



# **INVINCIBLE COLLIERY ANNUAL REVIEW 2024**

**1 JANUARY 2024 TO 31 DECEMBER 2024**

## Table of Contents

1	Statement of Compliance.....	6
2	Introduction.....	5
2.1	<i>Mine Contacts</i> .....	5
2.2	<i>Annual Review Requirements</i> .....	7
3	Approvals.....	8
3.1	<i>Development Consent History</i> .....	8
3.2	<i>Status of Leases, Licences and Approvals</i> .....	8
3.2.1	<i>Environmental Management Plans</i> .....	9
4	Operations Summary .....	11
4.1	Mining Operations .....	11
4.2	Vehicle Movements .....	11
4.3	Section 240 Notice .....	11
5	Actions Required from Previous Annual Review .....	12
6	Environmental Performance .....	13
6.1	<i>Summary of Performance against EA Predictions</i> .....	13
6.1.1	<i>Air Quality Predictions against the EA</i> .....	13
6.1.2	<i>Water Quality Predictions against the EA</i> .....	13
6.1.3	<i>Groundwater Predictions against the EA</i> .....	14
6.1.4	<i>Noise Predictions against the EA</i> .....	14
6.2	<i>Meteorological Monitoring</i> .....	16
6.2.1	<i>Rainfall</i> .....	16
6.2.2	<i>Temperature</i> .....	16
6.2.3	<i>Humidity</i> .....	16
6.3	<i>Air Quality</i> .....	16
6.3.1	<i>Environmental Management Measures</i> .....	16
6.3.2	<i>Performance Criteria</i> .....	16
6.3.3	<i>Environmental Outcomes</i> .....	18
6.3.4	<i>Trends in Data</i> .....	19
6.3.5	<i>Proposed Improvements</i> .....	20
6.4	<i>Surface Water</i> .....	20
6.4.1	<i>Environmental Management Measures</i> .....	20
6.4.2	<i>Performance Criteria</i> .....	20
6.4.3	<i>Environmental Outcomes</i> .....	20
6.4.4	<i>Trends in Data</i> .....	22
6.4.5	<i>Proposed Improvements</i> .....	24
6.5	<i>Groundwater</i> .....	24
6.5.1	<i>Environmental Management Measures</i> .....	25
6.5.2	<i>Performance Criteria</i> .....	25
6.5.3	<i>Trends in Data</i> .....	25
6.5.4	<i>Proposed Improvements</i> .....	26

6.6	Noise .....	26
6.6.1	<i>Environmental Management Measures</i> .....	26
6.6.2	<i>Performance Criteria</i> .....	27
6.6.3	<i>Environmental Outcomes</i> .....	27
6.6.4	<i>Trends in Data</i> .....	27
6.6.5	<i>Proposed Improvements</i> .....	28
6.7	Biodiversity .....	28
6.7.1	<i>Environmental Management Measures</i> .....	28
6.7.2	<i>Biodiversity Monitoring</i> .....	28
6.7.3	<i>Proposed Improvements</i> .....	37
6.8	Blasting.....	37
6.9	Waste Management .....	37
6.10	Hazardous Material Management.....	37
6.11	Heritage.....	37
6.11.1	<i>Indigenous Heritage</i> .....	37
6.11.2	<i>Non-Indigenous Heritage</i> .....	38
6.12	Spontaneous Combustion.....	38
6.13	Bushfire .....	38
6.14	Mine Subsidence.....	38
6.15	Public Safety.....	38
7	Water Management .....	39
7.1	Water Management System .....	39
7.2	Water Take.....	40
7.3	Erosion and Sediment Control .....	40
7.3.1	<i>Environmental Management Measures</i> .....	40
7.3.2	<i>Environmental Outcomes and Proposed Improvements</i> .....	40
8	Rehabilitation .....	42
8.1	Status of Mining and Rehabilitation.....	42
8.2	Post Rehabilitation Land Uses.....	42
8.3	Completion Criteria Assessment.....	43
8.4	Rehabilitation Activities .....	43
8.4.1	<i>Invincible Colliery Rehabilitation Area Biodiversity Monitoring</i> .....	43
8.4.2	<i>Summary</i> .....	47
9	Community .....	42
9.1	CCC Meetings .....	42
9.2	Complaints .....	42
10	Independent Audit .....	43
11	Incidents and Non-Compliances during the Report Period .....	44
12	Activities to be Completed in the Next Reporting Period .....	46
13	References.....	47
	APPENDIX 1 - FIGURES.....	49

APPENDIX 2 – Monitoring Results .....	54
APPENDIX 3 – IEA 2024 Action Plan .....	63
APPENDIX 4 – Section 240 Notice Action Plan .....	73


