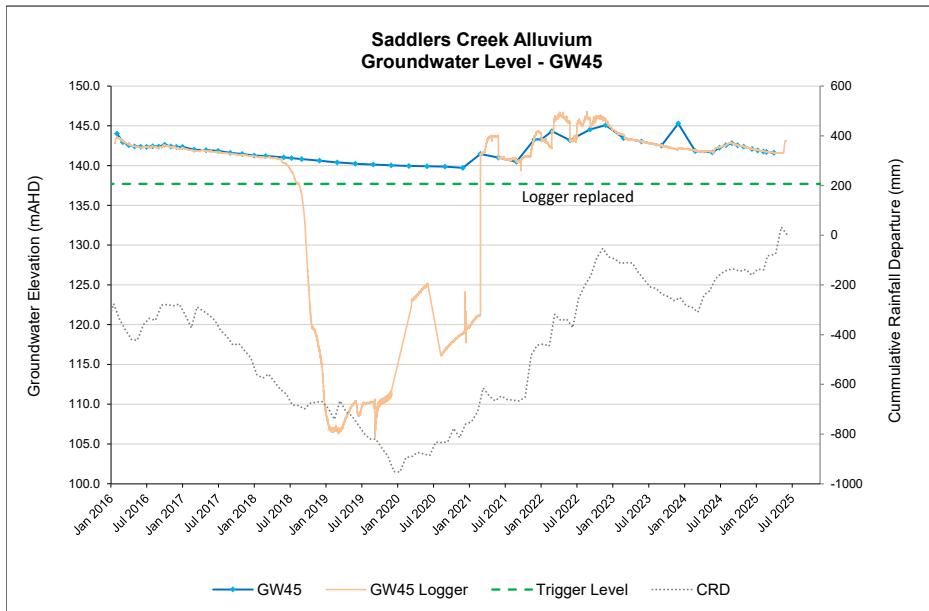
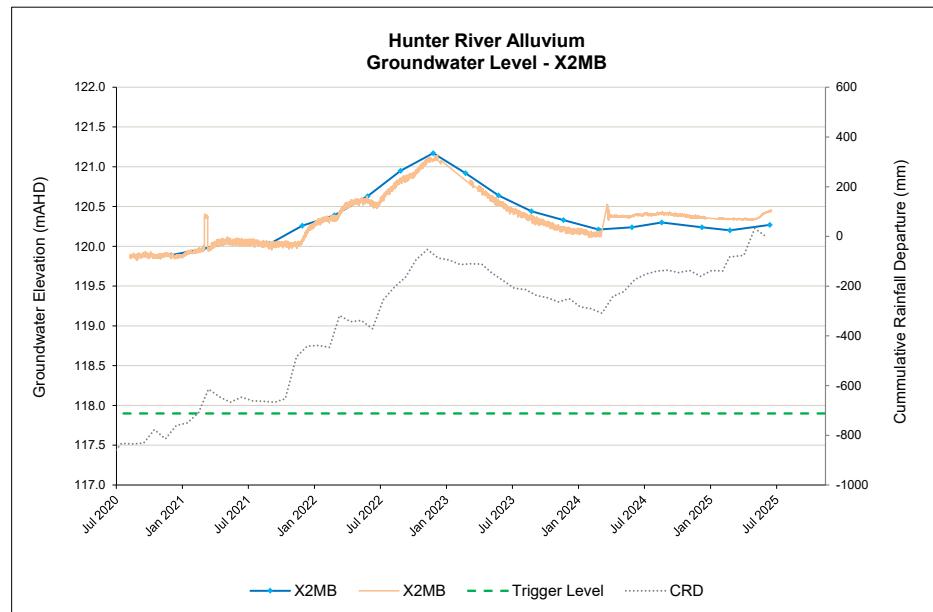
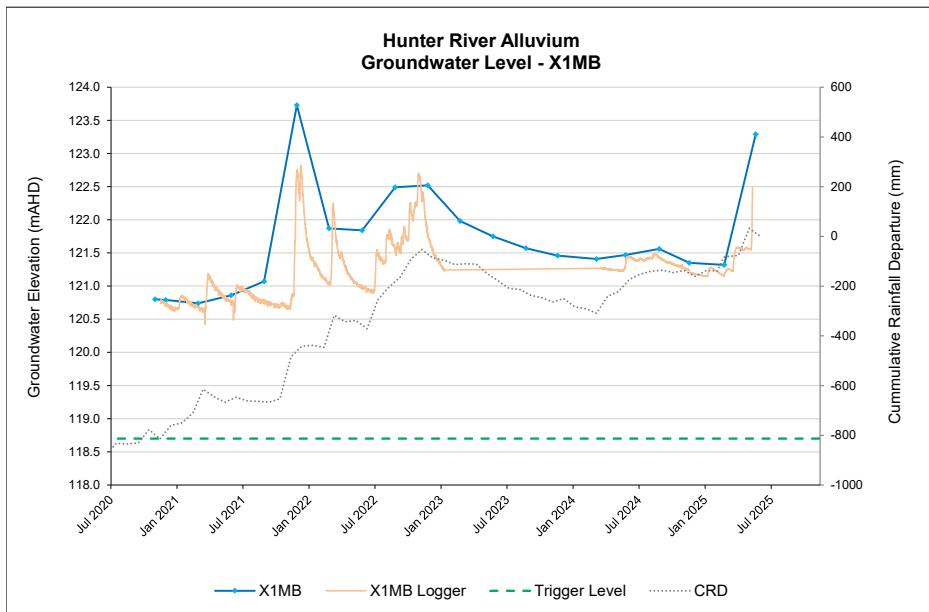
Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor (mAHD)	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
Installed																		
VWP07_271						271.0	-55.05	Vaux Seam	Y	Monitoring of Vaux Seam to assess vertical hydraulic gradient between Permian Coal measures (Piercefield, Bayswater, Edderton and Ramrod Creek seams), and the impact of mining activities adjacent to mining areas to the northwest of MAC.	D/Q	-	1	57.3	-	-	-	
VWP07_286						286.0	-70.5	Bayswater Seam	Y	Monitoring of Bayswater Seam to assess vertical hydraulic gradient between Permian Coal measures (Piercefield, Vaux, Edderton and Ramrod Creek seams), and the impact of mining activities adjacent to mining areas to the northwest of MAC.	D/Q	-	1	-17.1	-	-	-	
VWP07_326						326.0	-110.1	Edderton Seam	Y	Monitoring of Edderton Seam to assess vertical hydraulic gradient between Permian Coal measures (Piercefield, Vaux, Bayswater and Ramrod Creek seams), and the impact of mining activities adjacent to mining areas to the northwest of MAC.	D/Q	-	1	-91.3	-	-	-	
VWP07_418						418.0	-202.1	Ramrod Creek Seam	Y	Monitoring of Ramrod Creek Seam to assess vertical hydraulic gradient between Permian Coal measures (Piercefield, Vaux, Bayswater and Edderton seams), and the impact of mining activities adjacent to mining areas to the northwest of MAC.	D/Q	-	1	142.3	-	-	-	
X1_S-1 (35)	293564	6422437	VWP	131.44	131.44	35.0	96.44	Alluvium	Y	Monitoring any depressurisation in alluvium near the Hunter River due to mining activities at MAC.	D/Q	-	1	97.6	-	-	-	
X1_S-2 (59)						59.0	72.44	Mt Arthur Seam	Y	Monitoring any depressurisation in the Mt Arthur Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	91.0	-	-	-	
X1_S-3 (128.5)						128.5	2.94	Vaux Seam	Y	Monitoring any depressurisation in the Vaux Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	24.6	-	-	-	
X1_S-4 (164)						164.0	-32.56	Bayswater/Wynn Seam	Y	Monitoring any depressurisation in the Bayswater/Wynn Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	16.1	-	-	-	
X1_S-5 (215)						215.0	-83.56	Interburden above Bengalla Seam	Y	Monitoring any depressurisation in the Interburden above Bengalla Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	-31.7	-	-	-	

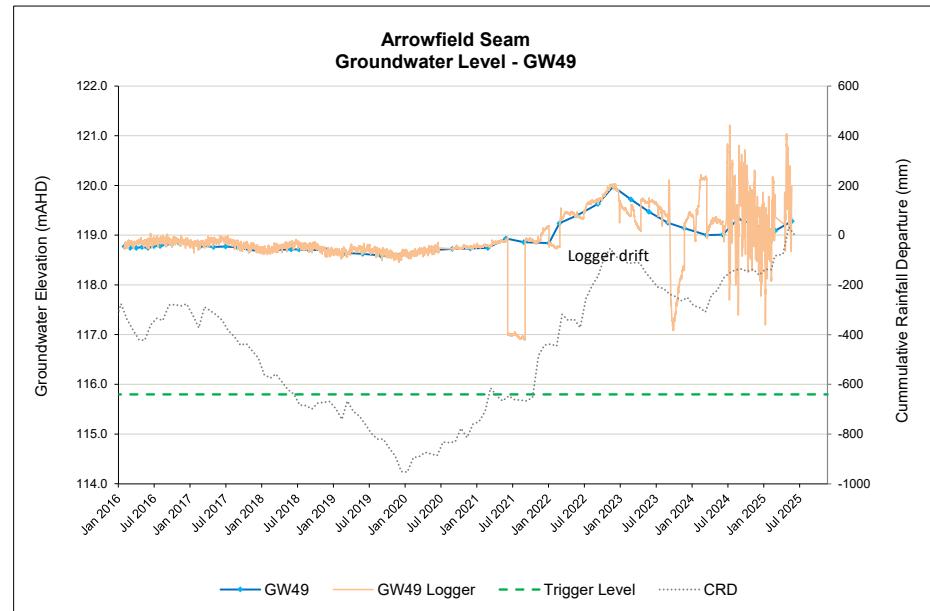
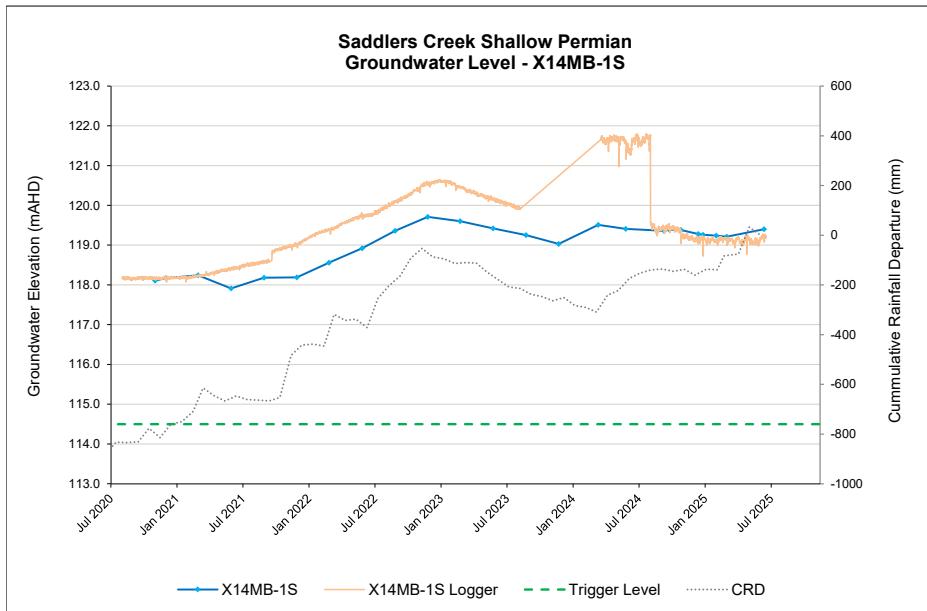
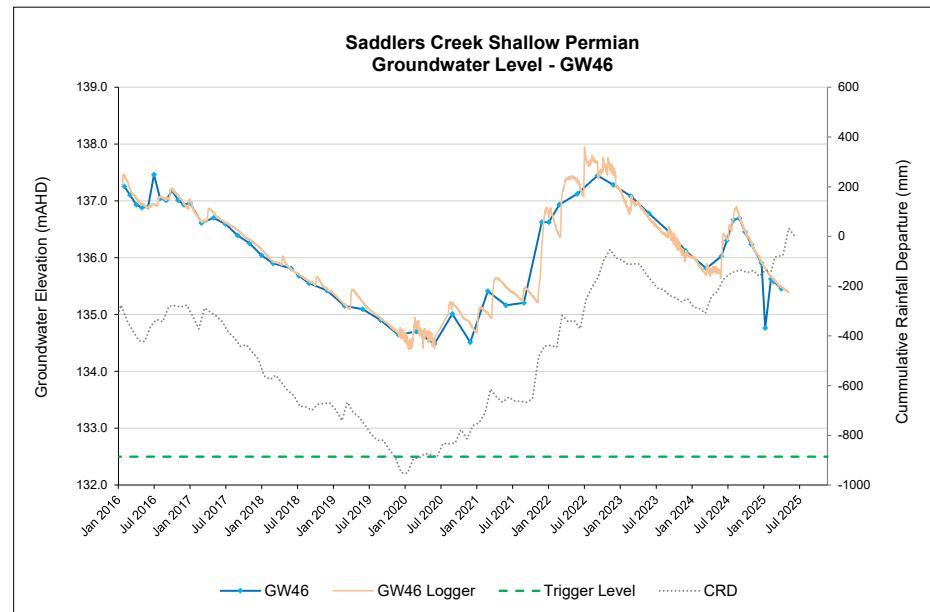
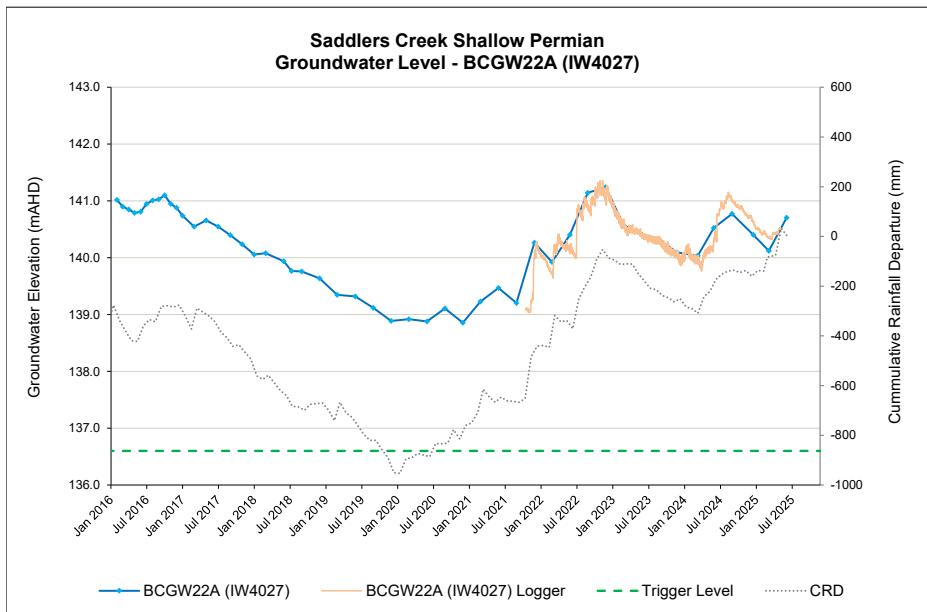
Bore ID	Easting (m)	Northing (m)	Type	TOC Elevation (mAHD)	Surface Elevation (mAHD)	Bore/Sensor Depth (mbgl)	Screen/Sensor (mAHD)	Stratigraphy	Logger/Sensor	Purpose of Bore	SWL Frequency	WQ Frequency	Water Level Trigger Derivation Method*	Water Level Trigger (mAHD)	Water Level Trigger (mbTOC)	pH Trigger Range	EC Trigger Stage 1 (µS/cm)	EC Trigger Stage 2 (µS/cm)
X1_S-6 (255)						255.0	-123.56	Edinglassie Seam	Y	Monitoring any depressurisation in the Edinglassie Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	-55.6	-	-	-	-
X1_S-7 (276.5)						276.5	-145.06	Ramrod Creek Seam	Y	Monitoring any depressurisation in the Ramrod Creek Seam near the Hunter River due to mining activities at MAC.	D/Q	-	1	-64.6	-	-	-	-

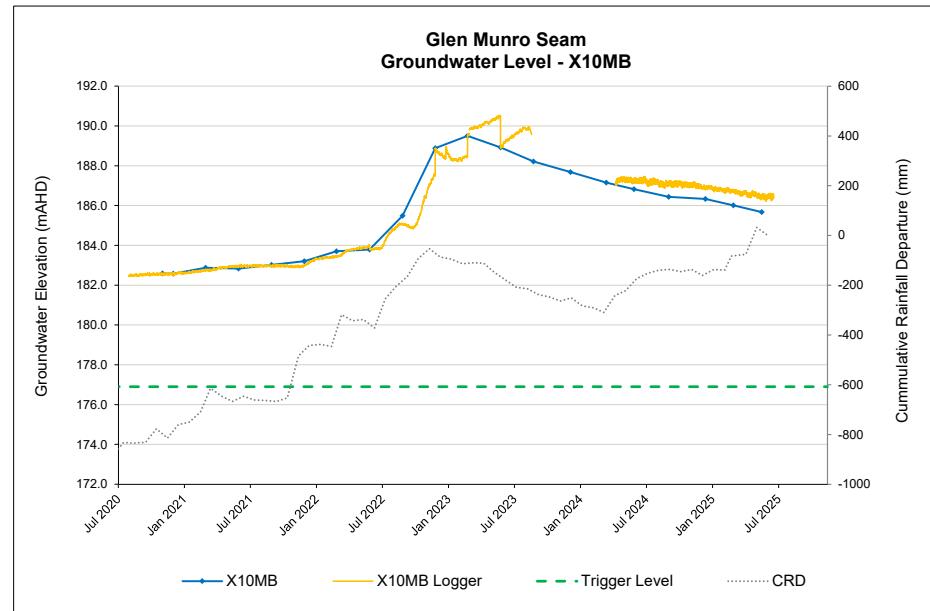
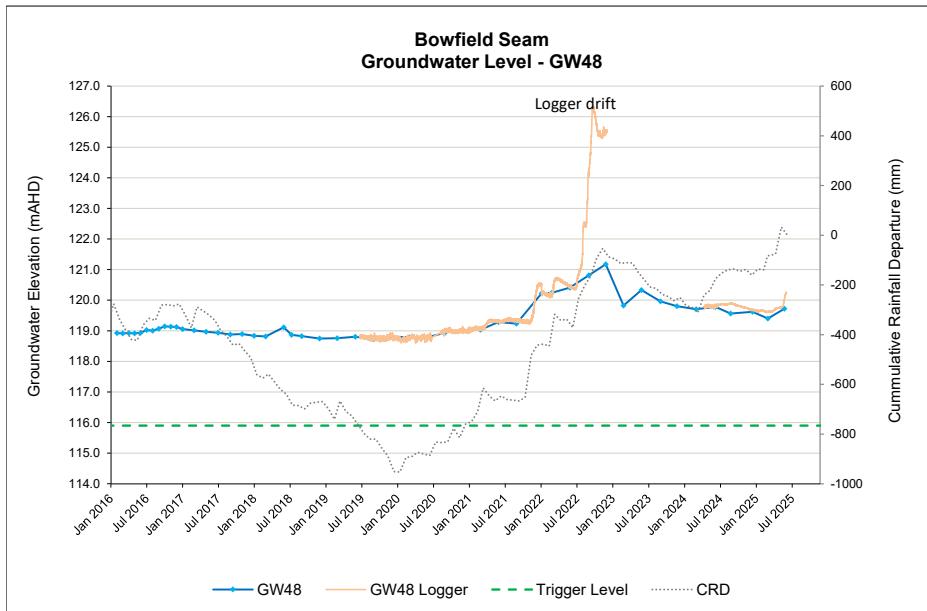
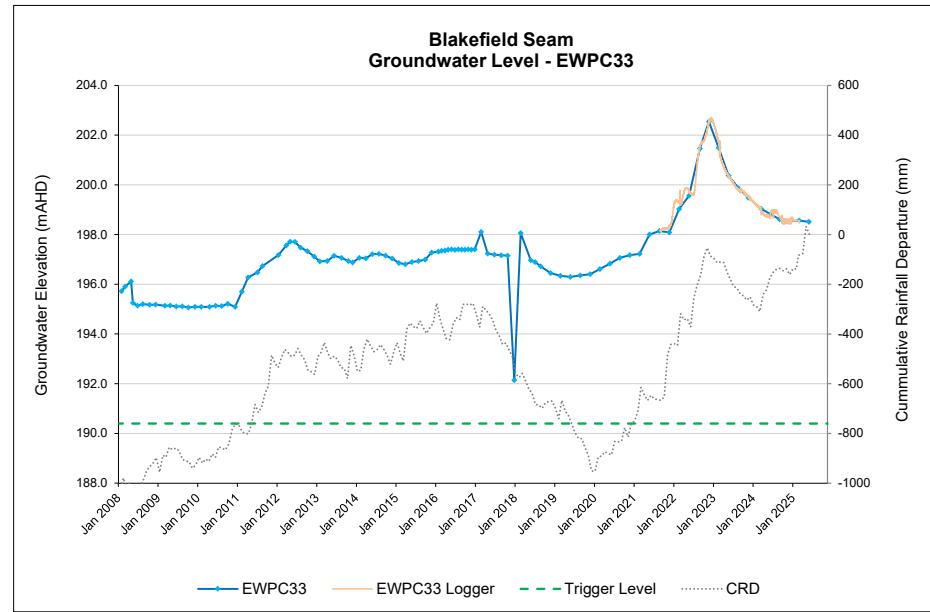
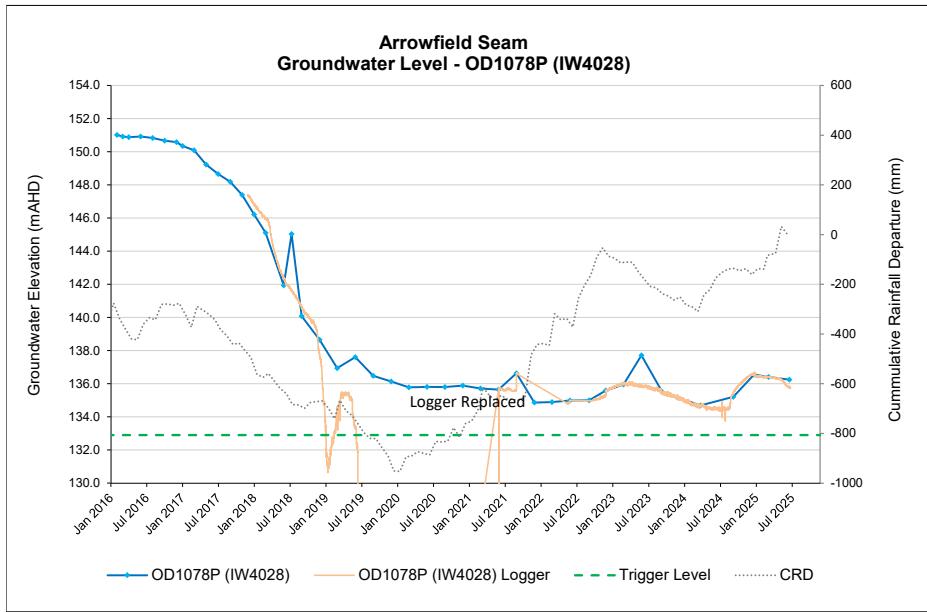
## Appendix B