## Tables

Table 1-1 Statement of Compliance .....	6
Table 1-2 Compliance Status Key .....	6
Table 1-3 Non-Compliance Recorded during the Reporting Period.....	2
Table 2-1 Key Personnel Responsible for Environmental Management.....	5
Table 2-2 Project Approval 07_0127 (MOD 5) Conditions for the Annual Review .....	7
Table 3-1 Current Approvals, Licences and Leases .....	9
Table 4-1 Production Summary.....	11
Table 6-1 Summary of Environmental Performance during the Reporting Period.....	15
Table 6-2 Invincible Colliery Weather Data.....	17
Table 6-3 Air Quality Performance Criteria .....	18
Table 6-4 Deposited Dust Monitoring Results .....	18
Table 6-5 Particulate Matter (PM10) and Total Suspended Particulates (TSP) Annual Average Results .....	19
Table 6-6 Annual Averages for Dust Deposition 2020 – 2024.....	19
Table 6-7 Annual Averages for Particulate Matter 2020 – 2024.....	20
Table 6-8 Water Quality Concentration Limits.....	20
Table 6-9 LD002 Water Quality Monitoring Results .....	21
Table 6-10 Comparison of Water Quality in On-Site Dams 2020-2024 .....	23
Table 6-11 Upstream and Downstream Creek Water Quality 2020 – 2024 .....	24
Table 6-12 Existing Invincible Colliery Groundwater Monitoring Bores .....	25
Table 6-13 Noise Impact Assessment Criteria.....	27
Table 6-14 2024 Quarterly Attended Noise Monitoring Results.....	27
Table 6-15 Biodiversity Offset Area 2023 vs 2024 Results.....	30
Table 7-1 Water Take.....	40
Table 8-1 Invincible Colliery Rehabilitation Status.....	42
Table 8-2 Rehabilitation Area 2023 vs 2024 Results .....	44
Table 8-3 Assessment of 2024 Monitoring Results against Invincible Colliery Completion Criteria .....	48
Table 9-1 Comparison of Complaints for Invincible Colliery 2020 – 2024 .....	42
Table 11-1 Summary of Non-Compliance Recorded during the Reporting Period.....	44

## Graphs

Graph 1 Invincible Rehabilitation Monitoring Plot Species Richness.....	46
Graph 2 Invincible Rehabilitation Monitoring Plot Percent Foliage Cover .....	46

## Annual Review Title Block

Name of operation:	Invincible Colliery
Name of operator:	Shoalhaven Coal Pty Limited
Development consent:	Invincible Coal Mine Extension Project Approval 07_0127 (MOD 5)
Name of holder of development consent:	Shoalhaven Coal Company Pty Limited
Mining leases:	ML1638, ML1635, ML 1844, ML 1859, ML 1860, CCL702.
Name of holder of mining leases:	Shoalhaven Coal Pty Limited
Water licence:	Water Access Licence (WAL) 36485 (10BL602586)
Name of holder of water licence:	Shoalhaven Coal Pty Limited
RMP start date:	30 September 2022
RMP end date:	N/A
Annual Review start date:	1 January 2024
Annual Review end date:	31 December 2024
<p><b>I, Kim Nguyen, certify that this audit report is a true and accurate record of the compliance status of Invincible Colliery for the period 1 January 2024 to 31 December 2024, and that I am authorised to make this statement on behalf of Shoalhaven Coal.</b></p> <p>Note.</p> <p><i>a) 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.</i></p> <p><i>b) 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).</i></p>	
Name of authorised reporting officer:	Kim Nguyen
Title of authorised reporting officer:	Chief Executive Officer
Signature of authorised reporting officer:	
Date:	31/03/2025

## 1 Statement of Compliance

This Annual Review provides a summary of the Invincible Colliery operations performance over the period 1 January to 31 December 2024 (referred to hereafter as the reporting period).

The 2024 Independent Environmental Audit (IEA) was undertaken during the reporting period which identified non-compliances across the EPL, Mining Lease (ML) and the Project Approval. An updated action plan is included **Appendix 3**. During the reporting period, Invincible Colliery operated in accordance with Project Approval 07\_0127 – Mod 5 (Project Approval) Southern Extension Project, as approved by the Planning and Assessment Commission (PAC) on 2 February 2018. Mining operations were undertaken by Shoalhaven Coal Pty Limited (Shoalhaven Coal) during the reporting period, focusing on the Southern Extension.

The compliance status for the reporting period is summarised in **Table 1-1**. Nine (9) non-compliances occurred during the reporting period. The non-compliances recorded during the report period have been ranked according to the risk matrix included in **Table 1-2** and a brief description of each is provided in **Table 1-3**.

**Table 1-1 Statement of Compliance**

Relevant Approval	All conditions complied with?
Project Approval (PA) 07_1027 (Mod 5)	No – Refer to <b>Table 1.3</b>
Environment Protection Licence (EPL) 1095	No – Refer to <b>Table 1.3</b>
WAL 36485 (10BL602586)	Yes
Mining Lease (ML) 1635, ML 1638, ML 1844, ML 1859, ML 1860	No

**Table 1-2 Compliance Status Key**

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 likely 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)

Source: Annual Review Guideline (NSW Government, 2015).

**Table 1-3 Non-Compliance Recorded during the Reporting Period**

Relevant Approval	Condition No.	Condition Description/Non-Compliance	Compliance Status	Comment	Where Addressed in Annual Review
PA 07_0127 (MOD 5)	Schedule 3 Condition 16	Exceedance of air quality 24 hr assessment criteria for particular matter (PM <sub>10</sub> ) on 22 November 2024.	Low Non-compliant	A sample taken from HV02 (PM <sub>10</sub> unit) on 22 November 2024 recorded a PM <sub>10</sub> reading of 56.00 µg/m <sup>3</sup> for the 24 hr period. The results were received by site 14 January 2025. An investigation into the elevated result did not identify a specific emission source. The result was an isolated incident, all other PM <sub>10</sub> results for November were compliant with assessment criteria.	Section 6.3
PA 07_0127 (MOD 5)	Schedule 3 Condition 19	Air Quality Monitoring – HVAS PM10 & TSP not monitored	Low Non-compliant	From January 2024 to March 2024 PM10 and TSP were not monitored. Due to contractual issues, technicians did not attend site to carry out collection and routine filter changes after scheduled runs. A review of contractual obligations and an engagement of new contractors was undertaken to avoid future non compliances.	Section 6.3
PA 07_0127 (MOD 5)	Schedule 3 Condition 19	Air Quality Monitoring – HVAS PM10 no data	Low Non-compliant	No data recorded for PM10 at HVAS at Invincible Colliery on 3 August 2024 due to faulty/brittle filters.	Section 6.3

<b>PA 07_0127 (MOD 5) EPL 1095</b>	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS TSP no data	Low Non-compliant	No data recorded for TSP from 8 April to 10 April at Invincible Colliery due to faulty/brittle filters.	<b>Section 6.3</b>
<b>PA 07_0127 (MOD 5) EPL 1095</b>	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS PM10 and TSP no data	Low Non-compliant	No data recorded for PM10 and TSP at HVAS at Invincible Colliery on 13 September 2024 due to faulty/brittle filters.	<b>Section 6.3</b>
<b>PA 07_0127 (MOD 5)  EPL 1095</b>	Schedule 3 Condition 24  Condition L2.4	Discharge Quality Monitoring – Outside of pH assessment criteria at LD002	Low Non-compliant	Water quality results of pH collected at the licensed discharge point LD002 were below the EPL assessment criteria on seven (7) occasions during discharge events.	<b>Section 6.4</b>
<b>PA 07_0127 (MOD 5)</b>	Schedule 3 Condition 24 (b)	Discharge exceedances for ANZG trigger values for 95% species – Cadmium, Chromium, Silver and Boron.	Low Non-compliant	As a requirement under the project development PA 07_127 discharge water quality must be within default Australia and New Zealand Water Quality Guidelines (ANZG). During the reporting period discharge water quality at the licensed discharge point LD002 results of cadmium, chromium, silver and boron recorded above the trigger levels for the ANZG 95 % species protection limit on various occasions.	<b>Section 6.4</b>



<b>CCL702</b> <b>ML1635 and ML 1638</b>	Condition 3(1) (AEMR) Condition 4 (EMR)	Failure to submit an AEMR/EMR in the timeframe approved by the Director General.	Administrative Non-compliant	The 2023 Annual Review report was submitted late due to an administrative oversight.	<b>NA</b>
<b>PA 07_0127 (MOD 5)</b>	Schedule 3 Condition 35	Biodiversity - Conservation Bond	Administrative Non-compliance	<p>The Department of Planning, Housing and Infrastructure (DPHI) has principally accepted the Invincible Coal Mine proposed area known as Hillcroft as a biodiversity offset area. However, further works and consultations are required by DPHI and Crown Lands to register a Biodiversity Stewardship Agreement and Conservation Bond against the proposed biodiversity offset area including:</p> <ul style="list-style-type: none"> <li>(i) agreement to financial considerations,</li> <li>(ii) lease condition alterations indemnifying the Minister,</li> <li>(iii) reserve purpose alterations, and</li> <li>(iv) confirmation that Perpetual Special Lease 1943 – Lithgow extinguishes Native Title</li> </ul> <p>These are expected to be finalised in 2025.</p>	<b>Section 6.7</b>

## 2 Introduction

Shoalhaven Coal Pty Ltd owns the Invincible Colliery, an open cut coal mine located approximately 25 kilometres (km) north-west of Lithgow in New South Wales (NSW) (refer to **Appendix 1, Figure 1**). Invincible Colliery is Operated by Castlereagh Coal a wholly owned subsidiary of Shoalhaven Coal Pty Ltd.

Operations at Invincible Colliery were suspended and placed in care and maintenance in April 2013 as known coal reserve within the approved mining area were exhausted and a project modification by former owners Coalpac Pty Ltd to allow further mining was rejected. As a result, administrators were appointed in October 2013, and Coalpac Pty Ltd was placed into voluntary liquidation in November 2014. Invincible Colliery and the nearby Cullen Valley Mine were subsequently purchased by Shoalhaven Coal Pty Ltd (a subsidiary of the Manildra Group) in 2015 to secure the supply of nut coal for Manildra's Shoalhaven Starches Plant located at Bomaderry on the NSW South Coast.

Subsequently Shoalhaven Coal sought a modification to the Invincible Colliery Project Approval in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979*. The modification proposed an extension to open cut mining operations to the south of the existing approved mining domain into an area known as the Southern Extension. Following public exhibition between 27 September and 8 November 2016, the modification was approved by the NSW Planning and Assessment Commission (PAC) on 5 February 2018, refer to **Section 4.1**.