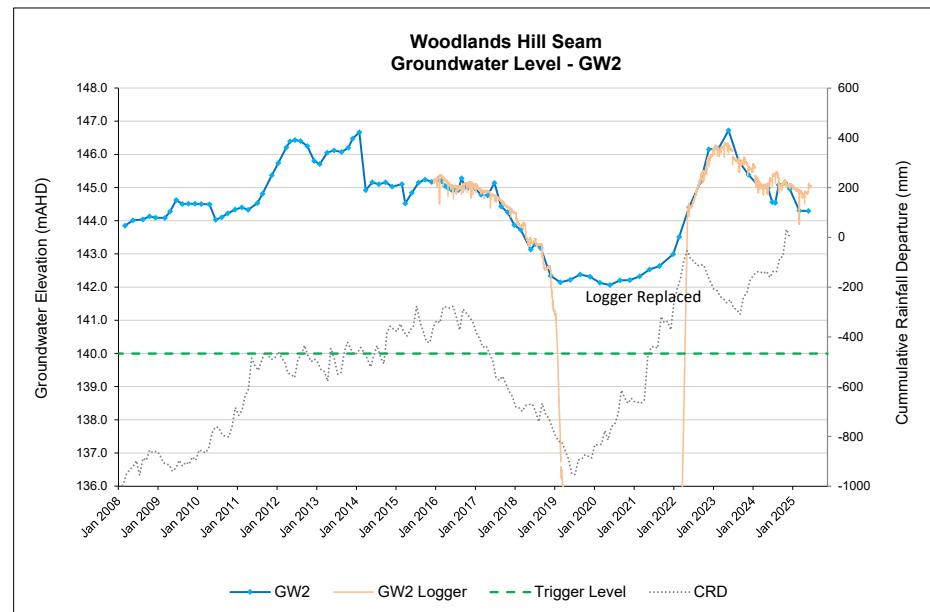
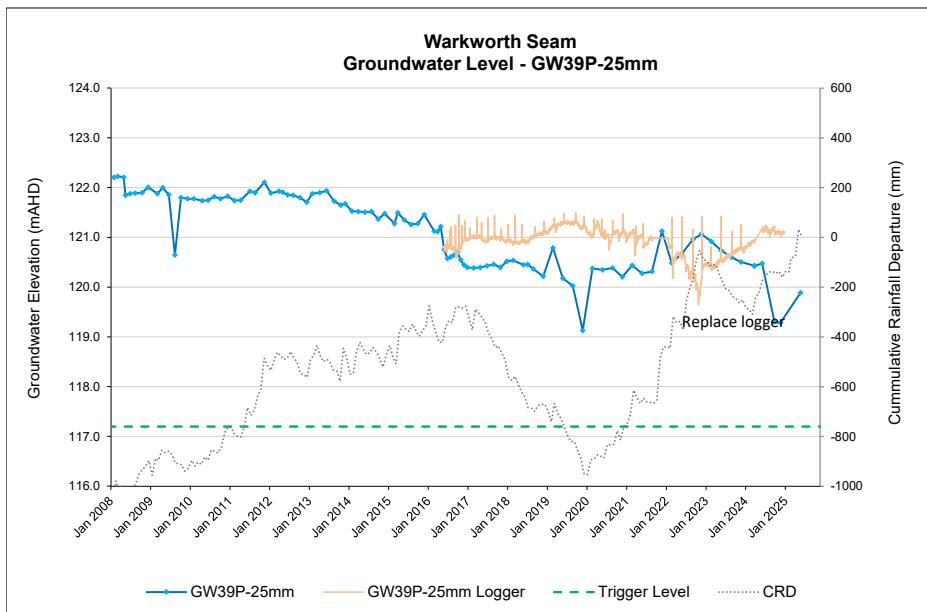
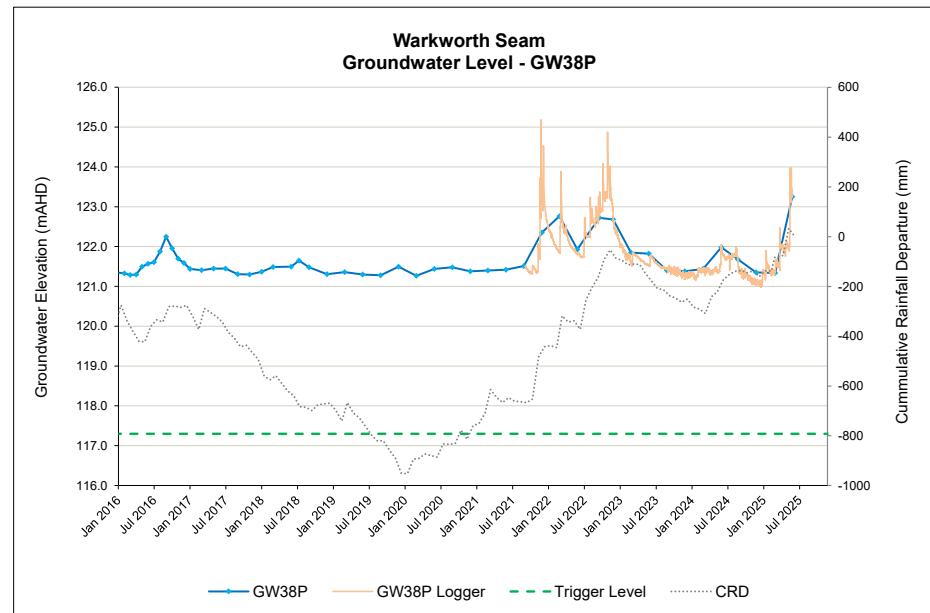
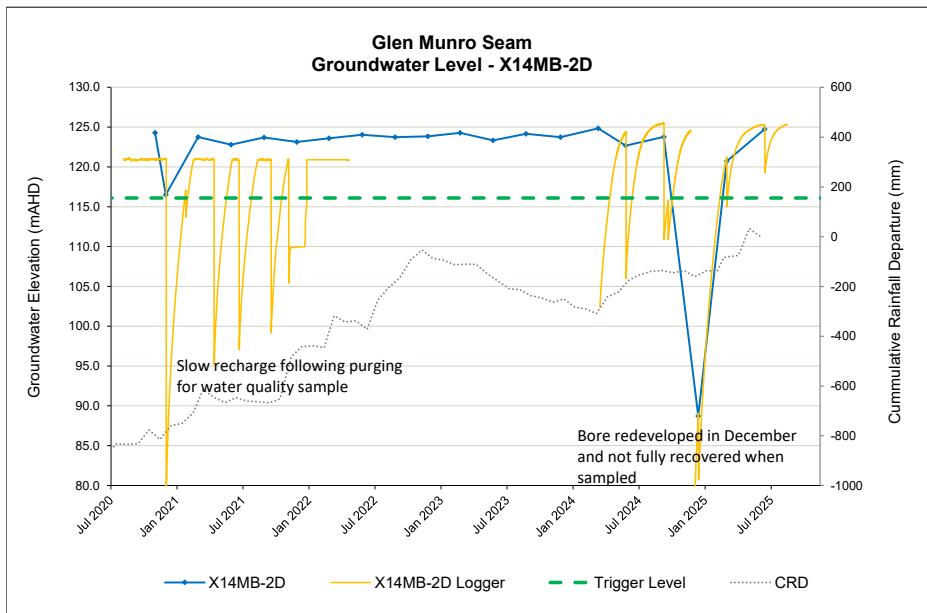
# Groundwater Level Graphs

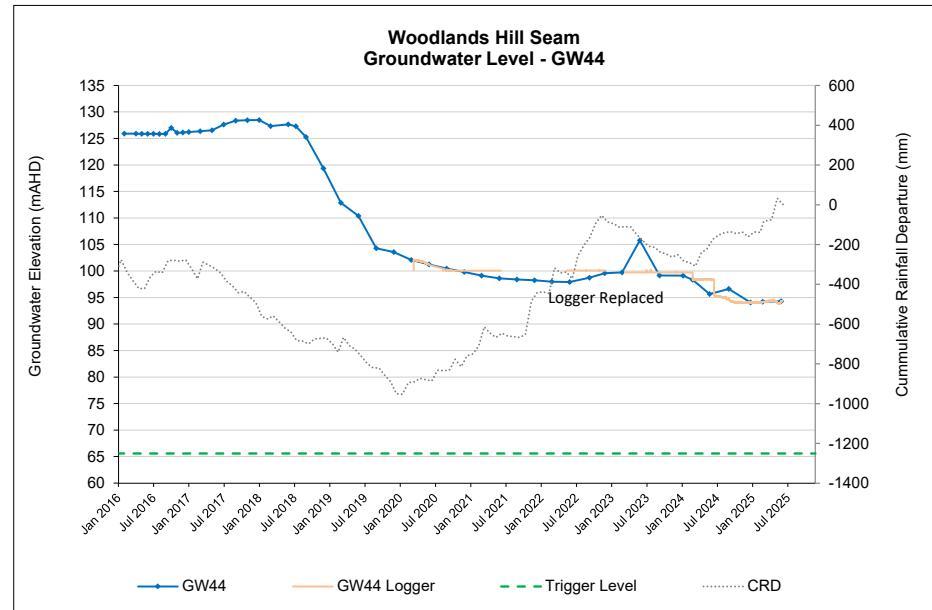
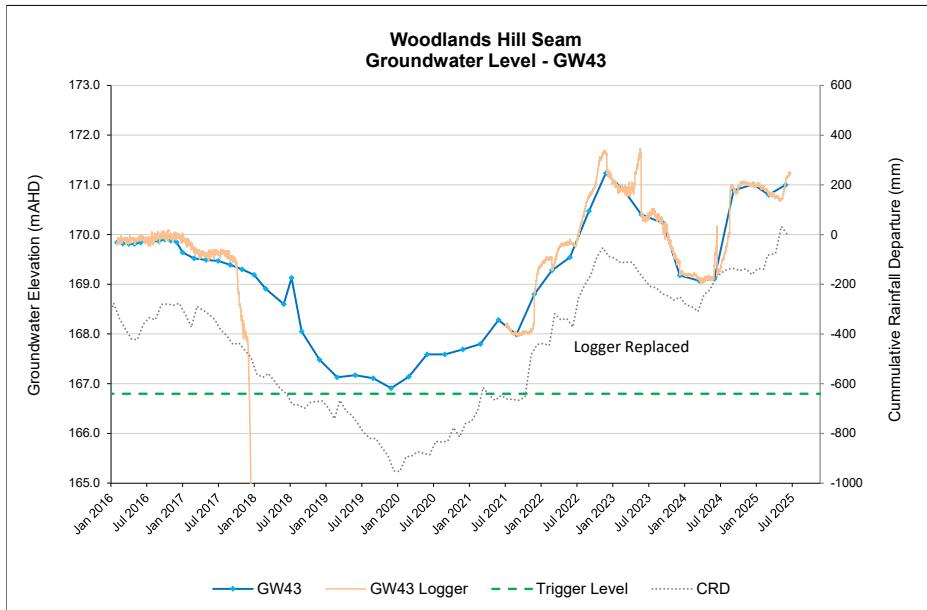


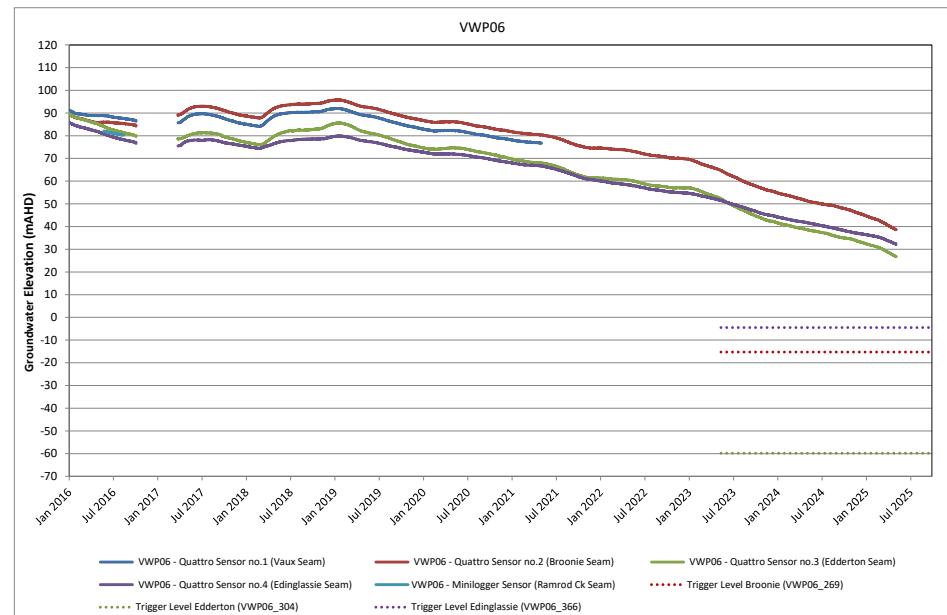
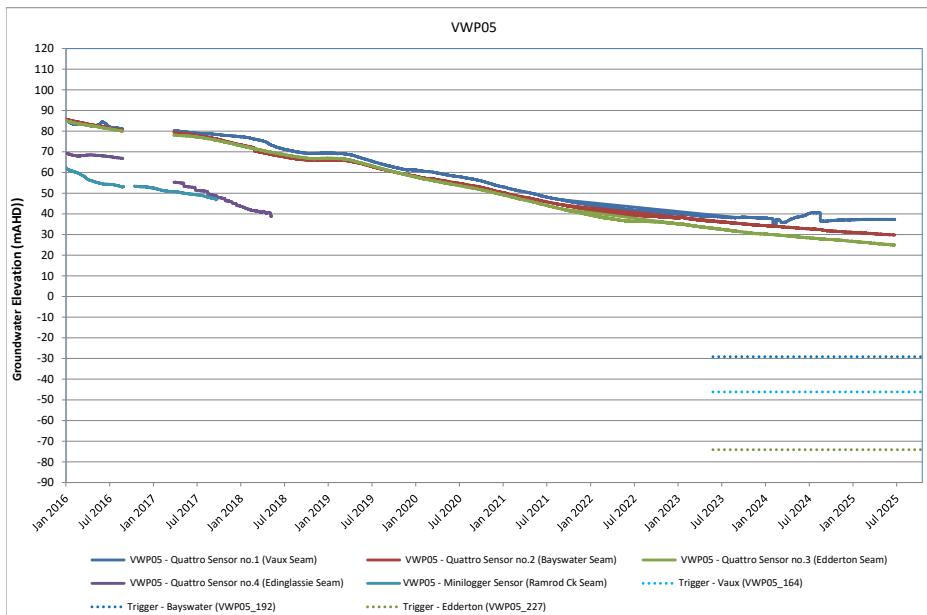
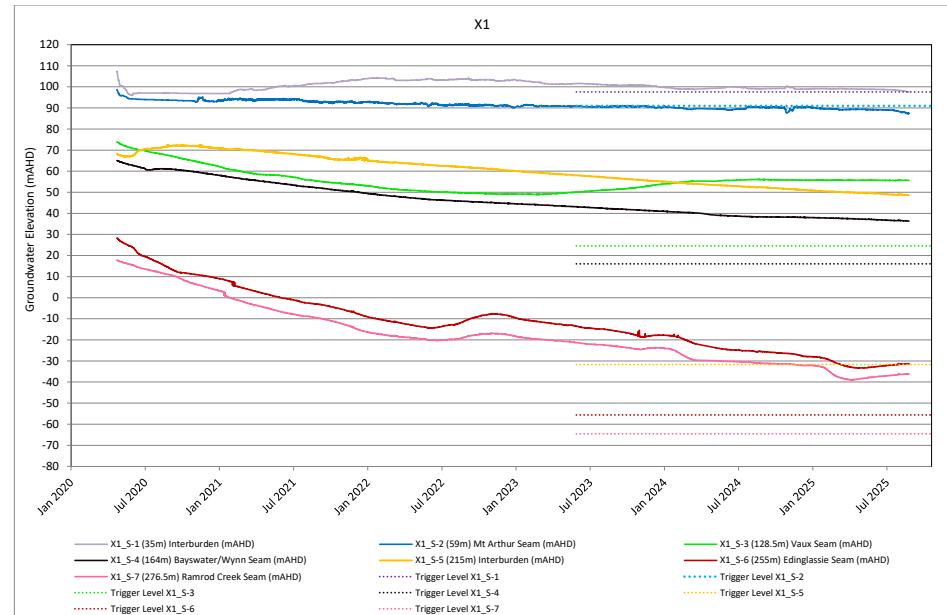
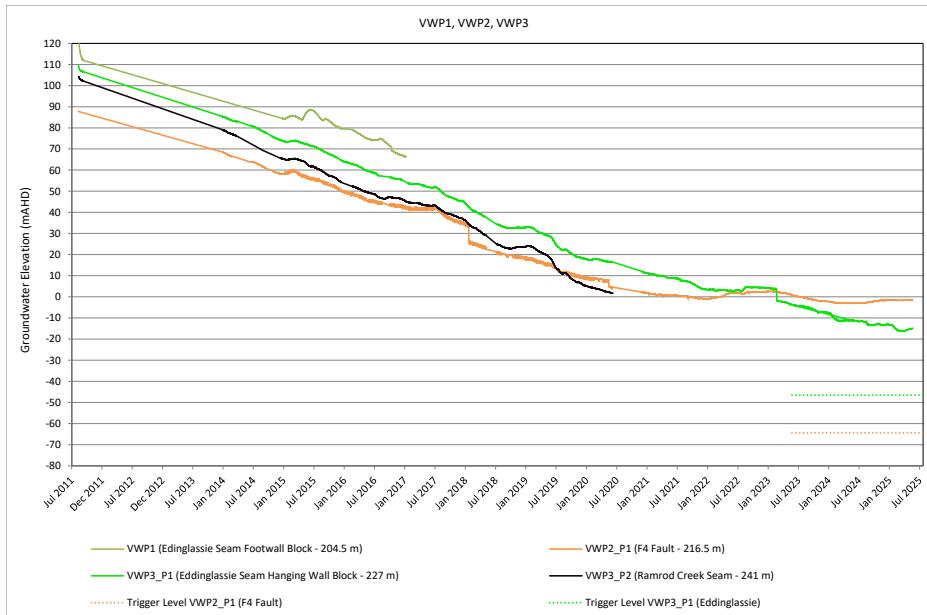