In November 2021 Shoalhaven Coal Pty Ltd was sold via a 100% share transaction to an all-Australian locally based ownership team who continued to operate the Colliery under a care and maintenance arrangements until July 2023 when mining commencing in the Southern Extension.

Invincible Colliery is located in an area of historical mining operations associated with western coalfields of NSW, including the former mining operations at Cullen Valley Mine, Baal Bone Colliery, Pine Dale and Ivanhoe Colliery. The Invincible site has had a long history of mining operations commencing in 1901. Open cut mining has been carried out at Invincible Colliery at various times since the 1940s through to 2013 when operations were placed in care and maintenance followed by recommencement of mining in 2023. The existing operations are shown in **Figure 2, Appendix 1**.

### 2.1 Mine Contacts

The Manager Mining Engineering is responsible to the regulatory authorities for all aspects of environmental compliance at the site supported by the Environmental Manager and Community Liaison Officer. Contact details are summarised in **Table 2-1**.

**Table 2-1 Key Personnel Responsible for Environmental Management**

Name	Role	Company	Contact details
Kim Nguyen	Chief Executive Officer	Shoalhaven Coal Pty Ltd, trading as Castlereagh Coal	Invincible Colliery Castlereagh Highway Cullen Bullen, NSW 2790 M 0414 335 529
Tim Haig	General Manager	Shoalhaven Coal Pty Ltd, trading as Castlereagh Coal	Invincible Colliery Castlereagh Highway Cullen Bullen, NSW 2790 M 0400 653 241

<b>William Olsen</b>	Environmental Superintendent	Castlereagh Coal	Invincible Colliery Castlereagh Highway Cullen Bullen, NSW 2790 M   0477 115 523
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## 2.2 Annual Review Requirements

During the reporting period, Invincible Colliery operated in accordance with Project Approval.

Condition 4 of Schedule 5 of the Project Approval requires an Annual Review (AR) to be prepared and submitted to the DPHI. This report has been prepared in accordance with *NSW Government Annual Review Guidelines* (NSW Government, 2015) and details the operational and environmental management activities of Invincible Colliery during the reporting period. Project Approval requirements along with an explanation of where each requirement is addressed within this document are provided in **Table 2-2**.

**Table 2-2 Project Approval 07\_0127 (MOD 5) Conditions for the Annual Review**

Conditions		Addressed in
<b>Schedule 3 – Specific Environmental Conditions</b>		
<b>Monitoring of Coal Transport</b>		
<b>40.</b>	The Proponent must: a) Keep accurate records of the: <ul style="list-style-type: none"> <li>Amount of coal transported from the project in each calendar year (on a monthly basis)</li> <li>Number of coal truck movements generated by the project to the Mt Piper Power Station and the Shoalhaven Starches Plant (on a daily basis)</li> </ul> b) include these records in the Annual Review.	<b>Section 4.0</b>
<b>Schedule 3 – Specific Environmental Conditions</b>		
<b>Waste Minimisation</b>		
<b>43.</b>	(e) monitor and report on effectiveness of the waste minimisation and management measures in the Annual Review.	<b>Section 6.10</b>
<b>Schedule 5 – Environmental Management, Monitoring, Auditing and Reporting</b>		
<b>Annual Reporting</b>		
<b>4.</b>	By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent must review the environmental performance of the project to the satisfaction of the Secretary. This review must:	<b>This document</b>
	(a) describe the project (including any rehabilitation) that was carried out in the past financial year, and the project that is proposed to be carried out over the next year;	<b>Sections 4.0, 6.0 and 8.0</b>
	(b) include a comprehensive review of the monitoring results and complaints records of the project over the past financial year, which includes a comparison of these results against the: <ul style="list-style-type: none"> <li>relevant statutory requirements, limits or performance measures/criteria</li> <li>requirements of any plan or program required under this approval</li> <li>monitoring results of previous years</li> <li>relevant predictions in the EA;</li> </ul>	<b>Sections 6.0 and 9.2</b>
	(c) identify any non-compliance over the past financial year, and describe what actions were (or are being) taken to ensure compliance.	<b>Sections 1.0 and 11.0</b>
	(d) identify any trends in the monitoring data over the life of the project;	<b>Sections 6.0</b>
	(e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and	<b>Section 6.1</b>
	(f) describe what measures will be implemented over the current financial year to improve the environmental performance of the project.	<b>Section 6.0</b>

*Note: For the purposes of the Annual Review, Condition 4(a), 4(b), 4(c) and 4(f) have been interpreted to be the calendar year which is consistent with previous Annual Reviews prepared for Invincible Colliery and aligns with a required submission date of 31 March.*

### 3 Approvals

The operations at Invincible Colliery are subject to a range of standards and performance measures. Environmental approvals, licences and leases currently held by Invincible Colliery are listed in **Table 3-1**.

#### 3.1 *Development Consent History*

The Invincible Project Approval granted on 4 December 2008 which permits mining for eight years from the date of grant of the approval (i.e. to 4 December 2016). This 2008 Project Approval has subsequent modifications approved in 2009 and 2010.