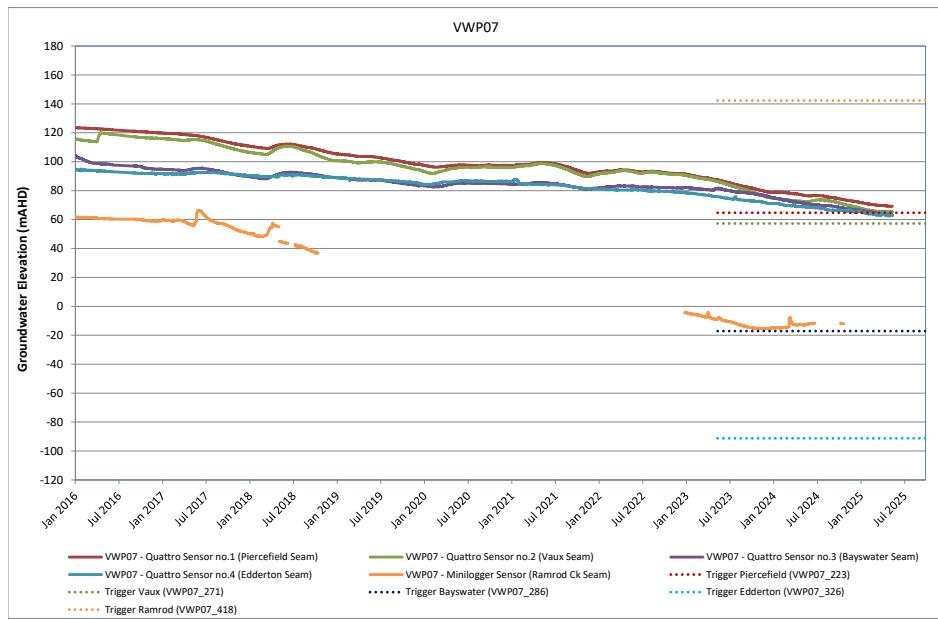












## Appendix C

# **Groundwater Level Monitoring Data**

Bore ID	Construction						Triggers	Modelled Levels	Measured Groundwater Levels								Drawdown				
	Easting (m)	Northing (m)	TOC Elevation (mAHD)	Bore/Sensor Depth (mbTOC)	Target Formation	Type			WMP Trigger (mAHD)	MAC Consolidation Project June 2025 Modelled Head (mAHD)	First Record			Jun-24		Jun-25		Head Difference Modelled vs Measured (m)	Measured Drawdown	First Record vs Measured (m)	Expected Drawdown
									WL Date	Depth to Water (mbTOC)	WL Elevation (mAHD)	Depth to Water (mbTOC)	WL Elevation (mAHD)	Depth to Water (mbTOC)	WL Elevation (mAHD)	June 2025 <sup>1</sup> (Residual)	First Record vs Modelled (m)	First Record vs Modelled (m)	First Record vs Modelled (m)	First Record vs Modelled (m)	
BCGW22A (IW4027)	295313.56	6414209.79	143.80	14.65	Saddlers Creek shallow Permian	MB	Compliance	136.60	139.19	Feb-16	3.02	141.00	3.28	140.52	3.10	140.70	-1.51	-0.30	-1.81		
EWPC33	294252.73	6416847.02	230.32	56.38	Blakefield Seam	MB	Compliance	190.40	200.39	Jan-08	34.30	196.00	31.50	198.82	31.81	198.51	1.87	2.51	4.39		
GW16	294197.28	6422759.28	131.71	12.76	Hunter River Alluvium	MB	Compliance	119.00	125.34	Feb-99	9.20	123.00	9.36	122.35	8.10	123.61	1.73	0.61	2.34		
GW2	299044.80	6413510.69	153.84	112.63	Woodlands Hill Seam	MB	Compliance	140.00	131.30	Jun-01	7.50	146.40	8.86	144.98	9.09	144.29	-12.99	-2.11	-15.10		
GW21	296141.36	64244482.98	135.96	16.00	Hunter River Alluvium	MB	Compliance	118.30	130.02	Feb-99	8.60	127.40	9.25	126.71	7.68	128.28	1.74	0.88	2.62		
GW38A (IW4030)	293831.31	6422393.09	131.71	10.76	Hunter River alluvium	MB	Compliance	119.70	125.09	Feb-16	9.60	122.15	9.74	121.97	8.49	123.22	1.87	1.07	2.94		
GW38P	293831.69	6422384.03	131.64	22.52	Warkworth Seam	MB	Compliance	117.30	122.66	Jan-08	9.50	122.00	9.66	121.98	8.39	123.25	-0.59	1.25	0.66		
GW39P	293094.40	6422250.97	130.72	41.74	Warkworth Seam	MB	Compliance	117.20	123.94	Jan-08	8.50	121.90	10.24	120.48	10.83	119.89	4.06	-2.02	2.04		
GW41A (IW4029)	290347.78	6421809.93	126.48	7.44	Hunter River alluvium	MB	Compliance	116.70	121.19	Feb-16	7.36	119.20	7.05	119.43	7.09	119.39	1.81	0.19	1.99		
GW43	294232.96	6418560.14	197.33	68.50	Woodlands Hill Seam	MB	Compliance	166.80	167.63	Feb-16	27.49	169.84	28.22	169.11	26.33	171.00	-3.37	1.16	-2.21		
GW44	297444.52	6414732.56	211.03	132.47	Woodlands Hill Seam	MB	Compliance	65.60	96.52	Feb-16	85.14	125.89	105.26	105.77	116.73	94.30	2.21	-31.59	-29.37		
GW45	298889.80	6413629.54	152.41	14.49	Saddlers Creek alluvium	MB	Compliance	137.70	140.74	Feb-16	8.43	144.03	10.74	141.67	10.79	143.10	-2.36	-0.93	-3.29		
GW46	298336.77	6413469.33	144.14	20.49	Saddlers Creek shallow Permian	MB	Compliance	132.50	130.39	Feb-16	6.91	137.25	8.12	136.02	8.69	135.37	-4.98	-1.88	-6.86		
GW47	297408.85	6412974.07	137.00	17.51	Saddlers Creek alluvium	MB	Compliance	126.90	128.52	Feb-16	6.41	130.66	7.13	129.87	7.51	129.85	-1.33	-0.81	-2.14		
GW48	291829.60	6422110.67	129.62	35.60	Bowfield Seam	MB	Compliance	115.90	123.11	Feb-16	10.77	118.93	9.84	119.78	9.90	119.72	3.39	0.79	4.18		
GW49	290345.74	6421797.57	126.55	35.47	Arrowfield Seam	MB	Compliance	115.80	121.16	Feb-16	7.78	118.77	7.54	119.01	7.27	119.28	1.88	0.51	2.39		
OD1078 (IW4028)	294490.61	6419265.17	171.26	64.82	Arrowfield Seam	MB	Compliance	132.90	145.13	Jan-08	7.30	164.10	36.57	134.69	35.02	136.24	8.90	-27.86	-18.97		
VWP05_164	293993.30	6421605.10	161.40	164.00	Vaux Seam	VWP	Compliance	-46.20	41.67	Dec-15	89.55	68.95	-	38.91	-	37.27	4.40	-31.68	-27.28		
VWP05_192				192.00	Bayswater Seam	VWP	Compliance	-29.10	41.67		116.78	86.13	-	32.91	-	29.77	11.90	-56.36	-44.46		
VWP05_227				227.00	Edderton Seam	VWP	Compliance	-74.10	70.53		151.13	85.47	-	28.57	-	24.89	45.64	-60.58	-14.94		
VWP06_269	293960.30	6420850.40	179.64	269.00	Broonie Seam	VWP	Compliance	-15.30	78.08	Dec-15	179.49	89.99	-	50.76	-	38.63	39.45	-51.36	-11.91		
VWP06_304				304.00	Edderton Seam	VWP	Compliance	-59.80	111.82		214.63	90.08	-	38.12	-	26.78	85.03	-63.30	21.74		
VWP06_366				366.00	Edinglassie Seam	VWP	Compliance	-4.50	110.15		272.85	86.33	-	41.26	-	32.28	77.87	-54.05	23.82		
VWP07_223	295656.10	6419564.90	215.95	223.00	Piercefield Seam	VWP	Compliance	64.70	56.18	Dec-15	130.65	123.55	-	76.50	-	69.29	-13.11	-54.26	-67.37		
VWP07_271				271.00	Vaux Seam	VWP	Compliance	57.30	56.18		171.33	116.15	-	72.40	-	65.45	-9.27	-50.70	-59.97		
VWP07_286				286.00	Bayswater Seam	VWP	Compliance	-17.10	-21.22		175.42	104.89	-	71.00	-	63.10	-84.32	-41.79	-126.11		
VWP07_326				326.00	Edderton Seam	VWP	Compliance	-91.30	-42.23		204.93	94.78	-	68.60	-	62.72	-104.95	-32.06	-137.01		
VWP07_418				418.00	Ramrod Creek Seam	VWP	Compliance	142.30	138.09		264.50	154.32	-	79.71	-	-	-	-	-16.23		
VWP2_P1	295194.77	6423364.09	135.41	216.50	F4 Fault	VWP	Compliance	-64.40	1.03	Aug-11	47.70	87.70	-	-2.91	-	-1.41	2.44	-89.11	-86.67		
VWP3_P1	295165.89	6423349.36	135.38	227.00	Edinglassie Seam	VWP	Compliance	-46.50	1.03	Sep-11	29.80	105.60	-	-11.24	-	-14.90	15.93	-120.50	-104.57		
X1MB	293566.00	6422429.00	131.47	13.30	Hunter River Alluvium	MB	Compliance	118.70	125.01	Nov-20	10.67	120.80	10.66	121.47	8.84	123.29	1.72	2.49	4.21		
X1_S-1 (35)	293564.00	6422437.00	131.44	35.00	Interburden	VWP	Compliance	97.60	123.54	May-20	-	100.64	-	99.82	-	98.76	24.78	-1.88	22.90		
X1_S-2 (59)				59.00	Mt Arthur Seam	VWP	Compliance	91.00	123.54		-	95.84	-	89.39	-	89.07	34.47	-6.78	27.70		
X1_S-3 (128.5)				128.50	Vaux Seam	VWP	Compliance	24.60	123.54		-	72.94	-	55.76	-	55.71	67.83	-17.23	50.60		
X1_S-4 (164)				164.00	Bayswater/Wynn Seam	VWP	Compliance	16.10	95.60		-	64.44	-	38.67	-	38.67	58.72	-27.57	31.16		
X1_S-5 (215)				215.00	Interburden above Bengalla Seam	VWP	Compliance	-31.70	72.14		-	67.54	-	52.84	-	49.23	22.91	-18.31	4.60		
X1_S-6 (255)				255.00	Edinglassie Seam	VWP	Compliance	-55.60	81.38		-	26.74	-	-24.93	-	-32.28	113.65	-59.02	54.64		
X1_S-7 (276.5)				276.50	Ramrod Creek Seam	VWP	Compliance	-64.40	81.38		-	17.04	-	-30.38	-	-37.13	118.50	-54.17	64.34		
X2MB	291196.00	6421899.00	127.36	15.00	Hunter River Alluvium	MB	Compliance	117.90	122.71	Nov-20	7.49	119.87	7.12	120.24	7.09	120.27	2.44	0.40	2.84		
X10MB	293247.00	6418841.00	248.19	80.60	Glen Munro Seam	MB	Compliance	179.60	181.81	Nov-20	65.60	182.59	61.37	186.82	62.52	185.67	-3.86	3.08	-0.78		
X14MB-1S	295649.00	6412596.00	127.58	20.00	Saddlers Creek shallow Permian	MB	Compliance	114.50	118.96	Nov-20	3.30	124.28	8.82	119.41	9.06	119.40	-0.44	-4.88	-5.32		
X14MB-2D	295648.00	6412592.00	128.06	75.50	Glen Munro Seam	MB	Compliance	116.10	106.06	Nov-20	9.95	118.11	5.38	122.68	3.31	124.75	-18.69	6.64	-12.05		

Note:

TOC Elev – Top of Casing elevation

mAHD metres above Australian Height Datum

WL – water level

mBTOC – metres below top of casing

1 Negative values indicate the measured piezometric level is higher than modelled – this means the model is over-predicting effects at this site for FY24

2 Negative values indicate drawdown.

## Appendix D

# Groundwater Quality Data

## Water Quality Data

	EWPC33							GW16							GW2							
	2024 / 2025				All Data			2024 / 2025				All Data			2024 / 2025				All Data			
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	
Field pH	7.1	6.9	7.0	7.0	6.5	8.0	7.1	7.4	7.3	7.3	7.3	6.4	8.0	7.3	7.5	7.6	7.7	7.6	6.5	8.5	7.7	
Field EC (µS/cm)	2548	2584	2591	2643	290	6280	2306	3080	3050	3140	3057	2139	4690	3315	3600	4020	3590	3700	3030	5030	3845	
TDS (mg/L)	1460	1740	1670	1760	149	2060	1292	1780	1980	1930	1950	1350	2860	1991	2050	2450	2320	2320	1670	3150	2237	
TSS (mg/L)	<5	<5	<5	<5	5	1570	51	<5	<5	<5	<5	5	492	59	6	<5	6	<5	<5	432	23	
Dissolved Fe (mg/L)	0.1	0.1	0.1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<1	<0.05	0.2	0.1	
Sulphate (mg/L)	28.0	238.0	115.0	1080.0	12.0	238.0	29.7	251.0	256.0	270.0	486.0	191.0	313.0	247.2	119.0	104.0	133.0	1150.0	62.0	152.0	116.5	
Chloride (mg/L)	289.0	240.0	229.0	21.0	161.0	316.0	210.2	640.0	628.0	638.0	258.0	458.0	869.0	655.4	555.0	692.0	527.0	96.0	442.0	846.0	628.8	
Calcium (mg/L)	20.0	24.0	23.0	220.0	13.0	24.0	18.4	124.0	129.0	125.0	656.0	76.0	160.0	116.7	16.0	22.0	18.0	529.0	6.0	22.0	15.0	
Magnesium (mg/L)	98.0	102.0	106.0	20.0	<1	106.0	84.7	108.0	104.0	105.0	118.0	<1	130.0	102.9	14.0	14.0	13.0	16.0	9.0	17.0	12.5	
Potassium (mg/L)	15.0	15.0	17.0	93.0	12.0	18.0	14.4	2.0	2.0	2.0	108.0	1.0	2.0	1.8	3.0	4.0	3.0	11.0	2.0	5.0	3.5	
Sodium (mg/L)	427.0	461.0	482.0	477.0	379.0	538.0	460.1	412.0	391.0	400.0	430.0	305.0	469.0	398.3	886.0	1030.0	883.0	893.0	736.0	1070.0	902.8	
Carbonate (mg/L)	<1	<1	<1	16.0	<1	<1	<1	<1	<1	<1	2.0	<1	<1	<1	<1	<1	<1	<1	3.0	<1	<1	
Bicarbonate (mg/L)	1220.0	1200.0	1280.0	<0.01	<1	1290.0	1166.3	481.0	480.0	495.0	<0.01	<1	598.0	480.0	1160.0	1130.0	1130.0	<0.01	852.0	1240.0	1114.2	
		GW21							GW38A (IW4030)							GW38P						
		2024 / 2025				All Data			2024 / 2025				All Data			2024 / 2025				All Data		
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	
Field pH	7.0	7.0	7.0	7.0	6.4	8.0	7.2	7.3	7.2	7.2	7.4	6.5	8.3	7.3	7.6	7.6	7.6	7.7	7.1	8.6	7.7	
Field EC (µS/cm)	1047	901	884	791	636	2000	955	3790	3950	3860	3390	1762	5560	3784	2347	2365	2427	2434	1290	3830	2329	
TDS (mg/L)	632	540	484	496	370	992	544	2130	2280	2210	1870	958	3200	2131	1320	1360	1420	1340	1000	3650	1296	
TSS (mg/L)	<5	<5	<5	<5	5	280	58	80	30	<5	6	<5	273	71	<5	<5	<5	<5	116	17		
Dissolved Fe (mg/L)	<0.05	<0.05	<0.05	<1	0.0	10.7	0.6	<0.05	<0.05	<0.05	<1	<0.05	<0.05	<0.05	0.1	0.1	0.1	<1	<0.05	0.5	0.1	
Sulphate (mg/L)	52.0	34.0	25.0	314.0	4.0	124.0	38.9	179.0	168.0	187.0	512.0	108.0	247.0	177.2	53.0	52.0	46.0	442.0	35.0	69.0	43.8	
Chloride (mg/L)	59.0	62.0	66.0	26.0	39.0	147.0	70.3	854.0	895.0	849.0	163.0	262.0	1130.0	778.2	519.0	507.0	496.0	51.0	397.0	597.0	479.3	
Calcium (mg/L)	91.0	84.0	75.0	70.0	50.0	133.0	74.4	100.0	102.0	114.0	746.0	30.0	144.0	97.5	12.0	12.0	13.0	515.0	8.0	14.0	11.6	
Magnesium (mg/L)	55.0	50.0	47.0	70.0	29.0	81.0	45.9	110.0	125.0	124.0	86.0	35.0	157.0	108.1	15.0	17.0	15.0	14.0	12.0	17.0	15.4	
Potassium (mg/L)	<1	<1	<1	42.0	1.0	3.0	1.8	2.0	3.0	3.0	91.0	1.0	3.0	2.6	6.0	7.0	6.0	17.0	5.0	10.0	6.3	
Sodium (mg/L)	56.0	54.0	52.0	53.0	51.0	81.0	62.0	548.0	585.0	632.0	508.0	291.0	800.0	560.9	475.0	500.0	503.0	486.0	414.0	599.0	481.7	
Carbonate (mg/L)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.0	<1	<1	<1	<1	<1	<1	<1	7.0	<1	59.0	20.3
Bicarbonate (mg/L)	428.0	384.0	375.0	<0.01	288.0	508.0	366.9	631.0	645.0	732.0	<0.01	390.0	845.0	663.6	497.0	514.0	536.0	<0.01	442.0	607.0	513.1	
		GW39P							GW41A (IW4029)							GW43						
		2024 / 2025				All Data			2024 / 2025				All Data			2024 / 2025				All Data		
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	
Field pH	7.6	7.6	7.5																			

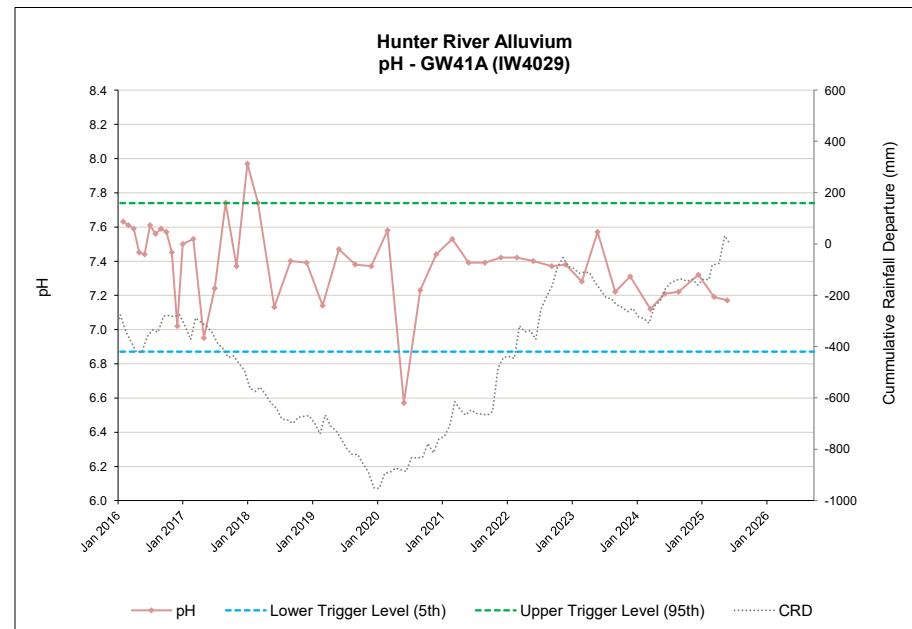
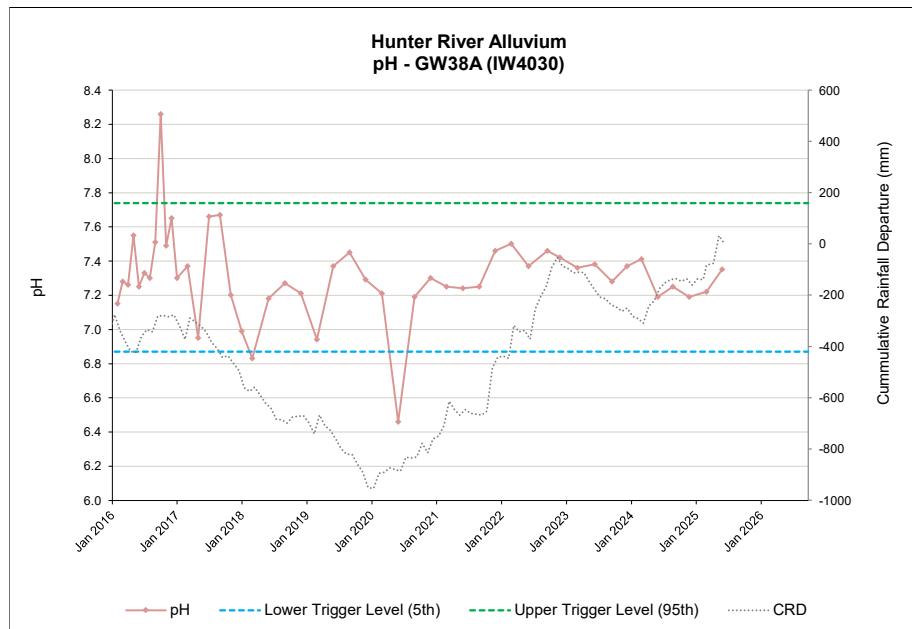
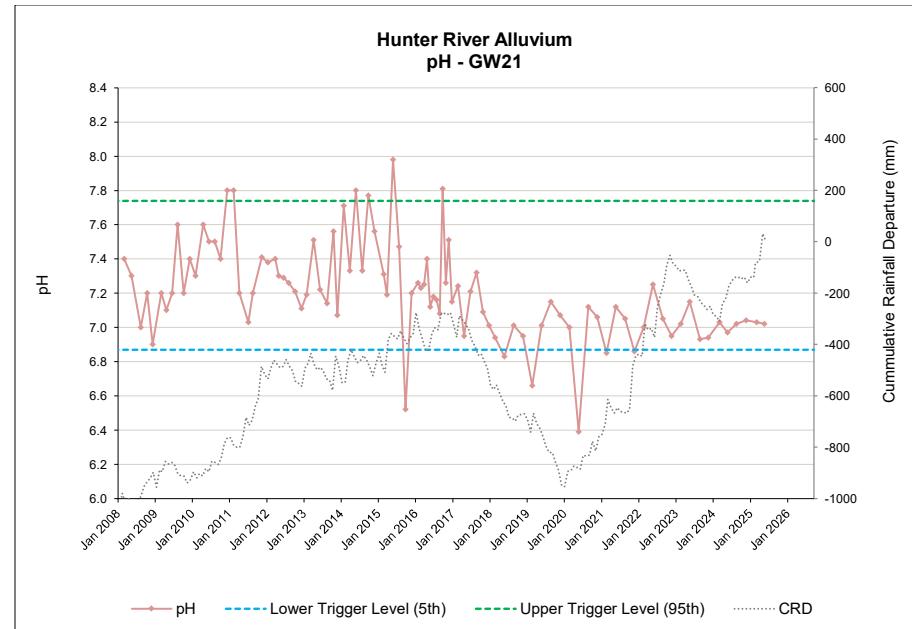
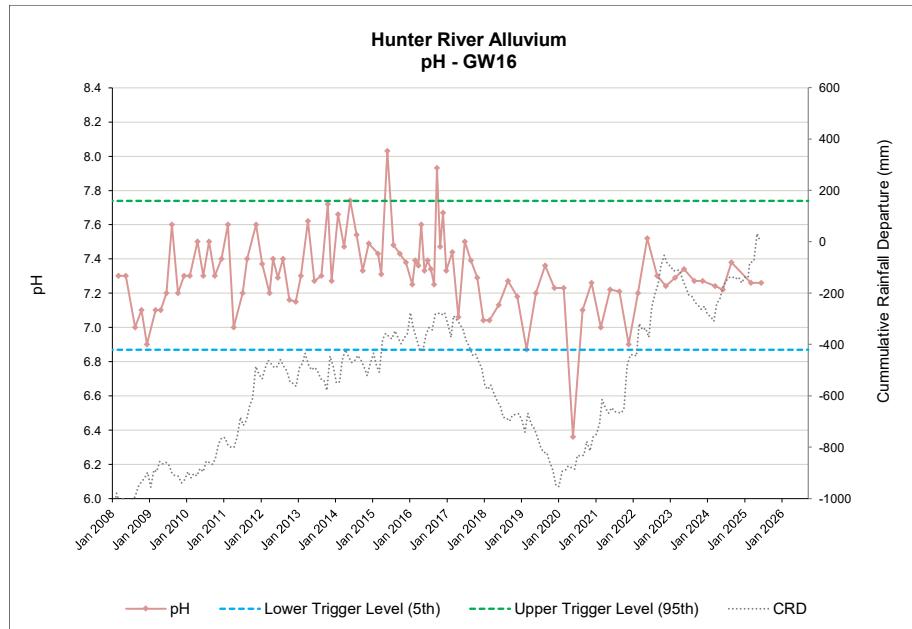
Parameter	GW48							GW49							X1						
	2024 / 2025				All Data			2024 / 2025				All Data			2024 / 2025				All Data		
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average
Field pH	7.6	7.7	7.5	7.5	6.8	8.2	7.6	6.9	7.0	6.9	6.8	6.1	7.5	6.9	7.3	7.4	7.6	7.4	7.1	7.7	7.4
Field EC (µS/cm)	3480	3480	3620	3510	3090	4750	3694	6230	5770	5840	5580	5020	7530	5899	170	3760	3610	3750	170	5390	3818
TDS (mg/L)	2340	2220	2370	2480	1920	2520	2245	3950	3820	3810	3790	2850	4000	3517	2240	2260	1890	2170	1890	2700	2325
TSS (mg/L)	22	18	<5	18	<5	30	12	<5	<5	<5	34	<5	54	15	817	437	4920	53	210	4920	1076
Dissolved Fe (mg/L)	0.3	0.3	0.2	<1	0.2	0.6	0.4	0.3	0.3	0.2	<1	<0.05	0.6	0.4	<0.05	<0.05	112.0	<1	<0.05	112.0	37.5
Sulphate (mg/L)	<10	<1	<1	<1	2.0	152.0	77.0	<10	<1	104.0	<1	1.0	104.0	35.3	254.0	242.0	242.0	583.0	160.0	254.0	210.2
Chloride (mg/L)	239.0	252.0	244.0	<1	214.0	284.0	240.9	806.0	831.0	809.0	<1	725.0	997.0	825.8	727.0	798.0	749.0	248.0	727.0	975.0	834.2
Calcium (mg/L)	13.0	12.0	12.0	25.7	10.0	15.0	13.5	57.0	52.0	52.0	854.0	41.0	68.0	49.6	128.0	112.0	125.0	719.0	106.0	144.0	126.2
Magnesium (mg/L)	14.0	16.0	15.0	10.0	11.0	17.0	14.3	53.0	52.0	49.0	50.0	37.0	61.0	47.4	116.0	115.0	118.0	123.0	107.0	134.0	118.9
Potassium (mg/L)	8.0	9.0	9.0	11.0	6.0	11.0	8.3	35.0	34.0	34.0	47.0	<1	42.0	32.3	4.0	4.0	4.0	104.0	3.0	8.0	4.6
Sodium (mg/L)	855.0	908.0	934.0	924.0	756.0	1030.0	925.1	1350.0	1440.0	1380.0	1360.0	1100.0	1460.0	1330.4	587.0	564.0	581.0	549.0	544.0	605.0	570.6
Carbonate (mg/L)	<1	<1	<1	9.0	<1	422.0	139.4	<1	<1	<1	35.0	<1	<1	<1	<1	<1	<1	4.0	<1	<1	<1
Bicarbonate (mg/L)	1770.0	1800.0	<1	<0.01	1380.0	2120.0	1791.5	2430.0	2220.0	<1	<0.01	1530.0	2460.0	2111.7	644.0	642.0	669.0	<0.01	636.0	790.0	679.0
	X2							X10							X14-1S						
Parameter	2024 / 2025				All Data			2024 / 2025				All Data			2024 / 2025				All Data		
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average
Field pH	7.3	7.4	7.3	7.4	7.0	7.4	7.2	7.1	7.2	7.5	6.9	7.0	10.0	8.3	6.7	6.9	6.9	7.0	6.7	12.6	7.5
Field EC (µS/cm)	4190	4250	4440	3250	3280	7420	4643	4100	4070	3980	4220	3520	6570	4567	10200	10700	10400	10300	9030	21480	11239
TDS (mg/L)	2380	2380	2770	1950	1840	3620	2662	2410	2490	2080	2360	2080	3300	2631	5730	6040	6890	6040	4350	7390	6182
TSS (mg/L)	<5	<5	<5	<5	12	49	26	81	42	40	17	<5	308	81	22	169	<5	<5	16	302	97
Dissolved Fe (mg/L)	<0.05	<0.05	<0.05	<1	<0.05	<0.05	<0.05	0.1	0.3	<0.05	<1	<0.05	<0.05	<0.05	0.5	1.0	1.0	<1	0.3	105.0	5.5
Sulphate (mg/L)	129.0	142.0	147.0	569.0	119.0	240.0	156.0	57.0	79.0	67.0	1320.0	<1	95.4	51.1	26.0	18.0	22.0	1160.0	<1	155.0	38.7
Chloride (mg/L)	890.0	1310.0	1040.0	149.0	680.0	1620.0	1056.3	806.0	679.0	623.0	72.0	590.0	806.0	689.6	3420.0	3120.0	3040.0	18.0	849.0	3810.0	3101.6
Calcium (mg/L)	71.0	73.0	84.0	713.0	55.0	129.0	84.9	50.0	52.0	63.0	705.0	4.0	63.0	36.6	151.0	166.0	142.0	3250.0	2.0	197.0	136.6
Magnesium (mg/L)	140.0	159.0	170.0	56.0	115.0	278.0	173.1	148.0	160.0	156.0	36.0	18.0	160.0	110.1	276.0	287.0	245.0	121.0	5.0	356.0	253.7
Potassium (mg/L)	7.0	8.0	8.0	118.0	4.0	8.0	6.9	60.0	57.0	65.0	164.0	57.0	471.0	180.9	18.0	19.0	19.0	238.0	15.0	509.0	57.5
Sodium (mg/L)	592.0	647.0	674.0	575.0	454.0	795.0	636.8	660.0	683.0	647.0	709.0	528.0	882.0	696.6	1910.0	1930.0	1760.0	1840.0	1430.0	2060.0	1813.8
Carbonate (mg/L)	<1	<1	<1	7.0	<1	<1	<1	<1	<1	<1	47.0	<1	1250.0	556.9	<1	<1	<1	17.0	<1	<1	<1
Bicarbonate (mg/L)	612.0	601.0	637.0	<0.01	601.0	798.0	649.6	1430.0	1360.0	1350.0	<0.01	590.0	1510.0	1232.6	1140.0	1080.0	1140.0	<0.01	816.0	1230.0	1114.0
	X14-2D							BCGW22A (IW4027)													
Parameter	2024 / 2025				All Data			2024 / 2025				All Data									
Parameter	Q1	Q2	Q3	Q4	Minimum	Maximum	Average	Q1	Q2	Q3	Q4	Minimum	Maximum	Average							
Field pH	9.4	10.0	10.1	10.1	6.8	11.6	9.3	6.9	6.9	6.9	6.9	6.									

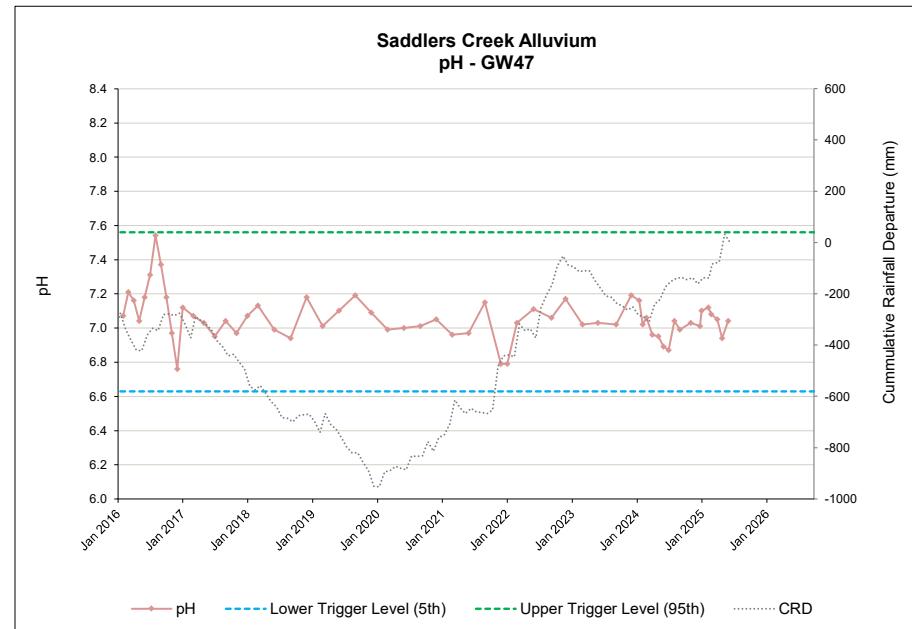
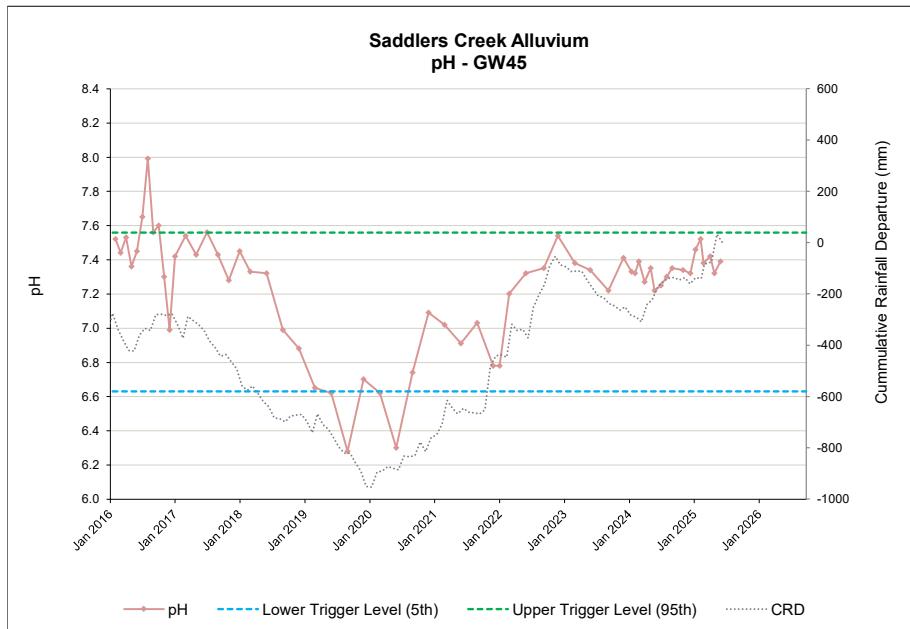
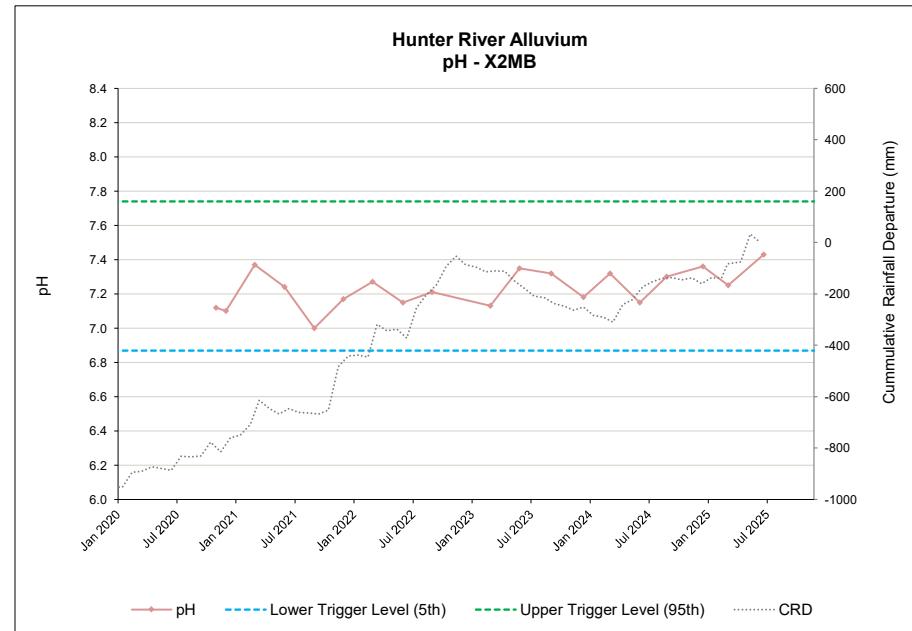
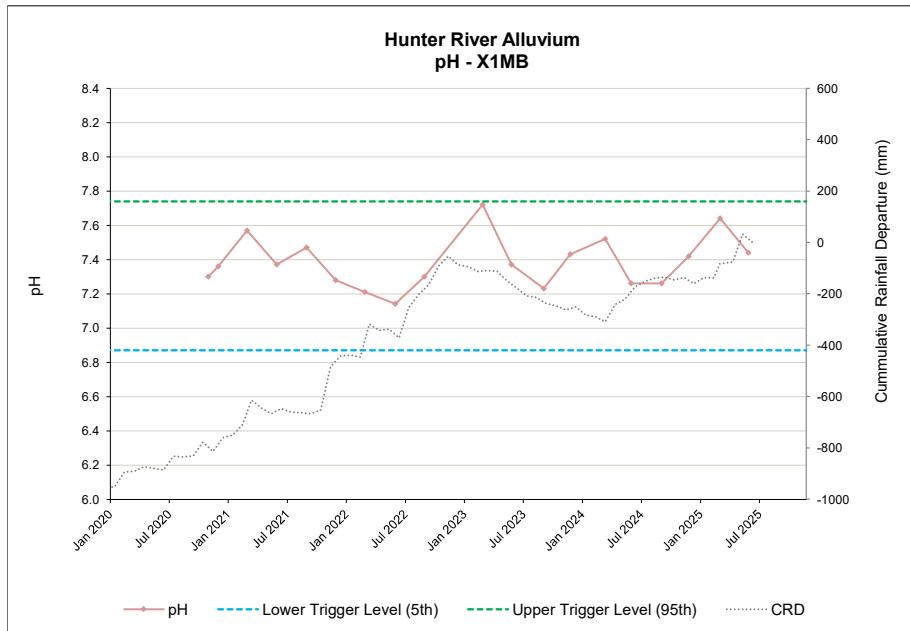
## Groundwater Quality Assurance Review

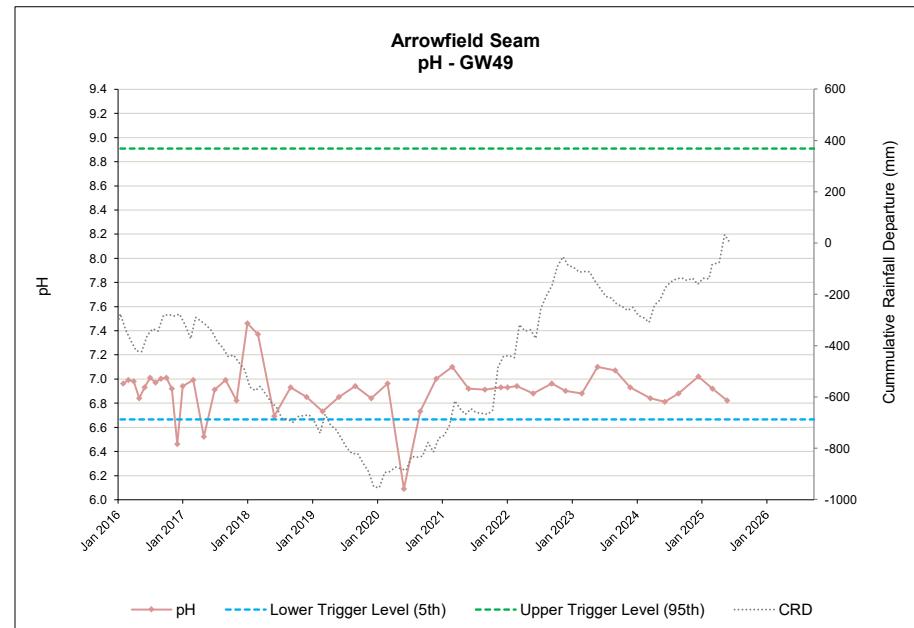
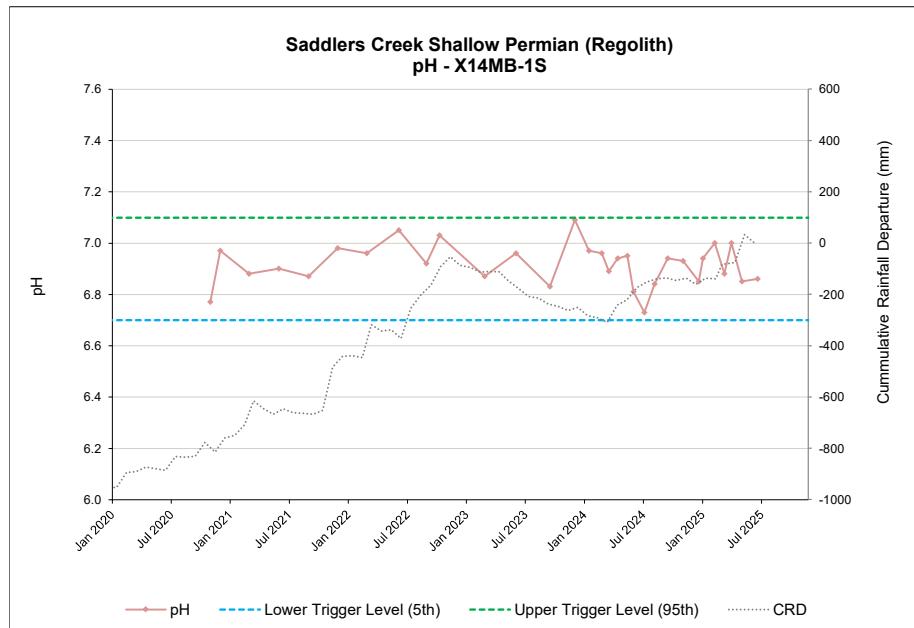
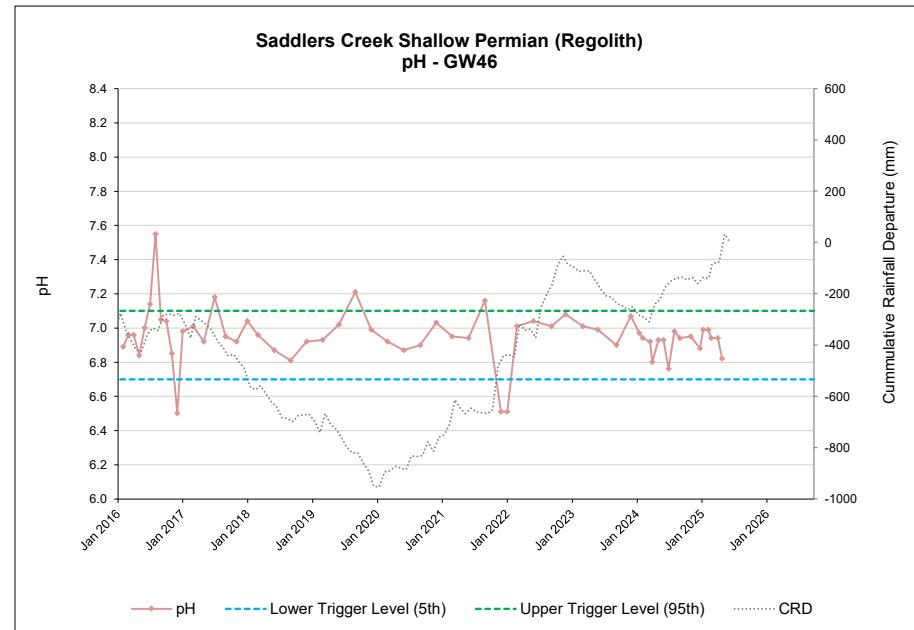
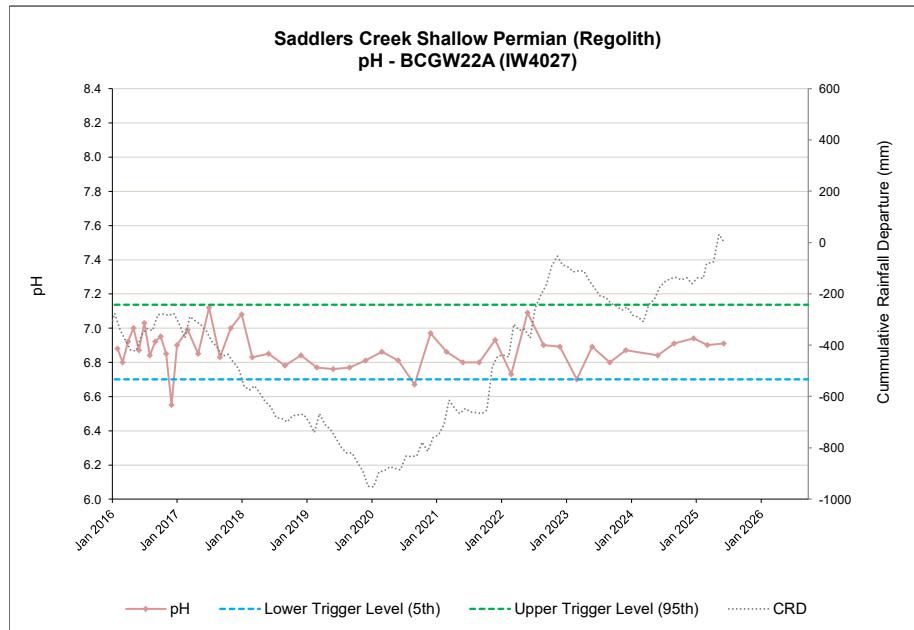
Sample Date:	ALS Batch Number:	Client sample ID (1st):	4/09/2024		Relative Percentage Difference	29/11/2024		Relative Percentage Difference	28/02/2025		Relative Percentage Difference	6/06/2025		Relative Percentage Difference						
			EN2410428			ES2439128			ES2503582			GW2								
			GW2	DUPLICATE		GW56	DUPLICATE		GW51	DUPLICATE		GW2	DUPLICATE							
<b>Analyte grouping/Analyte</b>																				
<b>Physical Parameters</b>																				
pH Value	pH Unit	0.01	7.79	7.86	-0.9%	5.24	6.89	27.2%	7.04	7.02	-0.3%	7.79	7.78	-0.1%						
Electrical Conductivity @ 25°C	µS/cm	1	4160	3730	10.9%	6880	6940	0.9%	5920	5920	0.0%	3990	3720	-7.0%						
Total Dissolved Solids @ 180°C	mg/L	10	2350	2160	8.4%	6600	6310	-4.5%	3490	3470	-0.6%	2400	2240	-6.9%						
Total Suspended Solids (TSS)	mg/L	5	19	7	92.3%	102	111	8.5%	9	9	0.0%	<5	<5	0.0%						
<b>Major Ions</b>																				
Hydroxide Alkalinity as CaCO3	mg/L	1	110.0	<1	0.0%	<1	<1	0.0%	<1	<1	0.0%	<1	<1	0.0%						
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	0.0%	<1	<1	0.0%	<1	<1	0.0%	<1	<1	0.0%						
Bicarbonate Alkalinity as CaCO3	mg/L	1	1110	1170	-5.3%	226	225	-0.4%	1210	1200	-0.8%	1130	1180	4.3%						
Total Alkalinity as CaCO3	mg/L	1	1110	1170	-5.3%	226	225	-0.4%	1210	1200	-0.8%	1130	1180	4.3%						
Sulfate as SO4 - Turbidimetric	mg/L	1	120	124	0.0%	3910	3850	-1.5%	448	449	0.2%	117	117	0.0%						
Chloride by Discrete Analyser	mg/L	1	658	478	31.7%	736	707	-4.0%	1100	1110	0.9%	586	546	-7.1%						
Calcium	mg/L	1	21	17	21.1%	498	489	-1.8%	126	127	0.8%	22	17	-25.6%						
Magnesium	mg/L	1	14	12	15.4%	536	530	-1.1%	236	233	-1.3%	15	13	-14.3%						
Sodium	mg/L	1	898	817	9.4%	568	553	-2.7%	892	878	-1.6%	969	925	-4.6%						
Potassium	mg/L	1	3	3	0.0%	53	52	-1.9%	15	14	-6.9%	4	3	-28.6%						
Total Phosphorus as P	mg/L	0.01	-	-	-	0.05	-	-	0.1	-	-	0.08	0.07	-13.3%						
Total Anions	meq/L	0.01	43.2	39.4	9.2%	107.0	104.0	-2.8%	64.5	64.6	0.2%	41.5	41.4	-0.2%						
Total Cations	meq/L	0.01	41.3	37.4	9.9%	95.0	93.4	-1.7%	64.9	64.1	-1.2%	44.6	42.2	-5.5%						
<b>Dissolved Metals</b>																				
Aluminum	mg/L	0.01	-	-	-	-	-	<0.01	-	-	<0.01	<0.01	<0.01	0.0%						
Antimony	mg/L	0.001	-	-	-	-	-	<0.001	-	-	<0.001	<0.001	<0.001	0.0%						
Arsenic	mg/L	0.001	-	-	-	-	-	0.004	-	-	<0.001	<0.001	<0.001	0.0%						
Barium	mg/L	0.001	-	-	-	-	-	0.031	-	-	0.067	0.053	-23.3%							
Boron	mg/L	0.05	-	-	-	-	-	0.32	-	-	0.300	0.220	-30.8%							
Cadmium	mg/L	0.0001	-	-	-	-	-	0.0001	-	-	<0.0001	<0.0001	<0.0001	0.0%						
Chromium	mg/L	0.001	-	-	-	-	-	0.002	-	-	<0.001	<0.001	<0.001	0.0%						
Copper	mg/L	0.001	-	-	-	-	-	0.001	-	-	<0.001	<0.001	<0.001	0.0%						
Iron	mg/L	0.05	0.05	<0.05	0.0%	<0.05	<0.05	0.0%	0.31	0.37	17.6%	<0.05	<0.05	0.0%						
Lead	mg/L	0.001	-	-	-	-	-	<0.001	-	-	<0.001	<0.001	<0.001	0.0%						
Mercury	mg/L	0.0001	-	-	-	-	-	<0.0001	-	-	<0.0001	<0.0001	<0.0001	0.0%						
Molybdenum	mg/L	0.001	-	-	-	-	-	0.002	-	-	<0.001	<0.001	<0.001	0.0%						
Nickel	mg/L	0.001	-	-	-	-	-	0.016	-	-	<0.001	0.002	200.0%							
Selenium	mg/L	0.01	-	-	-	-	-	<0.01	-	-	<0.01	<0.01	<0.01	0.0%						
Zinc	mg/L	0.005	-	-	-	-	-	0.036	-	-	<0.005	0.017	200.0%							