During 2016, Shoalhaven Coal submitted an application to DPE to modify the Invincible Project Approval to extend the life of mining operations at Invincible Colliery and obtain approval to extend the open cut mining operations to an area immediately south of the existing operations (i.e. the Southern Extension Project). The Invincible Southern Extension Project area is located within the Ben Bullen State Forest to the east of the Castlereagh Highway (refer to **Figure 2, Appendix 1**). The Invincible Southern Extension Project was approved by the PAC on 2 February 2018. The approval of the Southern Extension Project is noted as Mod 5 on the Project Approval. During the next reporting period a submission will be made for modification 6 (Mod 6) of the Project Approval. This will ensure project security and additional operational needs of the Southern Extension Project area.

The Invincible Southern Extension Project (Mod 5) includes:

- extending the period in which mining can continue for a period of 8 years from approval of the modification application.
- extending the open cut mining area to mine down to, and including, the Lithgow Seam to the south of the existing mine in the Southern Extension Area.
- maximum mining and production rates of up to 1.2 Mtpa.
- product coal transport arrangements (with coal to be transported from the site by road truck to either the Shoalhaven Starches Plant or Mt Piper Power Station).
- use of existing open cut voids and former underground workings for temporary water storage.
- continued use of existing Invincible Colliery infrastructure (including maintenance work, and minor upgrades and operation of the existing Invincible Coal Preparation Plant (Invincible CPP), and
- rehabilitation of the Southern Extension Area and existing disturbance areas at Invincible Colliery by reshaping mining areas to remove voids and revegetating the reshaped landform with locally endemic woodland and forest communities.

#### 3.2 *Status of Leases, Licences and Approvals*

Invincible operates in accordance with the approvals listed in **Table 3-1**.

**Table 3-1 Current Approvals, Licences and Leases**

Approval	Date Granted	Expiry Date	Details
<b>Project Approval (PA) 07_0127 (MOD 5)</b>	2 Feb 2018	31 December 2025	The MOD 5 Project Approval applied through the reporting period.
<b>Environment Protection Licence (EPL) 1095</b>	28 Feb (anniversary date)	Renewed annually	Held by Shoalhaven Coal over the Invincible premises.
<b>Mining Lease (ML) 1635</b>	10 Sep 2009	10 Sep 2030	Extends to the surface and covers the existing open cut mining areas at Invincible.
<b>ML 1638</b>	6 Nov 2009	6 Nov 2030	Extends to the surface and covers the existing open cut mining areas at Invincible. ML 1638 extends into the northern end of the Southern Extension Area.
<b>ML 1844</b>	21 Feb 2023	21 Feb 2044	Surface to 15.24m
<b>ML 1859</b>	6 June 2024	28 June 2027	Taken up by Shoalhaven Coal as part of the transfer of CCL 702 to Shoalhaven Coal from Ivanhoe Coal.
<b>ML 1860</b>	7 September 2023	7 September 2044	Ancillary Mining Activities.
<b>Consolidated Coal Lease (CCL) 702</b>	26 Nov 1990	24 November 2031	Variable depth.
<b>WAL 35978 (10BL602584) "Washery Bore"</b>	24 Dec 2012	23 Dec 2027	Authorises the extraction of 26 units from the NSW Murray-Darling Porous Rock Groundwater Sources Water Sharing Plan.
<b>WAL 36485</b>	1 July 2013	18 Feb 2028	Extraction Works GW

### 3.2.1 Environmental Management Plans

Environmental Management Plans (EMPs) have been prepared and approved for Invincible Colliery in accordance with the conditions of PA 07\_0127. The current versions approved by DPIE are available on the Castlereagh Coal website (<https://ccoal.com.au>).

- Environmental Management Strategy. Approved November 2022.
- Air Quality Management Plan. Approved November 2022.
- Aboriginal Cultural Heritage Management Plan. Approved January 2023.
- Biodiversity Management Plan. Approved July 2023.
- Noise Management Plan. Approved October 2022.
- Pollution Incident Response Management Plan. Updated December 2024.
- Rehabilitation Strategy. Approved December 2022.
- Rehabilitation Management Plan. Approved December 2022.

- Transport Management Plan. Approved September 2022.
- Water Management Plan. Approved November 2022.

## 4 Operations Summary

A summary of the operations undertaken at Invincible Colliery during the reporting period are included in the following sections.

### 4.1 Mining Operations

As discussed in **Section 3.1**, on 5 February 2018 the Invincible Colliery Southern Extension Project was approved by the PAC. This approval allows the mining down to, and including, the Lithgow Seam to the south of the existing mine in the Southern Extension Area (**Figure 2, Appendix 1**). Mining commenced in the Southern Area in July 2023 and continued throughout 2024. Production figures for the reporting period are detailed in **Table 4-1**.

**Table 4-1 Production Summary**

Material	Approved limit	Previous reporting period (actual 2023)	This reporting period (actual 2024)	Next reporting period (forecast 2025)
Waste rock/ overburden (Mbcm)	Not specified	0.535	1.512	3.896
Coal works/Coal mining (Mt)	0 – 2Mtpa handled (EPL) 0.5 - 2Mtpa produced (EPL) 1.2Mtpa extraction (PA)	0.05	0.234	0.344
Coarse reject	Not specified	0	0	0
Fine reject (tailings)	Not specified	0	0	0
Saleable Coal (Mt)	Not specified	0.05	0.249	0.344

### 4.2 Vehicle Movements

In accordance with Condition 40 of Schedule 3 of the Project Approval, records regarding the amount of coal transported from the mine site and annual number of coal truck movements for 2024 is required to be included within this report. A total of 246,951.1 tonnes of coal was transported by 7,504 coal truck movements from Invincible during the reporting period.

### 4.3 Section 240 Notice

During 2024 activities to address Notice NTCE0008974 (directing an assessment of rehabilitation materials, quantities, changes in inventories and shortfall projections at completion of mining activities and a report demonstrating how the directions have been met) and Notice NTCE0008975 (directing an assessment of surface water management systems associated with the final landform, including an assessment of the adequacy of the current systems, capacity, construction methods and effectiveness of materials used for rock armouring and a report demonstrating how the directions have been met) were completed for Invincible Colliery (refer to **Appendix 4** for the completed actions summary table).



## **5 Actions Required from Previous Annual Review**

Following submission of the 2023 Annual Review, DPHI advised in correspondence dated 19 July 2024, that the Annual Review was considered to generally satisfy the requirement of the Approval in relation to Annual Reviews. It was also noted reported non-compliances with the Consent as outlined in the Annual Review but indicated no further information was required. Additionally, DPHI requested that the Annual Review be made publicly available on the company website. A copy of the 2023 Annual Review is available on the Castlereagh Coal website.

## 6 Environmental Performance

The following sections provide a summary of environmental monitoring and management undertaken during the reporting period. Invincible Colliery undertakes a range of environmental monitoring. Environmental monitoring locations for the site are shown on **Figure 3, Appendix 1**. Environmental monitoring data and a copy of the current Invincible Colliery management plans are published on the Castlereagh Coal website (<http://ccoal.com.au>) in accordance with the requirement of the Project Approval. An overview of environmental performance at Invincible Colliery is provided in the following sections. A summary of the environmental performance during the reporting period is presented in **Table 6-1**.

### 6.1 Summary of Performance against EA Predictions

The Invincible Colliery has been subject to three Environmental Assessments (EA) and several modifications in the last 14 years of operations. The Invincible Expansion Project involving expanded operations to the north and south of the original mining area was assessed by the EA dated April 2008 (R.W. Corkery & Co. Pty Limited, 2008). An EA was also prepared for the Invincible Colliery Southern Extension Project (Umwelt, 2016) which assessed the expansion of operations immediately to the south of the existing operations.

Environmental monitoring undertaken includes noise, air quality, surface water and groundwater quality, and biodiversity. Below is a summary of predictions from the EA (2016) completed for the site. **Table 6-1** provides a summary of Invincible Colliery environmental performance against the EA predictions for the reporting period. It is noted that modelling undertaken for the EA assumed mining operations were being undertaken. As noted previously, Invincible Colliery was in care and maintenance until 13 July 2023 after which mining operations recommenced.

#### 6.1.1 Air Quality Predictions against the EA

The EA (Umwelt, 2016) predicted maximum 24-hour PM<sub>10</sub> concentrations from background levels plus mine emissions to be 27 µg/m<sup>3</sup>, which is well below the 50 µg/m<sup>3</sup> 24-hour goal. Predicted annual average PM<sub>10</sub> concentrations were 20 µg/m<sup>3</sup> (background plus mine emissions) and this is well below the annual average goal of 30 µg/m<sup>3</sup>. Maximum 24-hour average PM<sub>2.5</sub> concentrations, due to the Southern Extension Project, are predicted not to exceed the NEPM criteria of 25 µg/m<sup>3</sup> at any private residence surrounding Invincible. Similarly, annual average PM<sub>2.5</sub> concentrations are predicted to be below the NEPM criteria of 8 µg/m<sup>3</sup> at all private residences surrounding the Southern Extension Project.

There are no private residences that are predicted to experience annual average TSP or dust deposition levels above the air quality assessment criteria, either from the Southern Extension Project alone or from the cumulative impacts of the Southern Extension Project and all other sources. The predicted extent of TSP and Dust Deposition is located within the extent of the modelled PM<sub>10</sub>, 24 hr emissions from the Southern Extension Project.

During the reporting period and the TSP, PM<sub>10</sub> and dust deposition concentrations recorded were below regulatory criteria at all receivers. The details regarding the air quality monitoring results can be found in **Section 6.3**.

#### 6.1.2 Water Quality Predictions against the EA

Clean surface water is diverted away from active disturbance areas and runoff from disturbed areas is collected and stored for operational uses such as dust suppression. The EA (Umwelt, 2016) predicted that the project was unlikely to have a significant impact on local or regional surface water quantity or quality. The EA (Umwelt, 2016) did not predict any additional water quality impacts for the modification proposals.

Water quality monitoring was undertaken on three discharge events during the reporting period. All the results complied with the EPL water quality concentration limits. Further details on the surface water quality monitoring results are provided in **Section 6.4**.

#### **6.1.3 *Groundwater Predictions against the EA***

As noted in **Section 6.5** , there have been no impacts detected on groundwater levels and water quality at Invincible Colliery.

#### **6.1.4 *Noise Predictions against the EA***

The EA (Umwelt, 2016) modelling results indicated that the cumulative noise impacts assessment criteria will not be exceeded based on the Project and the relevant surrounding industrial noise sources.