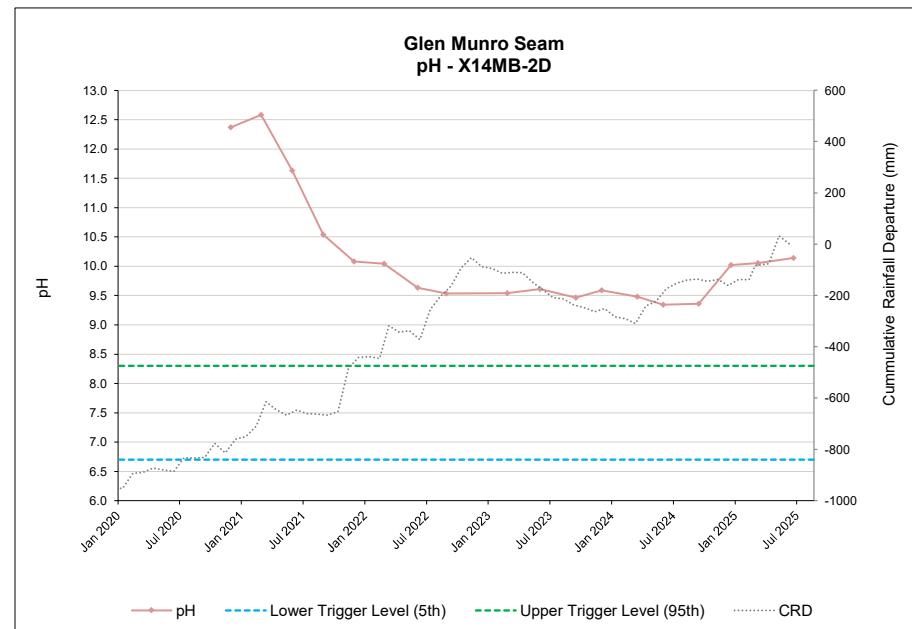
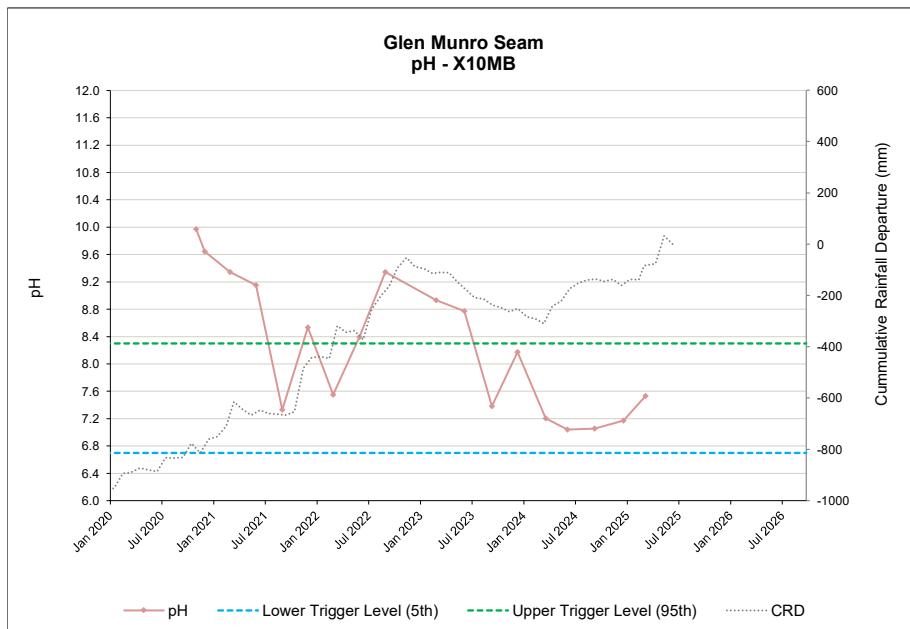
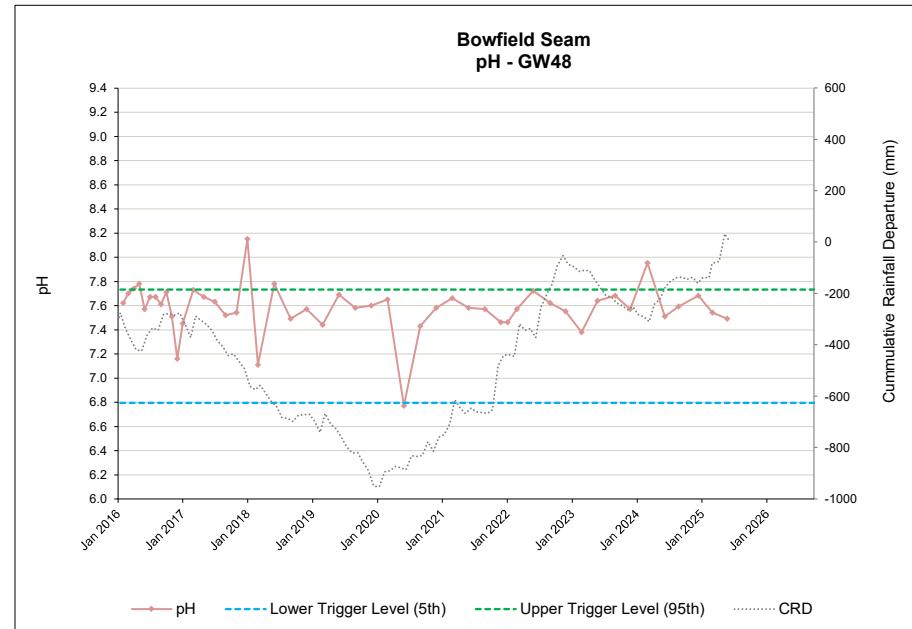
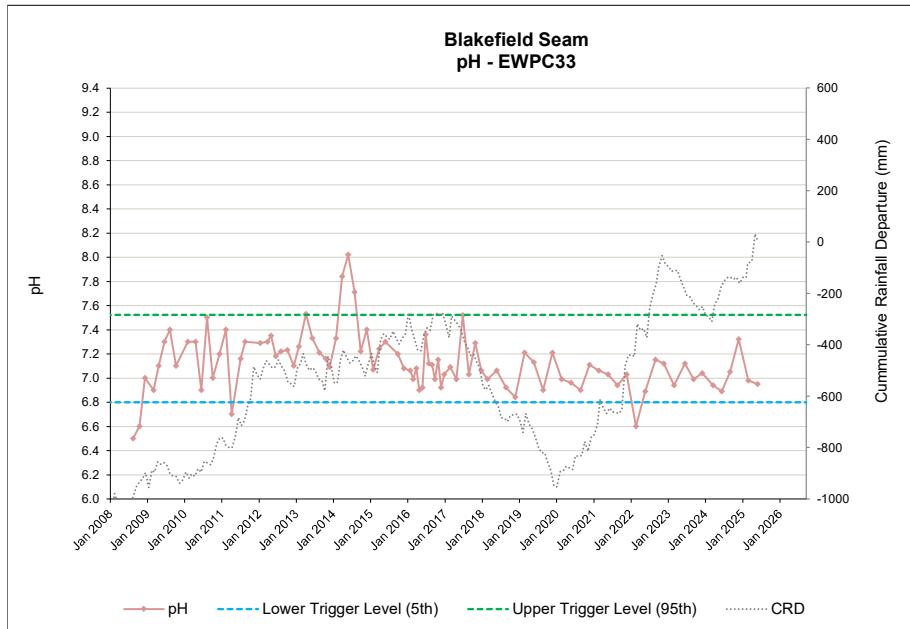
## Appendix E

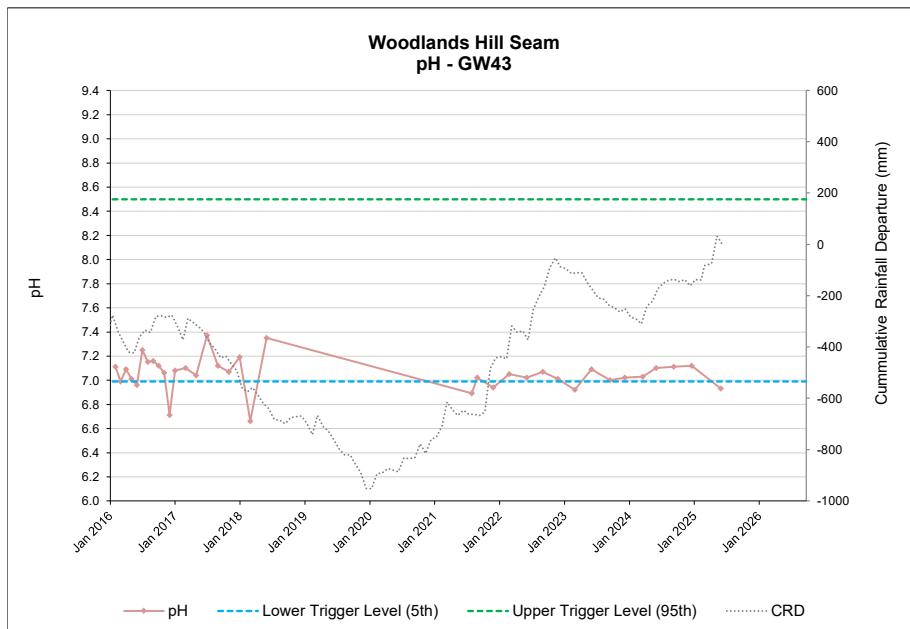
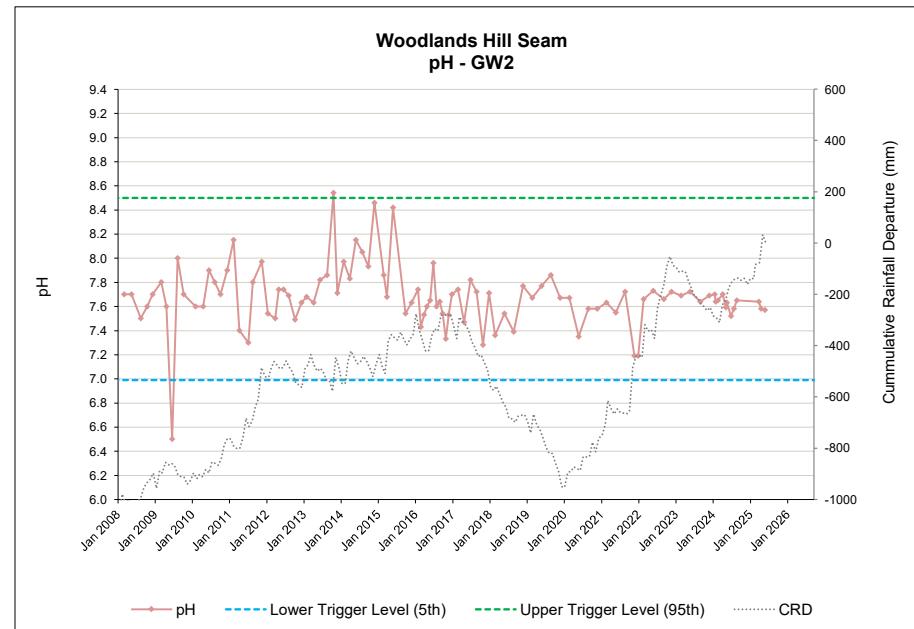
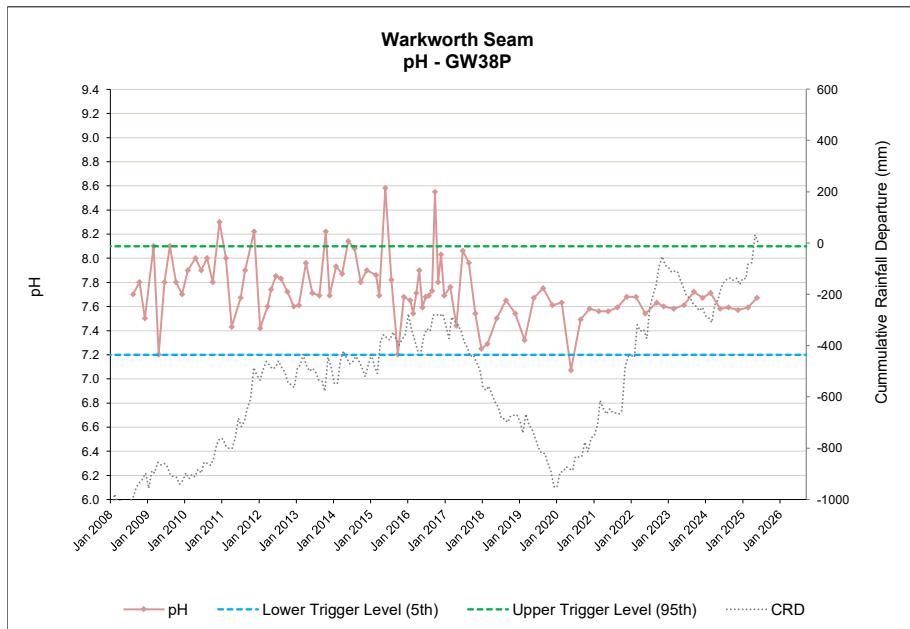
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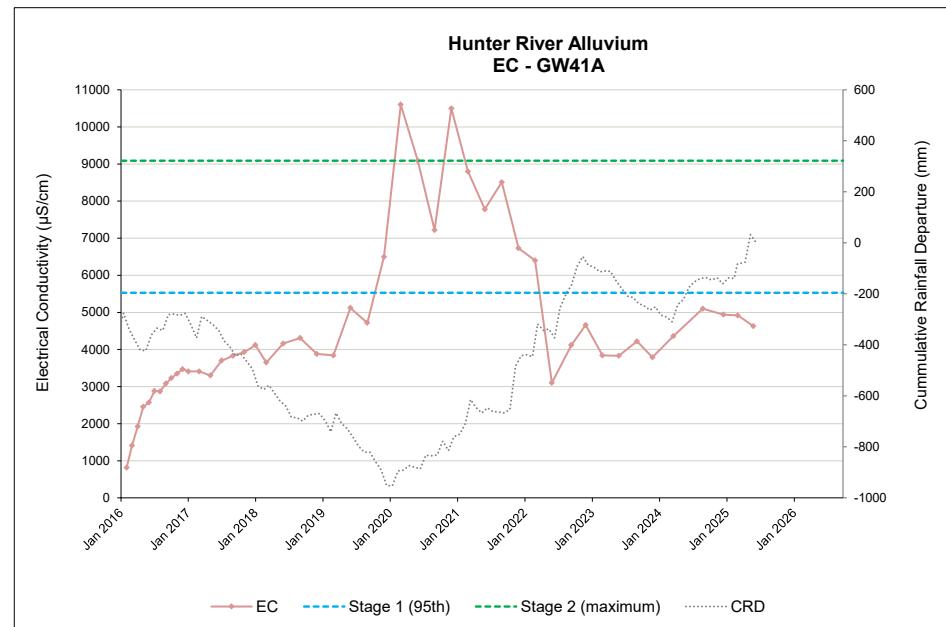
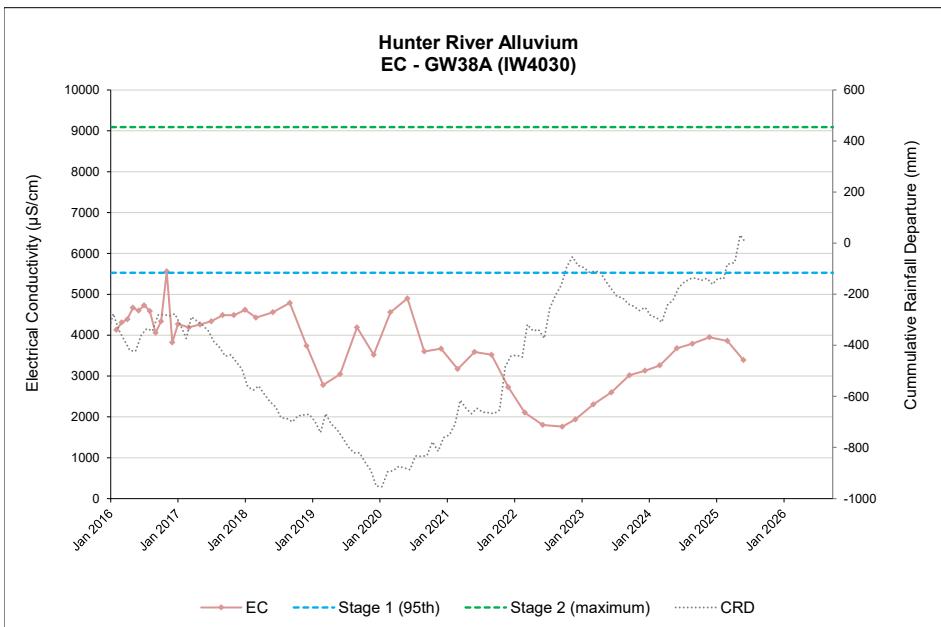
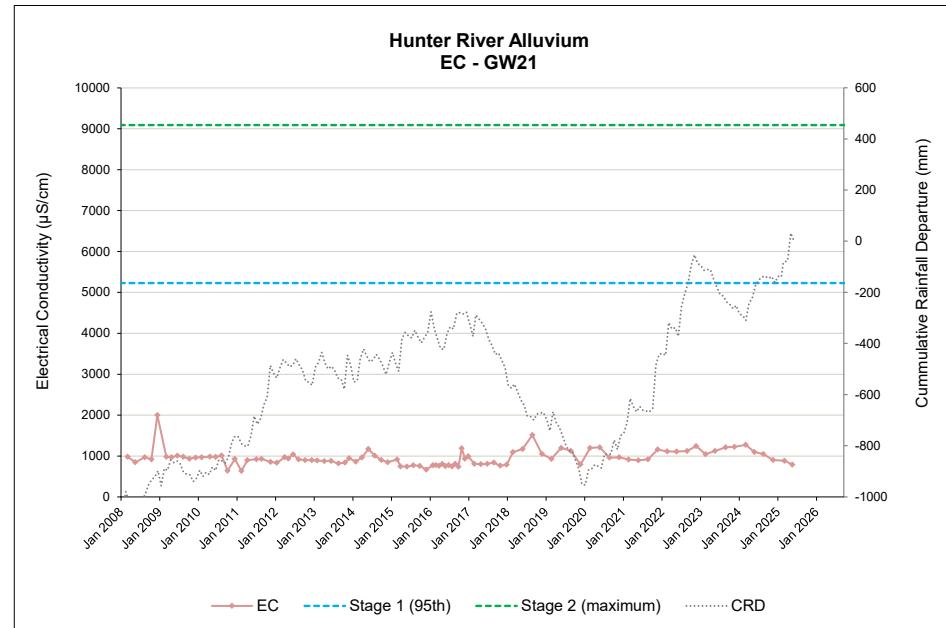
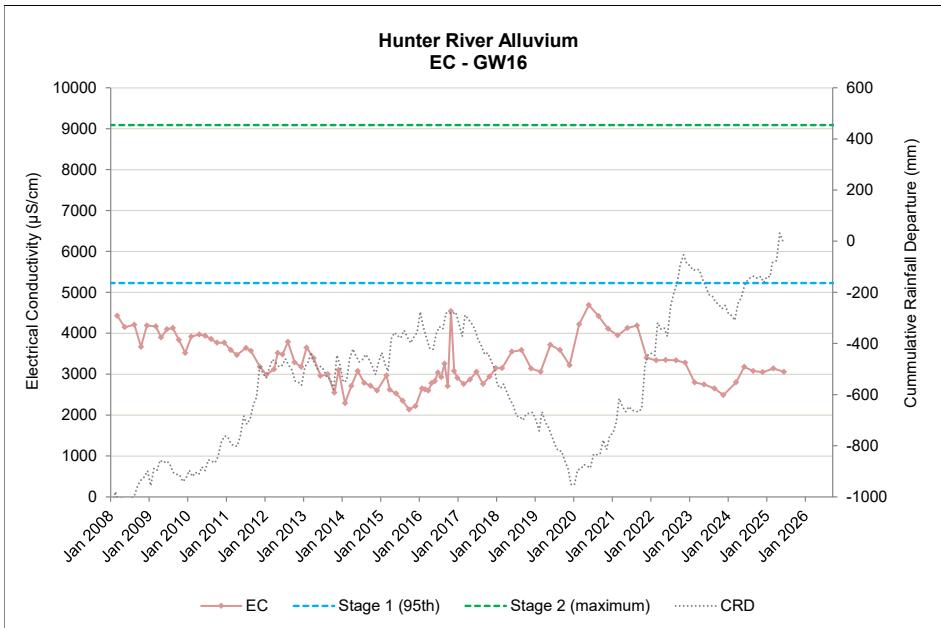