As detailed in **Section 6.6** , noise monitoring has shown that noise emissions have been inaudible at all locations during the reporting period and since the mine was placed on care and maintenance in 2013.

**Table 6-1 Summary of Environmental Performance during the Reporting Period**

<b>Aspect</b>	<b>Approval Criteria/ EIS Prediction</b>	<b>Performance during the reporting period</b>	<b>Trend/key management implications</b>	<b>Implemented/proposed management actions</b>
<b>Air Quality</b> (Refer to Section 6.3 )	Refer <b>Section 6.3.2</b> Refer <b>Section 6.1.1</b>	Annual average deposited dust, PM <sub>10</sub> and TSP levels were below the respective performance criteria. An exceedance of the PM <sub>10</sub> 24hr average was recorded as a non-compliance refer to <b>Table 1.3</b> for further detail.	Refer to <b>Section 6.3.4</b> Recorded air quality levels are generally consistent with previous years.	No further action required.
<b>Surface Water Quality</b> (Refer to Section 6.4)	Refer <b>Section 6.4.2</b> / Refer <b>Section 6.1.2</b>	Water quality across the Invincible Colliery water monitoring network was generally compliant with respective concentration limits. Refer to <b>Table 1.3</b> for non-compliances.	Refer to <b>Section 6.4.4</b> Water quality is generally consistent with previous years.	No further action required.
<b>Groundwater</b> (Refer to Section 6.5)	Refer <b>Section 6.5.2</b> Refer <b>Section 6.1.3</b>	Compliant	Groundwater quality monitoring results are further discussed in <b>Section 6.5.4</b>	No further action required.
<b>Noise</b> (Refer to Section 6.6)	Refer to <b>Section 6.6.2</b> / Refer to <b>Section 6.1.4</b>	Compliant	Refer to <b>Section 6.6.4</b> Noise emissions were inaudible at all private residences during the reporting period, which is consistent with previous years.	No further action required.
<b>Biodiversity</b> (Refer to Section 6.7)	Refer to <b>Section 6.7.2</b> Refer to <b>Section 8.4</b>	Non-compliant	Refer to <b>Section 6.7.3</b>	Biodiversity monitoring program will continue in accordance with regulatory requirements.

## **6.2 Meteorological Monitoring**

The Invincible Colliery weather station (IMET1) is located within the Lot 113 biodiversity offset area as shown in **Appendix 1, Figure 2**. During the reporting period the weather station received substantial upgrades due to faulty equipment, a new humidity and temperature sensor installed. A summary of monthly meteorological monitoring is provided in **Table 6-2**.

### **6.2.1 Rainfall**

Invincible Colliery received 602.2 mm of rainfall over 146 rain days during the reporting period. The highest rainfall occurred during November (101.4 mm), while the lowest rainfall was recorded during September (13.4 mm). A summary of monthly rainfall data is provided in **Table 6-2**.

### **6.2.2 Temperature**

Air temperature is measured at 2 and 10 metres above ground level at Invincible Colliery. The maximum temperature recorded during the reporting period was in February (25.4 @ @10 m) and the lowest temperature occurred in July (-2.6 @ 2 m). Maximum and minimum monthly temperatures are summarised in **Table 6-2**.

### **6.2.3 Humidity**

The minimum humidity of 41.8 % was recorded in September. As the humidity sensor was undergoing substantial repairs during 2024 the maximum humidity data was inaccurate. The minimum and maximum monthly humidity data is provided in **Table 6-2**.

## **6.3 Air Quality**

### **6.3.1 Environmental Management Measures**

Air quality monitoring is undertaken in accordance with the Invincible Colliery Air Quality Management Plan (AQMP 2022). The air quality monitoring network consists of six dust deposition gauges and one High Volume Air Sampler (HVAS) which measures particulate matter <10 µm (PM<sub>10</sub>) (refer to **Figure 3, Appendix 1**).

Air quality impacts at Invincible Colliery are managed in a manner that minimises generation of airborne and visual dust.

### **6.3.2 Performance Criteria**

Shoalhaven Coal is required to ensure that dust and particulate emissions do not cause exceedances of the criteria specified by the Project Approval. The air quality impact assessment criteria specified in the Project Approval are provided in **Table 6-3**.

**Table 6-2 Invincible Colliery Weather Data**

Month	Rainfall	Cumulative	No. of rain	Air temp @ 2m (°C)		Air temp @ 10m (°C)		Humidity (%)	
	(mm)	Rainfall (mm)	days/month	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
January 2024	70.6	70.6	14	9.2	21.7	9.6	21.7	56.8	NR
February 2024	33.4	104	16	12.6	24.8	12.7	25.4	51.0	NR
March 2024	81.6	185.6	12	8.4	20.0	9.3	20.2	61.4	NR
April 2024	45.4	231	10	4.2	13.9	4.7	14.1	74	NR
May 2024	39.6	270.6	16	-0.0	12.4	0.8	12.9	62.9	NR
June 2024	29.4	300	17	-1.4	12.4	-0.5	12.5	79.8	NR
July 2024	22.2	322.2	15	-2.6	9.5	-1.4	9.9	66.6	NR
August 2024	15.2	337.4	14	-2.5	15.7	-1.7	16.1	49.6	NR
September 2024	13.4	350.8	6	-2.2	11.7	-1.4	13.2	41.8	NR
October 2024	89.6	440.4	6	4.1	15.7	4.8	16.0	48.3	NR
November 2024	101.4	541.8	12	7.7	23.4	8.3	23.7	43.3	NR
December 2024	60.4	602.2	8	8.2	19.5	10.3	20.8	51.0	NR
<b>Total</b>	602.2	-	<b>146</b>	-	-	-	-	-	-

NR – Faulty reading as the humidity sensor was undergoing maintenance during 2024, results that were recorded were not accurate.