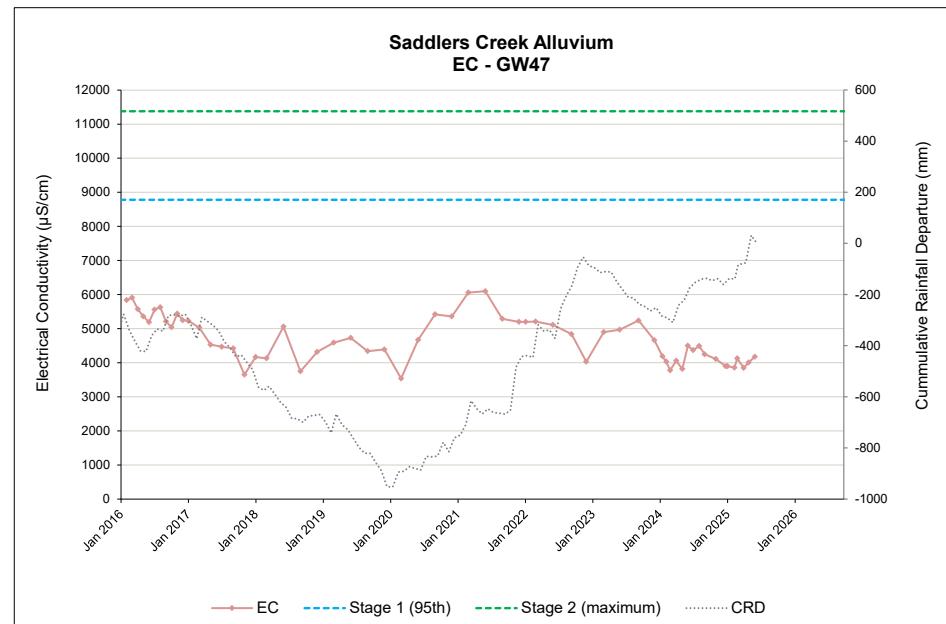
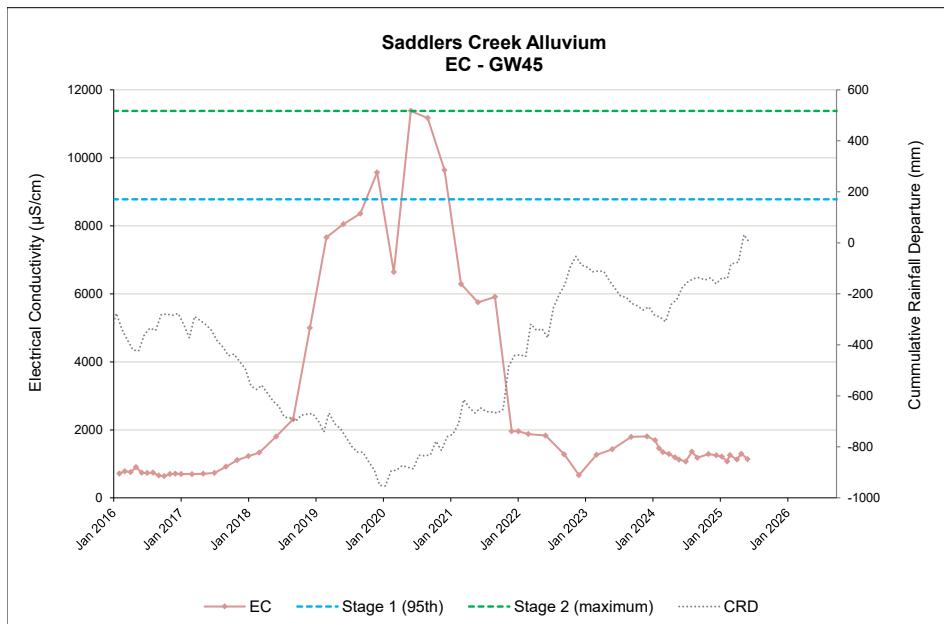
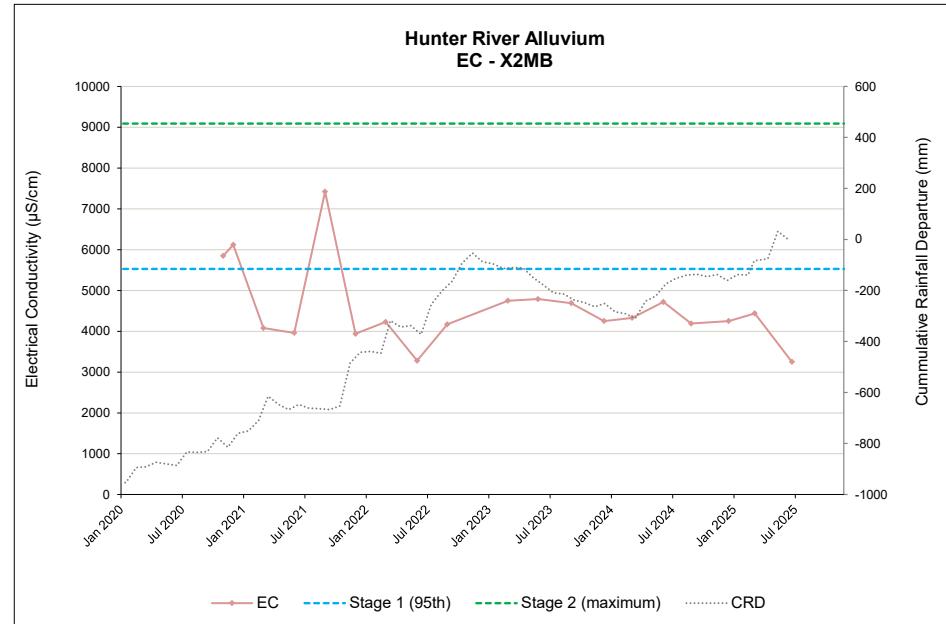
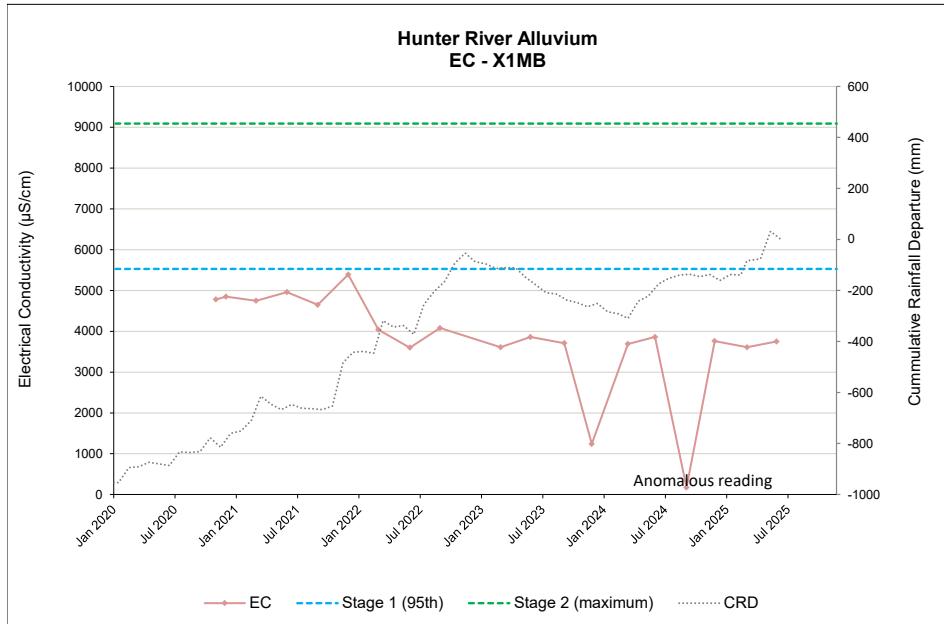


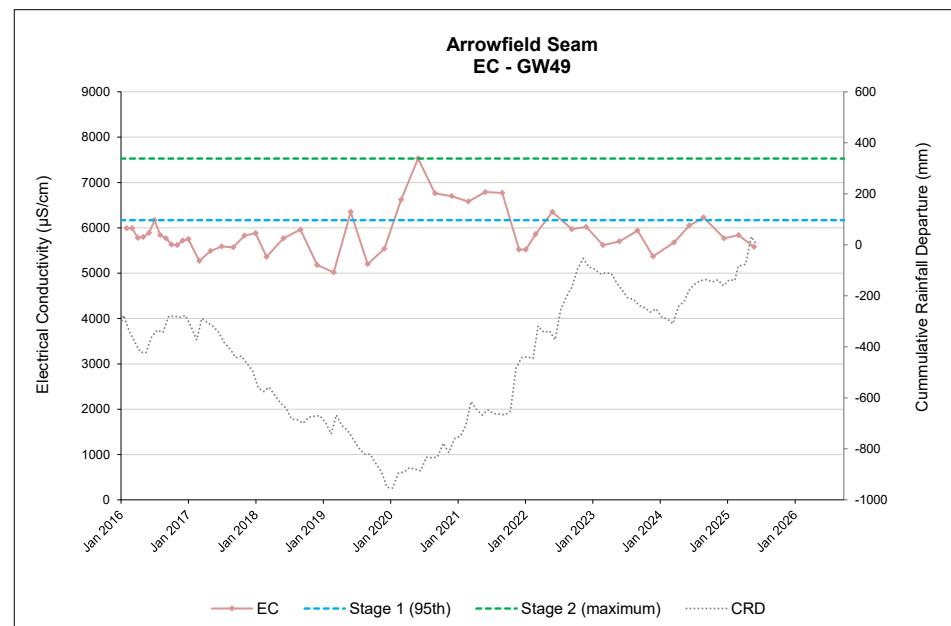
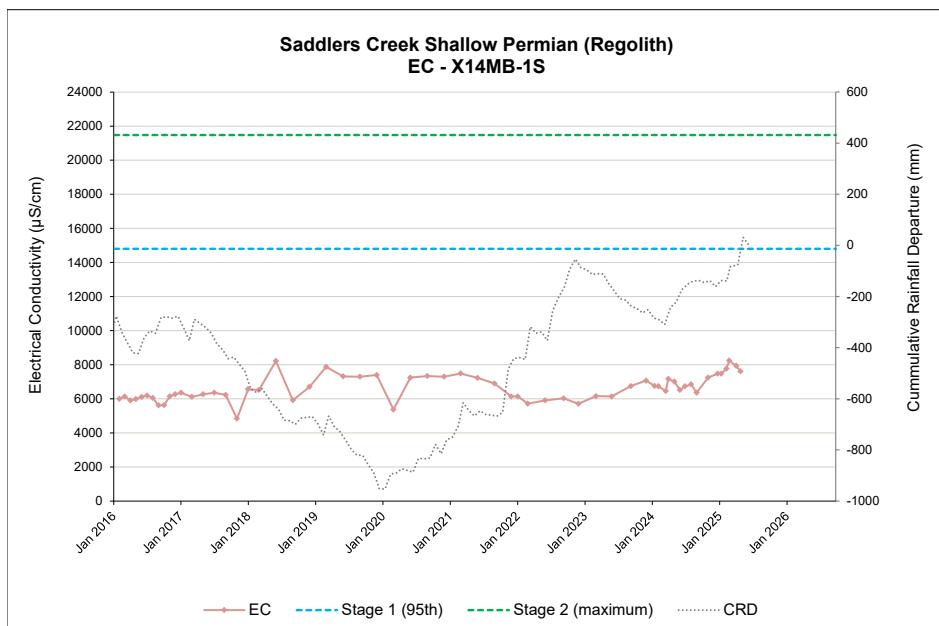
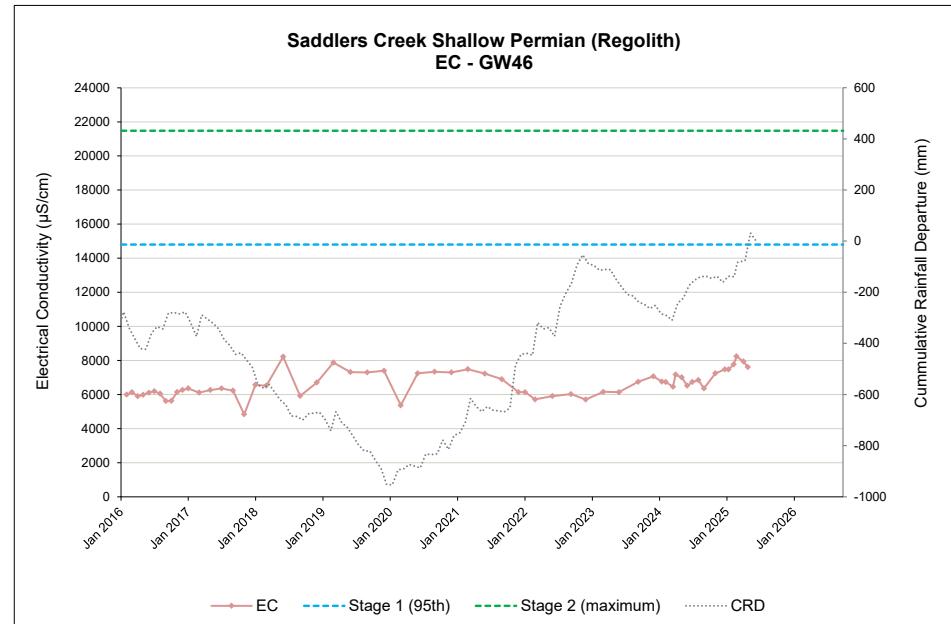
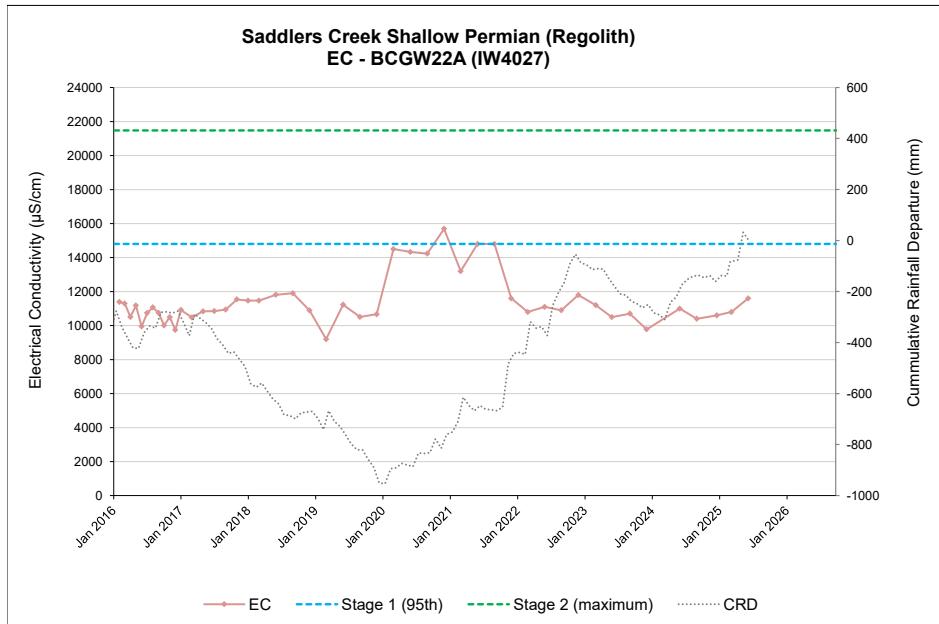


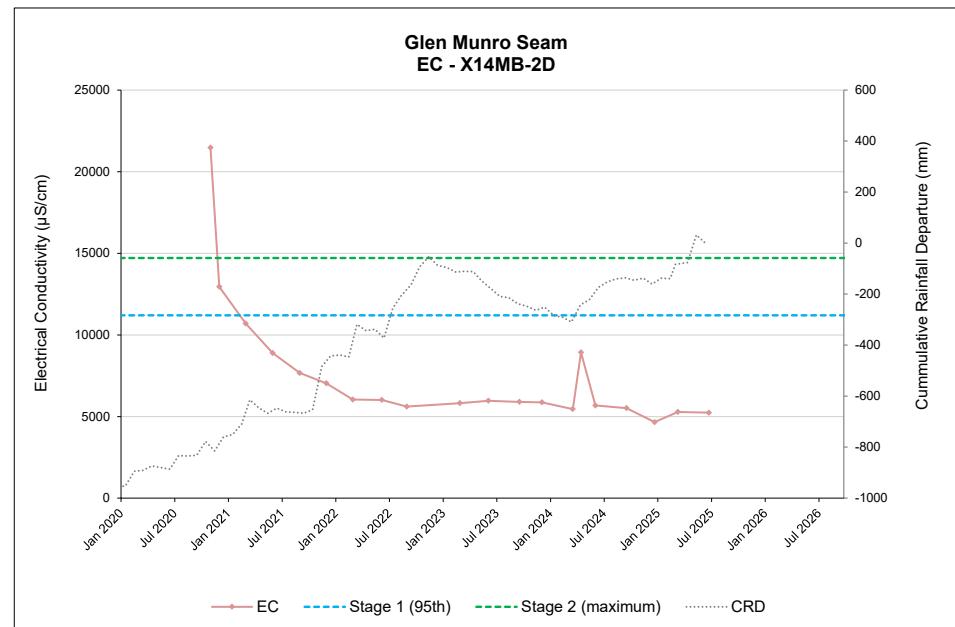
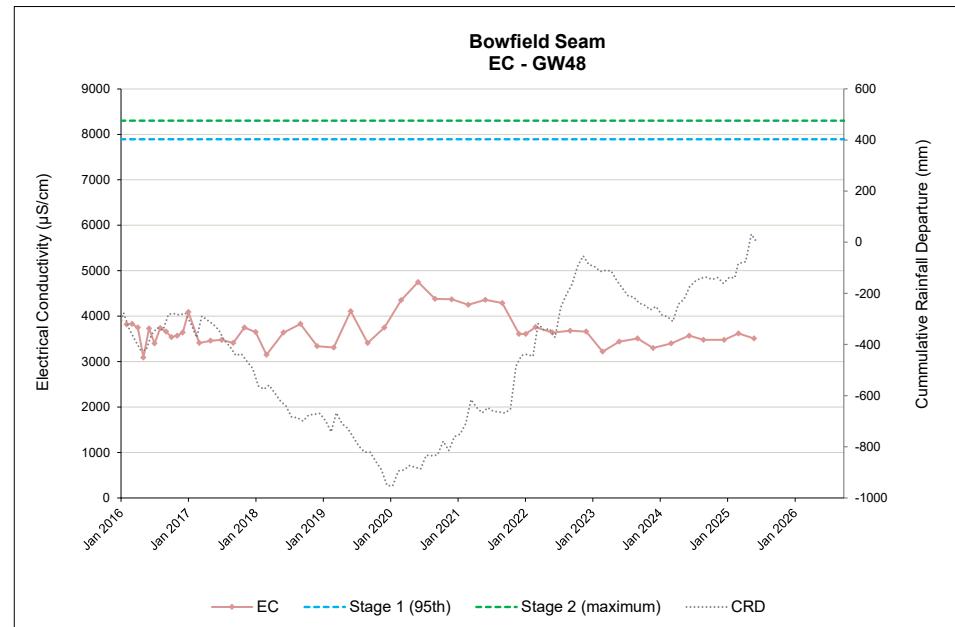
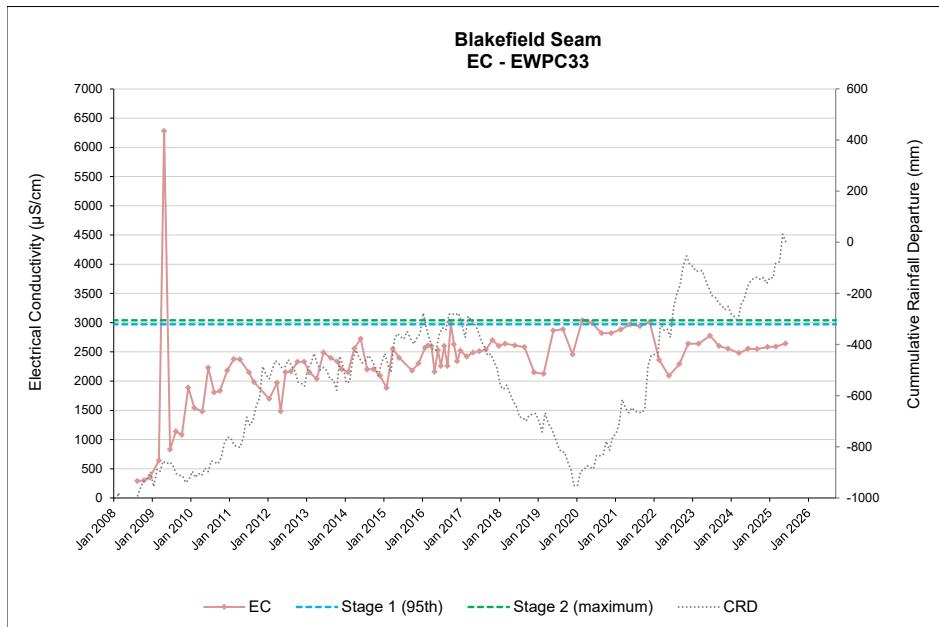


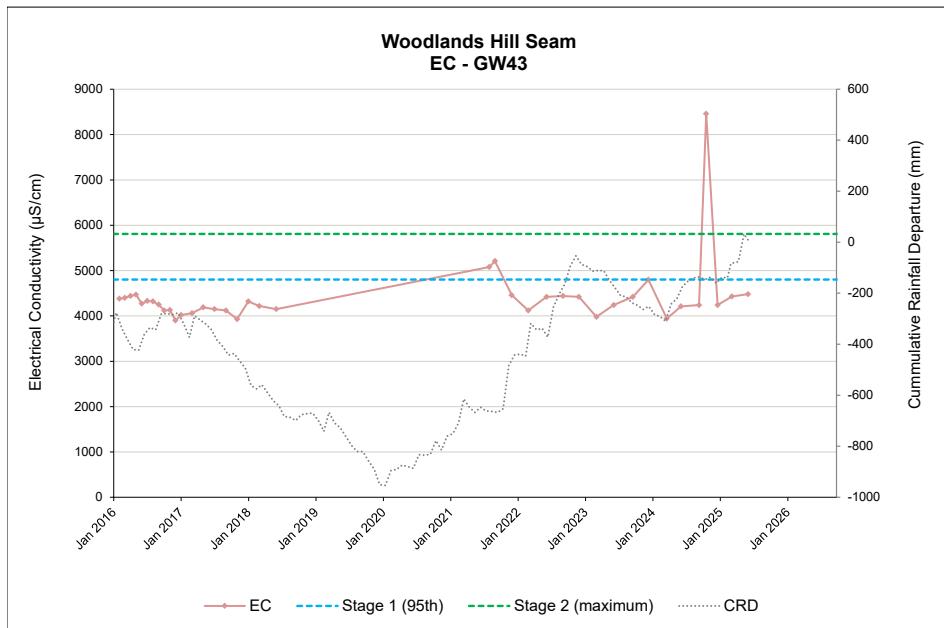
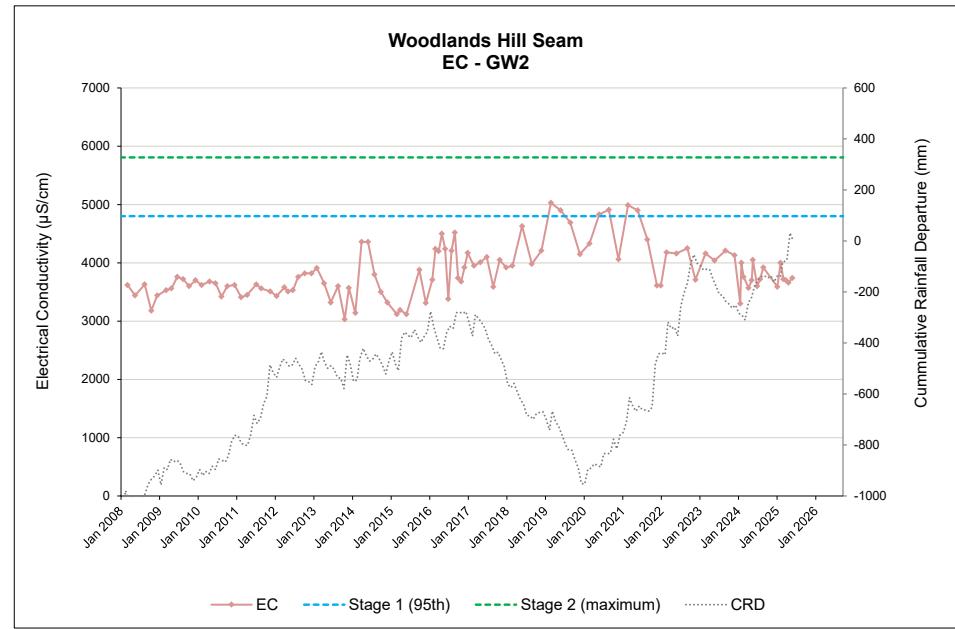
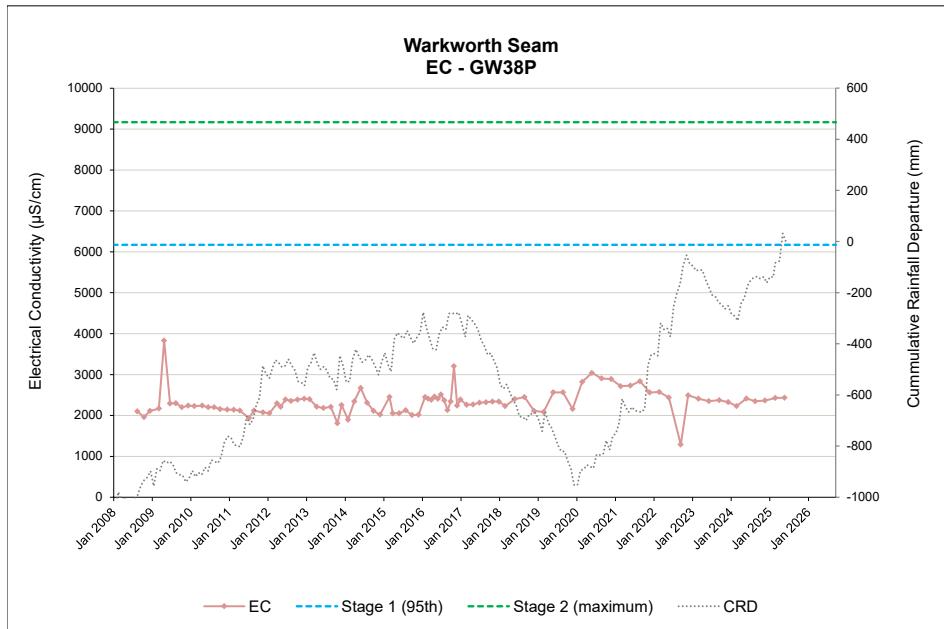














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## Appendix 3 Community Complaints

Number	Month	Date	Time	From	Issue	Lodgement type	Investigation and response to caller
1	August	28/08/2024	9.00am	Muswellbrook	Dust	Lodged with third party	Received from the NSW Environment Protection Authority on behalf of a resident. Detailed information was provided to EPA related to dust mitigation and control activities undertaken on that day. Investigation revealed high wind speeds were recorded on the day of the complaint. The actions taken demonstrated that MAC was operating competently and in compliance with EPL conditions.
2	August	28/08/2024	11.30am	Muswellbrook	Dust	Lodged with third party	Received from the NSW Environment Protection Authority on behalf of a resident. Detailed information was provided to EPA related to dust mitigation and control activities undertaken on that day. Investigation revealed high wind speeds were recorded on the day of the complaint. The actions taken demonstrated that MAC was operating competently and in compliance with EPL conditions.
3	November	6/11/2024	8.20pm	Roxburgh Rd, Muswellbrook	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Caller was advised of investigation results and action taken.
4	April	24/04/2025	10.52am	Miranda NSW	Other	Email	This complaint was a non-environmental matter and has been addressed with no further action required.

## Appendix 4 Annual Coal Transport Report FY25

This report has been prepared in accordance with Schedule 3 Condition 46 of Project Approval 09\_0062 MOD 1:

### **Monitoring of Coal Transport**

46. The Proponent shall keep records of the:

- (a) amount of coal transported from the site in each financial year;
- (b) number of coal haulage train movements generated by the Mt Arthur mine complex (on a daily basis); and
- (c) make these records available on its website at the end of each financial year.

For the 12-month period ending 30 June 2025:

- 13.15 million tonnes of export product coal was transported by rail to the Port of Newcastle. This is compliant with Schedule 2 Condition 7(a) of Project Approval 09\_0062 MOD 1, which restricts Mt Arthur Coal's coal transport on the Antiene rail spur to a maximum of 27 million tonnes of product coal in a financial year;
- 1.626 million tonnes of domestic product coal was transported by rail to the Eraring Power Station and Vales Point Power Station. This is compliant with Schedule 2 Condition 7(a) of Project Approval 09\_0062 MOD 1, which restricts Mt Arthur Coal's coal transport on the Antiene rail spur to a maximum of 27 million tonnes of product coal in a financial year;
- The total number of train movements was 3,828; and
- The maximum number of train movements in a single day was 20. This is compliant with Schedule 2 Condition 7(b) of Project Approval 09\_0062 MOD 1, which restricts Mt Arthur Coal's coal transport on the Antiene rail spur to a maximum of 30 train movements a day.

*Note: Each train entering and exiting the site is classified as two train movements and a day refers to the 24 hours from midnight to midnight the next day.*

**Table 40. Daily train movements FY25**

<b>Date</b>	<b>No. of train movements</b>
1/07/2024	14
2/07/2024	14
3/07/2024	8
4/07/2024	4
5/07/2024	8
6/07/2024	14
7/07/2024	16
8/07/2024	8
9/07/2024	8
10/07/2024	14
11/07/2024	18
12/07/2024	14
13/07/2024	10
14/07/2024	8
15/07/2024	6
16/07/2024	8
17/07/2024	2
18/07/2024	8
19/07/2024	10
20/07/2024	12
21/07/2024	12
22/07/2024	4
23/07/2024	10
24/07/2024	16
25/07/2024	20
26/07/2024	8
27/07/2024	18
28/07/2024	8
29/07/2024	6
30/07/2024	8
31/07/2024	16
1/08/2024	18
2/08/2024	8
3/08/2024	0
4/08/2024	0
5/08/2024	0
6/08/2024	12
7/08/2024	10
8/08/2024	14
9/08/2024	16
10/08/2024	12
11/08/2024	12
12/08/2024	14
13/08/2024	10
14/08/2024	14
15/08/2024	6
16/08/2024	14
17/08/2024	14
18/08/2024	12
19/08/2024	12

<b>Date</b>	<b>No. of train movements</b>
20/08/2024	14
21/08/2024	14
22/08/2024	12
23/08/2024	10
24/08/2024	4
25/08/2024	14
26/08/2024	16
27/08/2024	10
28/08/2024	14
29/08/2024	6
30/08/2024	14
31/08/2024	10
1/09/2024	14
2/09/2024	16
3/09/2024	12
4/09/2024	18
5/09/2024	10
6/09/2024	2
7/09/2024	0
8/09/2024	14
9/09/2024	16
10/09/2024	8
11/09/2024	8
12/09/2024	14
13/09/2024	18
14/09/2024	16
15/09/2024	12
16/09/2024	12
17/09/2024	10
18/09/2024	2
19/09/2024	10
20/09/2024	16
21/09/2024	14
22/09/2024	16
23/09/2024	8
24/09/2024	12
25/09/2024	4
26/09/2024	8
27/09/2024	8
28/09/2024	10
29/09/2024	2
30/09/2024	6
1/10/2024	0
2/10/2024	0
3/10/2024	0
4/10/2024	8
5/10/2024	8
6/10/2024	10
7/10/2024	16
8/10/2024	8
9/10/2024	14

ANNUAL REVIEW FY25

<b>Date</b>	<b>No. of train movements</b>
10/10/2024	14
11/10/2024	10
12/10/2024	16
13/10/2024	16
14/10/2024	4
15/10/2024	6
16/10/2024	16
17/10/2024	12
18/10/2024	18
19/10/2024	14
20/10/2024	8
21/10/2024	4
22/10/2024	8
23/10/2024	10
24/10/2024	8
25/10/2024	10
26/10/2024	12
27/10/2024	10
28/10/2024	10
29/10/2024	10
30/10/2024	12
31/10/2024	14
1/11/2024	18
2/11/2024	12
3/11/2024	24
4/11/2024	10
5/11/2024	10
6/11/2024	16
7/11/2024	14
8/11/2024	14
9/11/2024	10
10/11/2024	14
11/11/2024	20
12/11/2024	14
13/11/2024	10
14/11/2024	12
15/11/2024	20
16/11/2024	14
17/11/2024	14
18/11/2024	0
19/11/2024	0
20/11/2024	0
21/11/2024	0
22/11/2024	0
23/11/2024	6
24/11/2024	10
25/11/2024	14
26/11/2024	12
27/11/2024	14
28/11/2024	14
29/11/2024	10

<b>Date</b>	<b>No. of train movements</b>
30/11/2024	16
1/12/2024	12
2/12/2024	12
3/12/2024	10
4/12/2024	10
5/12/2024	10
6/12/2024	18
7/12/2024	10
8/12/2024	16
9/12/2024	10
10/12/2024	16
11/12/2024	12
12/12/2024	6
13/12/2024	8
14/12/2024	16
15/12/2024	12
16/12/2024	10
17/12/2024	8
18/12/2024	14
19/12/2024	2
20/12/2024	4
21/12/2024	16
22/12/2024	6
23/12/2024	12
24/12/2024	8
25/12/2024	0
26/12/2024	0
27/12/2024	4
28/12/2024	12
29/12/2024	10
30/12/2024	8
31/12/2024	12
1/01/2025	18
2/01/2025	16
3/01/2025	14
4/01/2025	14
5/01/2025	14
6/01/2025	16
7/01/2025	16
8/01/2025	10
9/01/2025	12
10/01/2025	12
11/01/2025	8
12/01/2025	16
13/01/2025	14
14/01/2025	8
15/01/2025	14
16/01/2025	10
17/01/2025	10
18/01/2025	10
19/01/2025	12

ANNUAL REVIEW FY25

<b>Date</b>	<b>No. of train movements</b>
20/01/2025	14
21/01/2025	14
22/01/2025	14
23/01/2025	10
24/01/2025	10
25/01/2025	14
26/01/2025	12
27/01/2025	14
28/01/2025	16
29/01/2025	8
30/01/2025	8
31/01/2025	10
1/02/2025	8
2/02/2025	10
3/02/2025	18
4/02/2025	14
5/02/2025	8
6/02/2025	2
7/02/2025	0
8/02/2025	0
9/02/2025	8
10/02/2025	14
11/02/2025	10
12/02/2025	14
13/02/2025	16
14/02/2025	14
15/02/2025	10
16/02/2025	14
17/02/2025	16
18/02/2025	14
19/02/2025	6
20/02/2025	8
21/02/2025	10
22/02/2025	6
23/02/2025	14
24/02/2025	14
25/02/2025	16
26/02/2025	6
27/02/2025	10
28/02/2025	8
1/03/2025	6
2/03/2025	10
3/03/2025	6
4/03/2025	10
5/03/2025	12
6/03/2025	8
7/03/2025	8
8/03/2025	16
9/03/2025	14
10/03/2025	12
11/03/2025	12

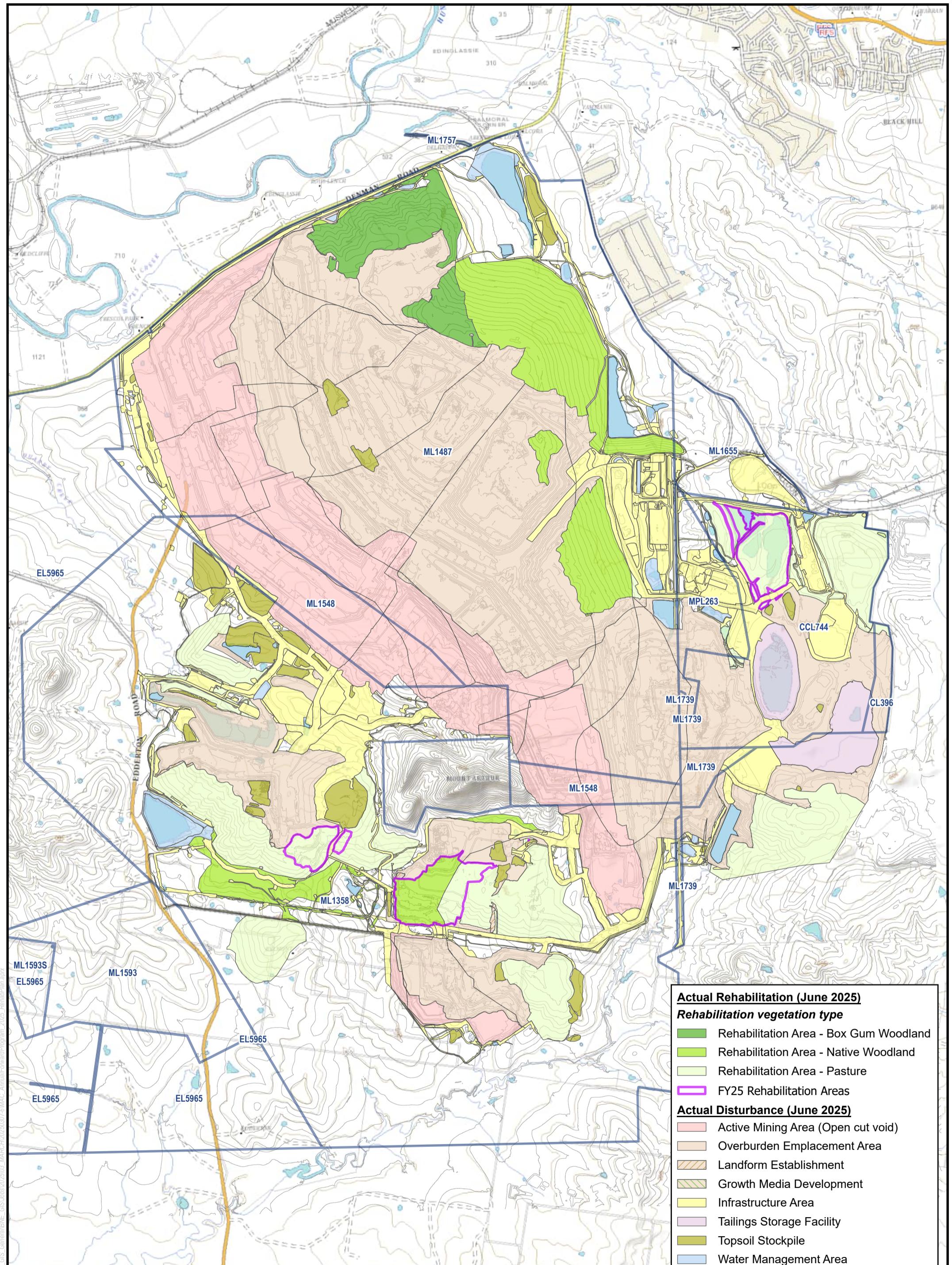
<b>Date</b>	<b>No. of train movements</b>
12/03/2025	14
13/03/2025	4
14/03/2025	10
15/03/2025	16
16/03/2025	10
17/03/2025	16
18/03/2025	6
19/03/2025	14
20/03/2025	14
21/03/2025	10
22/03/2025	14
23/03/2025	12
24/03/2025	12
25/03/2025	10
26/03/2025	8
27/03/2025	8
28/03/2025	14
29/03/2025	8
30/03/2025	12
31/03/2025	12
1/04/2025	16
2/04/2025	16
3/04/2025	12
4/04/2025	2
5/04/2025	0
6/04/2025	0
7/04/2025	6
8/04/2025	6
9/04/2025	12
10/04/2025	12
11/04/2025	14
12/04/2025	12
13/04/2025	16
14/04/2025	12
15/04/2025	16
16/04/2025	14
17/04/2025	14
18/04/2025	16
19/04/2025	12
20/04/2025	18
21/04/2025	16
22/04/2025	18
23/04/2025	14
24/04/2025	6
25/04/2025	12
26/04/2025	12
27/04/2025	12
28/04/2025	12
29/04/2025	16
30/04/2025	16
1/05/2025	14

ANNUAL REVIEW FY25

<b>Date</b>	<b>No. of train movements</b>
2/05/2025	10
3/05/2025	16
4/05/2025	12
5/05/2025	12
6/05/2025	16
7/05/2025	8
8/05/2025	10
9/05/2025	10
10/05/2025	12
11/05/2025	12
12/05/2025	18
13/05/2025	18
14/05/2025	18
15/05/2025	12
16/05/2025	12
17/05/2025	12
18/05/2025	8
19/05/2025	16
20/05/2025	16
21/05/2025	12
22/05/2025	2
23/05/2025	0
24/05/2025	0
25/05/2025	4
26/05/2025	6
27/05/2025	12
28/05/2025	14
29/05/2025	10
30/05/2025	12
31/05/2025	6
1/06/2025	14
2/06/2025	12
3/06/2025	8
4/06/2025	12
5/06/2025	0
6/06/2025	4
7/06/2025	12
8/06/2025	14
9/06/2025	16
10/06/2025	14
11/06/2025	14
12/06/2025	16
13/06/2025	18
14/06/2025	14
15/06/2025	12
16/06/2025	14
17/06/2025	10
18/06/2025	12
19/06/2025	8
20/06/2025	6
21/06/2025	4

<b>Date</b>	<b>No. of train movements</b>
22/06/2025	4
23/06/2025	10
24/06/2025	10
25/06/2025	4
26/06/2025	6
27/06/2025	4
28/06/2025	6
29/06/2025	10
30/06/2025	4
<b>Total</b>	<b>3828</b>
<b>Maximum daily train movements</b>	<b>20</b>

## Appendix 5 Rehabilitation Plan



# FY25 Annual Rehab Action Plan Report

BHP Mount Arthur



## Table of Contents

Table of Contents .....	2
Tables.....	2
Figures .....	2
Overview.....	3
1. FY25 Weed Action Plan .....	4
1.2 FY25 Works Completed.....	5
1.2.1 Herbicide Application .....	7
1.2.2 Targeted Areas.....	7
1. FY25 Planting .....	10
2. FY25 Pest Management.....	11
1.3 Vertebrate Pest Control Report .....	11
1.4 Feral Pig Trapping.....	14

## Tables

Table 1 - Works Completed .....	4
Table 2 - Works Deferred .....	5
Table 3 - Primary Target Areas .....	5
Table 4 - Planting Species.....	10
Table 5 - Wild Dog Baiting Results.....	12
Table 6: MAC Winter 2024 Feral Pig Trapping Results:.....	14
Table 7: MAC Winter 2024 Feral Pig Trapping Rates.....	14

## Figures

Figure 1 - Herbicide Usage.....	7
Figure 2- 1080 Control Sites .....	13
Figure 3: MAC Free Feed locations.....	15
Figure 4: MAC Feral Pig Cage Trapping Locations .....	16

## Overview

Throughout the period of FY25 a skilled land management team covered the majority of Mt Arthur, surveying the vegetation and targeting invasive weeds in current and recently rehabilitated areas. Through a range of management techniques several high priority invasive species have been controlled from areas within the mining operation and remnant vegetation onsite. In addition to the Weed Action Plan a vertebrate pest management program was also completed to remove feral populations present onsite. As the rehabilitated mine area continues to grow this workload will increase and correct management is essential to establish a balanced ecosystem with stable native vegetation populations. A total of 530 Ha of area received control throughout the FY25 period and a total of 52,000L of mixed herbicide sprayed.



*MAC Site map with section names*

## 1. FY25 Weed Action Plan

A comprehensive Weed Action Plan was created to identify high priority areas and specific invasive species of concern in the Upper Hunter area to better allocate resources and effectively manage the rehabilitation sites. This management plan was developed in conjunction with BHP, Global Soil Systems and Local Land Council information. Works completed and deferred from the plan are as per the below tables.

Area	Task	Activity	Hectares	Personnel	No. of Work Days	Status
Multiple	Spraying of St johns at various known locations	Weed spraying - High vol	36	2	20	Completed
McDonalds South - Established Canopy Rehabilitation	High Vol Spray for Exotic grasses in understory	Weed spraying - High vol	18	4	10	Completed
McDonalds South - Established Canopy Rehabilitation	Follow up High Vol Spray for Exotic grasses in understory	Weed spraying - High vol	29	2	5	Completed
McDonalds South - Established Canopy Rehabilitation	Follow up High Vol Spray for Exotic grasses in understory	Weed spraying - High vol	18	2	5	Completed
McDonalds South - FY23 tube stock planting	Back pack spraying grasses between existing plantings	Weed spraying - Backpack	22	4	10	Completed
Saddlers FY25 Rehab	Backpack Spray rehab first walk over	Weed spraying - Backpack	47	4	25	Completed
Saddlers Perimiter	High Vol Spray - Follow up	Weed spraying - High vol	5	2	5	Completed
VD 2/3	Initial walk over and treatment of weeds	Weed spraying - Backpack	51	6	53	Completed
VD2/3 - FY24 Rehabilitation	Follow up walk over	Weed spraying - Backpack	26	4	5	Completed
VD2/3 - FY24 Rehabilitation	Follow up walk over	Weed spraying - Backpack	26	4	5	Completed
VD4	Backpack Spray Exotic grasses	Weed spraying - Backpack	25.5	4	30	Completed
VD5 - Area 1	Backpack Spray	Weed spraying - Backpack	11	4	10	Completed
VD5 - Area 3B	Backpack Spray Exotic Grasses (Megathyrsus)	Weed spraying - Backpack	15.5	4	40	Completed
VD5 - Rehab Completed in FY24	Walk for priority weeds	Weed spraying - Backpack	62	4	82	Completed
VD5 - FY24 planting	Backpack Spray - 4 People	Weed spraying - Backpack	10	4	5	Completed
VD5 - FY25 Planting Beds	Backpack Spray, broad spectrum	Weed spraying - Backpack	10	4	5	Completed
VD5 - Perimeter of Rehabilitation	High Vol Spraying - perimiter works	Weed spraying - High vol	11	2	10	Completed

*Table 1 - Works Completed*

Area	Task	Activity	Hectares	Personnel	No. of Work Days	Status
CD1 - Upper Slope	High Vol Spray Exotic Grasses	Weed spraying - High vol	59	2	10	Deferred
CD1 - Upper Slope	High Vol Spray - Follow up	Weed spraying - High vol	42	2	10	Deferred
CD1 - Upper Slope	High Vol Spray - Targeting Annuals & Exotic Grasses	Weed spraying - High vol	42	2	10	Deferred
VD1	High Vol Spray - Priority weeds	Weed spraying - High vol	24.5	2	10	Deferred
VD1	High Vol Spray - Follow up	Weed spraying - High vol	24.5	2	10	D Deferred
VD1	High Vol Spray - Targeting Exotic Grasses & Box Thorn	Weed spraying - High vol	15.5	2	10	Deferred
VD4	High Vol Spray - Targeting Annuals	Weed spraying - High vol	25.5	4	10	Deferred
VD5 - FY24 planting	Backpack Spray - 4 People	Weed spraying - Backpack	10	4	5	Deferred
VD5 - FY25 Planting Beds	Backpack Spray- 4 People	Weed spraying - Backpack	10	4	10	Deferred

Table 2 - Works Deferred

This management plan was regularly reviewed in a weekly meeting between all interested parties. Some sections of the Weed Action Plan had to be cancelled due to delays due to weather and insufficient amount of personnel. There were no large outbreaks or areas of concern identified which required a revision of the annual plan. The FY25 program identified the need for additional workers which will be implemented in the coming financial year growing the team from 6 to 9.

### 1.2 FY25 Works Completed

The FY25 works were completed to the best of the land management team ability, however, due to weather delays, resourcing issues which required areas to be re-prioritised to focus on high priority areas, and high weed presence on site and in rehabilitation areas large portions of the weed action plan were not able to be carried out or took longer than expected.

The below table displays an account of the areas of focus for the year as well as the target species encountered in the relevant sections of the site. This table only shows the 2 areas in which most of the time was invested for each month with several other sections visited for initial surveying, minor follow up treatment and wet weather works. A further account of works completed can be found later in this report.

Table 3 - Primary Target Areas

Primary Target Areas				
Month	Location #1	Target	Location #2	Target
July	CD1	<i>Lycium ferocissimum</i> , <i>Acacia saligna</i>	CD2	<i>Lycium ferocissimum</i> ,
August	VD4	<i>Brassica</i> sp and <i>Eragrostis curvula</i>	VD5 FY24	All early emergent weeds

September	VD5 FY24	All early emergent weeds	VD5 area 1	<i>Galenia pubescens</i> and exotic grasses
October	VD5 area 1	Exotic Grasses, <i>Galenia pubescens</i>	VD2&3 FY 24	All early emergent weeds
November	VD5 area 3	<i>Galenia pubescens</i> , Exotic grasses, <i>Lycium ferocissimum</i>	Enviro dam	<i>Hypericum perforatum</i>
December	VD5 FY 24 & perimeter	Exotic Grasses, <i>Galenia pubescens</i>	Macdonalds south	Exotic Grasses
January	Macdonalds south	Exotic Grasses, <i>Galenia pubescens</i>	VD2 &3 FY24	Exotic Grasses, <i>Galenia pubescens</i>
February	VD2&3 FY24	Exotic grasses and <i>Galenia pubescens</i>	VD5 area3	Exotic Grasses and <i>Galenia pubescens</i>
March	VD5 area 3	Exotic grasses and <i>Galenia pubescens</i>	VD4	Exotic Grasses and <i>Galenia pubescens</i>
April	VD5 area 3	Tube stock planting related work	VD4	Exotic grasses & <i>Galenia pubescens</i>
May	VD4	Exotic Grasses, <i>Galenia pubescens</i>	VD5 FY25 planting	watering
June	Saddlers North FY 25	Early emergent weeds	VD5 area 1	Exotic Grasses

### 1.2.1 Herbicide Application

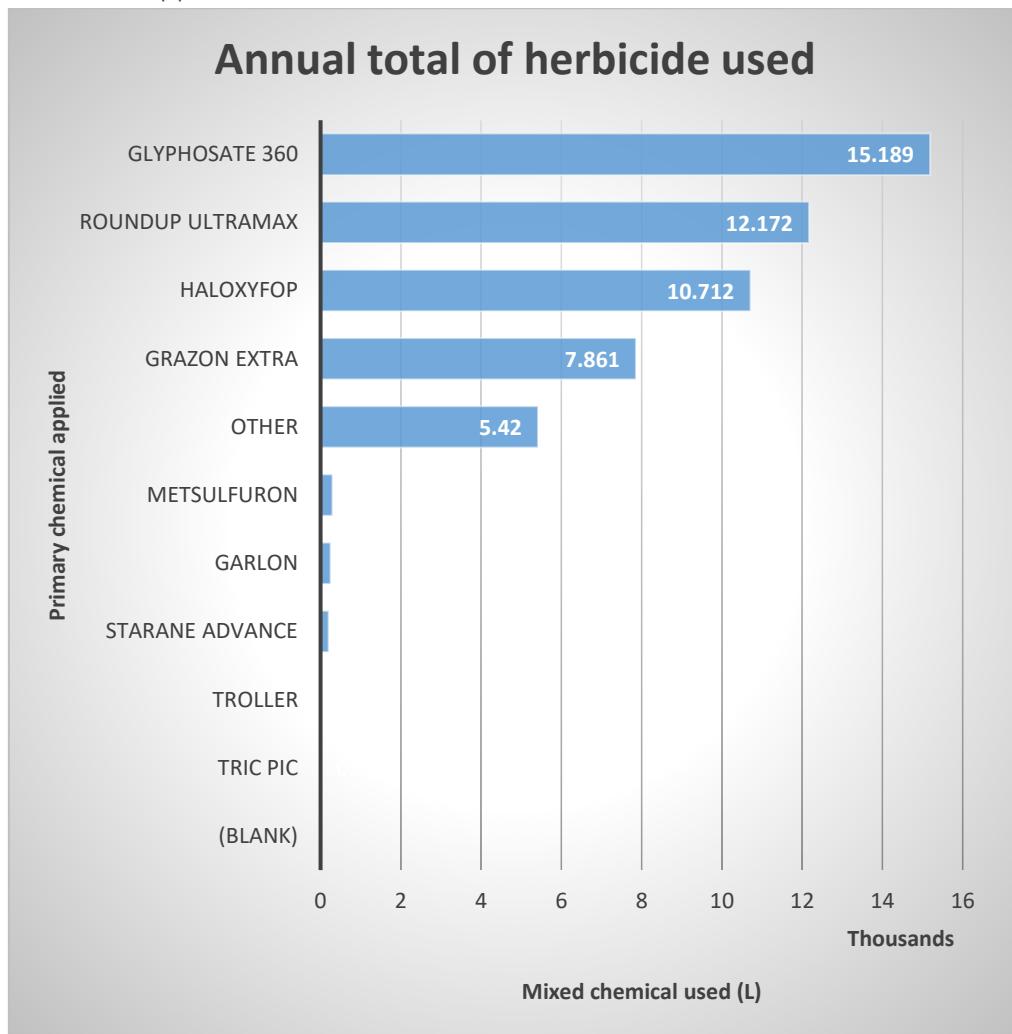


Figure 1 - Herbicide Usage

The most widely used herbicide was Glyphosate, the primary active ingredient in Weedmaster Duo and Round Up. When paired with Metsulfuron a higher die off rate in target species was observed and required less intensive follow up programs. Large volumes of herbicide were still applied beyond what was initially planned in the Weed Action Plan with visible result due to active uptake by plants.

### 1.2.2 Targeted Areas

#### FY23-24 rehab areas

As mentioned earlier, a large effort was focused on early weed treatment to help establish the newly seeded box gum woodland areas of VD5,2 and 3. This involved backpack spraying early emergent weeds such as Galenia pubescens, Lysimachia arvensis, brassica sp, Megathyrsus maxima, Panicum colaratum, Chloris gayana, Chloris virgata and Pennisetum clandestinum. The focus on these weed species was critical as they are aggressive growers and able to smother native seedlings.

#### VD4 & VD5

Repeat focus on VD4 & VD5 during the FY25 program was successful in further reducing the density of exotic grasses and other invasive species. A large investment of time and labour was committed to these areas due to their high public exposure and importance regarding achieving rehabilitation goals for Box Gum Woodland area. The location also acts as a barrier between seed transport from outside the mine site and the recently rehabilitated areas at VD2 & VD5.

The priority species in the VD5 rehab is the exotic grass *Megathyrsus maximus* and perennial ground cover *Galenia pubescens*.

#### **CD1**

CD1 received follow up control for boxthorn that had been treated in previous financial year. Due to staff shortages planned work to control *Hypermedia hirta* and other exotic grasses was not able to be carried out.

#### **OOPD FY23/24 Rehab**

OOPD received minimal weed management in this financial year due to it having a lower priority. A walk over inspection was conducted with minimal priority weeds encountered. In future years if time and resources permit then it would be beneficial to target problematic pasture grasses such as coolatai grass (*Hyparrhenia hirta*).

#### **MacDonald's South**

A considerable amount of time was spent in MacDonalds south targeting exotic grasses under canopy, spraying between the planting of FY23 and cutting and painting boxthorn under the canopy.

Exotic grasses under the canopy in management area 34 were high volume sprayed with the grass selective herbicide Haloxyfop. This allowed the native dicotyledons in the ground layer to be left unharmed while making an effective start at controlling the exotic grasses which were mainly *Chloris gayana* and *Megathyrsus maxima*. Follow up work with backpack sprayers using Glyphosate and Metsulfuron will finish off the exotic grasses as well as reduce the *Galenia pubescens*.

Many days where wet weather reduced access to other areas were spent targeting small boxthorns under the canopy and brush cutters were used to target the larger boxthorn initially.

#### **Drayton Rehab**

A small amount of time was spent targeting *Acacia saligna* and *Hyparrhenia hirta* in the Drayton rehab. As this is a lower priority area it was left to focus resources elsewhere. Boxthorn and pampas grass received a fair treatment in the around surrounding Drayton to limit the spread of these high threat weeds into the rehab. **Saddlers North**

Saddlers North FY25 rehab received its initial walk over in which all early emergent weeds were targeted. As the early emergent weeds sprouted before almost all the native seed germinated the decision was made to high volume spray large sections of weeds using Glyphosate. Other areas where there was some early germination of natives were walked over with backpack sprayers.

#### **Train Loop**

Large patches of Hypericum perforatum, St Johns Wort, was boom sprayed and high volume sprayed around the train loop area. The area was treated with Grazon extra.

#### **Remnant Vegetation**

There are multiple remnant vegetation patches left on site which that are part of the woodland corridor. These areas received sensitive spot spraying to preserve the native diversity. Weed threats in these areas differ greatly with some areas having exotic grasses and others having woody weeds as the primary concern. Box Thorn proved to be the most common priority weed encountered throughout these areas.

#### **CHPP Bund**

The CHPP bund received a small amount of work for boxthorn and Acacia saligna. Small amounts of St Johns Wort were also treated around the CHPP bund.

#### **Environmental Dam**

The Environmental Dam had large patches of St Johns Wort high volume sprayed in the vegetation surrounding it. A pampas grass outbreak was also treated.

## 1. FY25 Planting

Tube stock planting program was completed in Autumn of FY25 with an approximate total of 10,000 midstory and canopy species planted into the eastern side of VD5. Prior to planting the area had received multiple walkovers for the mentioned priority weeds, planting area was slashed and ripples were put in. Ripples were then sprayed with a residual herbicide that is safe to use with plantings but will kill emergent weeds as they germinate. Plant guards were replaced with a browsing deterrent that sticks to the leaves to try to reduce waste, labour and cost associated with plantings. This planting also incorporated a community day where school children from primary to high school were invited to come along for the planting. Approximately 20% of the total plants were planted by the community with the remained planted by a contract planter who was paid per tree planted. The method of using a contract planter with the GSS land management team assisting greatly sped up the speed of the planting and the quality of the planting.

Table 4 - Planting Species

<b>Species</b>	<b>No. of individuals</b>
<i>Acacia Decora</i>	80
<i>Acacia Falcata</i>	133
<i>Acacia Implexa</i>	130
<i>Acacia Paradoxa</i>	120
<i>Acacia Parvipinnula</i>	80
<i>Allocasuarina luehmannii</i>	100
<i>Brachychiton Populneus</i>	1,169
<i>Bursaria Spinosa</i>	12
<i>Cassinia Quinquefaria</i>	47
<i>Dodonaea Viscosa</i>	1,160
<i>Dodonaea Viscosa Angustifolia</i>	163
<i>Eucalyptus Albens</i>	340
<i>Eucalyptus Albens X Moluccana</i>	111
<i>Eucalyptus Blakelyii</i>	240
<i>Eucalyptus Blakleyi X Tereticornis</i>	668
<i>Eucalyptus Crebra</i>	1,929
<i>Eucalyptus Moluccana</i>	1,040
<i>Eucalyptus Tereticornis</i>	166
<i>Indigofera Australis</i>	920
<i>Lomandra longifolia</i>	120
<i>Notelaea Microcarpa</i>	195
<i>Teucrium (Spartothamnella) Juncea</i>	257
<b>Total</b>	<b>9180</b>

## 2. FY25 Pest Management

### 1.3 Vertebrate Pest Control Report

A total of 27 bait stations were used to present the 1080 baits. Each station consisted of a small dirt / sand mound where the processed meat injected with Sodium monofluoroacetate (1080 poison) was placed inside. The meat bait is tethered using a bamboo skewer to hold the bait in place. The skewer acts as an indicator as to whether the bait has been tampered with or taken. This ground baiting method aligns with the code of practise and Standard Operation Procedures produced by NSW DPI.

Each station was checked weekly for three weeks and taken baits replaced. The remaining baits were buried onsite at a depth of not less than 500mm away from all water courses as per the Pesticide control Order 2008.

A total of 81 Baits over three weeks were presented at 27 bait stations with 21 takes.

6 takes being from Foxes and 15 takes from Wild Dogs based on animal signs left on the mound and surrounding area. No off-target native or non-native species were recorded as taking baits. The full breakdown of the results can be found in the following table.

Table 5 - Wild Dog Baiting Results

MAC Site							
Site ID	Date Laid	Check 1 Date	Check 1 Species	Check 2 Date	Check 2 Species	Check 3 & Removal Date	Check 3 Species
1237	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1238	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	Dog
1239	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1240	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1242	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1243	14/05/2024	23/05/2024	Fox	30/05/2024	No Sign	6/06/2024	No Sign
1244	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1245	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1247	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1248	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1249	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1250	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1252	14/05/2024	23/05/2024	Dog	30/05/2024	No Sign	6/06/2024	No Sign
1254	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1255	14/05/2024	23/05/2024	Fox	30/05/2024	Dog	6/06/2024	No Sign
1257	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1258	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	Fox
1259	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
1260	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	Dog
1261	14/05/2024	23/05/2024	Fox	30/05/2024	No Sign	6/06/2024	Fox
1262	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	Dog
1263	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1264	14/05/2024	23/05/2024	No Sign	30/05/2024	No Sign	6/06/2024	No Sign
1265	14/05/2024	23/05/2024	No Sign	30/05/2024	Fox	6/06/2024	No Sign
1266	14/05/2024	23/05/2024	Dog	30/05/2024	No Sign	6/06/2024	No Sign
1267	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	Dog
1268	14/05/2024	23/05/2024	No Sign	30/05/2024	Dog	6/06/2024	No Sign
<b>Check Totals</b>	<b>27 Bait Stations Established</b>	<b>27 Baits</b>	<b>2 Dogs 3 Foxes 18.5% Update</b>	<b>27 Baits</b>	<b>9 Dogs 1 fox 37.0% Update</b>	<b>27 Baits</b>	<b>4 Dogs 2 Foxes 22.2% Update</b>
<b>81 Baits / 21 Takes</b>							
15 Dogs 6 Foxes							
<b>Uptake Rate 25.9%</b>							

BHP

**Mt Arthur Coal**

1080 Control Sites

Autumn 2024

**Legend**

Pest control locations

- No Baits Taken (9)
- 1 Bait Take (15)
- 2 Bait Takes (3)


 0 1 2 4  
 Kilometers


Spatial Reference  
 Datum: WGS 1984  
 Projection: Mercator Auxiliary Sphere  
 Map Units: Meter  
 User: Jacob Leonard  
 Date Exported: 1/07/2024 8:52 AM



Figure 2- 1080 Control Sites

### 1.4 Feral Pig Trapping

A total of 8 free feeding sites were set up between 27th June and 17th July 2024 at various locations across the BHP Mount Arthur Coal Mine Site as per the below map. Each site was baited with 10 to 20kg of cracked corn and molasses to attract feral pigs, allowing HLM to (1) assess each location's viability as an effective trapping location and (2) cluster local feral pig populations to increase efficiency of trapping efforts. These sites were attended frequently throughout the control program and restocked as necessary until traps were installed.

Two feral pig cage traps with HogEye trap cameras were also installed on 27th June 2024 at the most likely locations on Mt Arthur Coal Mine. HogEye traps were attended when pigs were caught or to carry out necessary maintenance/repairs.

Traps were active between 27/06/2024 and 26/07/24. Detailed results, which correspond to the tables and maps below.

Throughout the duration of the control program, very little sign of feral pig activity was observed by HLM field staff within the site boundary. Coincidentally, feral pigs were not found to attend any of the cracked corn and molasses free feeding sites for the duration of the project, despite regular attendance and restocking of molasses to attract feral pigs. Free feeding site locations were chosen based on suitability of habitat features and sighting reports by Robson, BHP and other MAC staff, however it is assumed that feral pig populations across the site were low at the time of trapping. This estimation is supported by the camera monitoring survey undertaken by HLM in April 2024, during which only one feral pig was photographed across 6 locations for an abundance rating of 0.57% (Scarce).

*Table 6: MAC Winter 2024 Feral Pig Trapping Results:*

MAC Sites			
Trap Site ID	Date Established	Date Closed	Pigs Controlled
1804	27/6/2024	26/7/2024	0
1805	27/6/2024	26/27/2024	1
			1 Feral Pug

*Table 7: MAC Winter 2024 Feral Pig Trapping Rates*

MAC Winter 2024 Feral Pig Control Program Trapping Rates			
Trap Site ID	Trapping Days (Days Active)	Pigs Controlled	Trapping Rate (Pigs Controlled / Trapping Days)
1804	22	0	0%
1805	22	1	5%
<b>Total</b>	<b>44</b>	<b>1</b>	<b>2%</b>

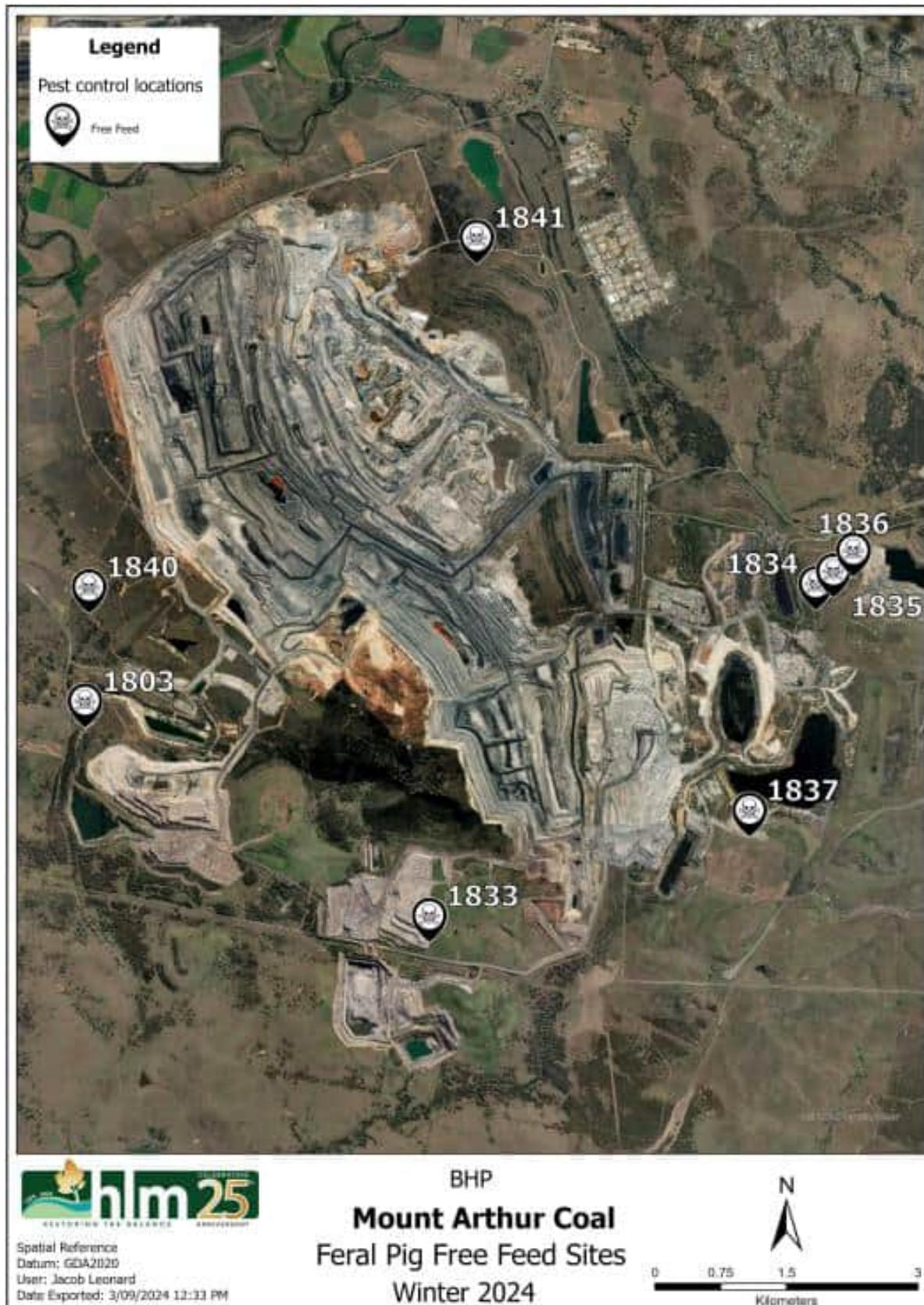


Figure 3: MAC Free Feed locations

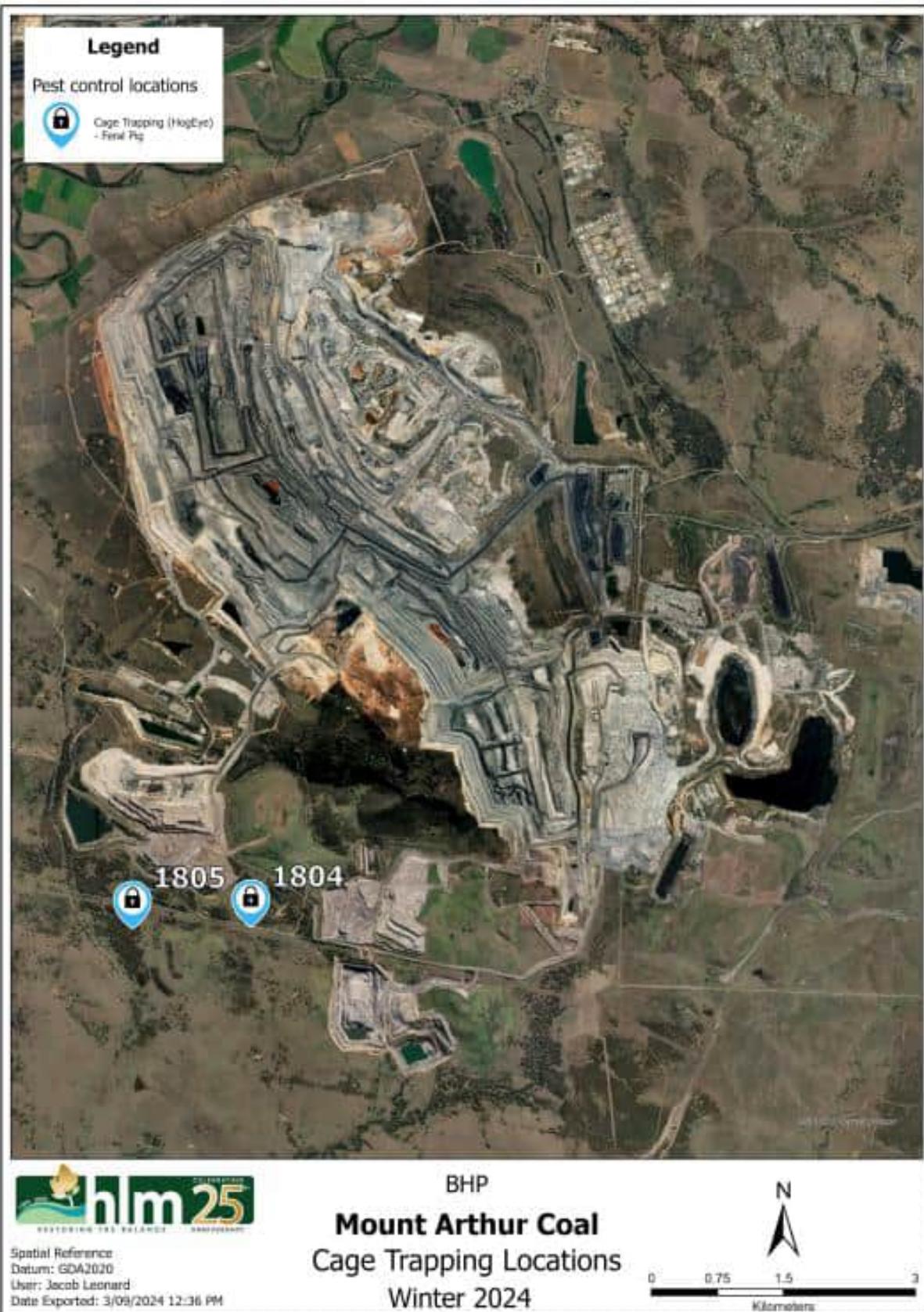


Figure 4: MAC Feral Pig Cage Trapping Locations