**Table 6-3 Air Quality Performance Criteria**

Pollutant	Averaging Period	Criterion
Total suspended matter (TSP) matter	Annual average	90 µg/m <sup>3</sup>
Particulate matter <10µm (PM <sub>10</sub> )	Annual average	30 µg/m <sup>3</sup>
	24 hour average	50 µg/m <sup>3</sup>
Deposited dust	Annual average (maximum total)	4 g/m <sup>2</sup> /month
	Annual average (maximum increase)	2 g/m <sup>2</sup> /month

### 6.3.3 Environmental Outcomes

#### 6.3.3.1 Dust Deposition

Deposited dust is monitored every 30 ±2 days at six representative locations around the mine site (dust deposition gauges IDD1 to IDD6). The annual average criterion for deposited dust (4 g/m<sup>2</sup>/month) was not exceeded at any of the dust deposition gauges during the reporting period. The 2024 annual average dust levels for all locations were less than 2 g/m<sup>2</sup>/month and therefore complied with air quality performance criteria. The monthly deposited dust monitoring results and annual averages for 2024 are shown in **Table 6-4**.

**Table 6-4 Deposited Dust Monitoring Results**

Date	Total Insoluble Solids (g/m <sup>2</sup> /month)					
	IDD1	IDD2	IDD3	IDD4	IDD5	IDD6
January 2024	0.5	0.3	0.9	0.2	0.1	1.7
February 2024	0.8	1.8	1.1	1.2	1.1	1.6
March 2024	0.7	0.8	0.5	0.6	0.5	2
April 2024	0.6	1.3	0.4	0.3	0.3	0.6
May 2024	0.8	1.2	0.9	0.5	0.4	0.4
June 2024	0.6	0.9	0.4	0.7	0.2	0.4
July 2024	1.1	1.7	0.9	0.5	0.8	2.4
August 2024	0.4	0.7	0.6	0.4	0.5	1.9
September 2024	0.6	1.2	1.1	0.5	0.8	0.3
October 2024	0.6	1.1	1.1	0.3	0.2	0.5
November 2024	1.7	3.1	1.0	1.3	0.6	1.0
December 2024	2.7	2.3	1.4	3.2	3.5	1.1
Annual Average 2024	0.9	1.4	0.9	0.8	0.8	1.2

#### 6.3.3.2 Particulate Matter

Monitoring of PM<sub>10</sub> and TSP was conducted during 2024 from the High Volume Sampler (HVAS) (refer HV02 in **Figure 3, Appendix 1**). The annual average criteria for PM<sub>10</sub> (30 µg/m<sup>3</sup>) and TSP (90 µg/m<sup>3</sup>) were not exceeded during the reporting period. However, the 24 hr average criteria for PM<sub>10</sub> (50 µg/m<sup>3</sup>) was exceeded on one (1) occasion during the reporting period Refer to **Table 1-3** for non-compliance details.

The annual average PM<sub>10</sub> monitoring results for the reporting period is shown in **Table 6-5**. Some HVAS data is unavailable for the reporting period. Refer to **Table 1-3** for non-compliance details.

**Table 6-5 Particulate Matter (PM<sub>10</sub>) and Total Suspended Particulates (TSP) Annual Average Results**

Averaging period	PM <sub>10</sub> (µg/m³)	TSP (µg/m³)
Annual Average 2024	8.9	17.2
Annual Average Criterion	30	90

#### 6.3.4 Trends in Data

##### 6.3.4.1 Dust Deposition

**Table 6-6** presents the annual average deposited dust levels over the previous five years. The 2024 annual average deposited dust levels are within the range of results recorded in the previous five years at all sites. The 2024 annual average dust deposition levels for all sites are well below the performance criteria (4 g/m²/month).

**Table 6-6 Annual Averages for Dust Deposition 2020 – 2024**

Reporting period	Total Insoluble Solids (g/m²/month)					
	IDD1	IDD2	IDD3	IDD4	IDD5	IDD6
Criteria	4	4	4	4	4	4
2020	1.4	0.6	0.8	0.7	0.6	--
2021	0.3	0.4	0.5	0.5	0.2	--
2022	0.4	0.7	0.4	0.3	0.3	--
2023	0.8	0.7	0.9	0.7	0.7	0.9
2024	0.9	1.4	0.9	0.8	0.8	1.2

--IDD6 added to program in 2023

The 2024 annual average deposited dust levels at all monitoring locations are low and consistent with the historical range of results obtained over the previous five years.

##### 6.3.4.2 Particulate Matter

**Table 6-7** presents the PM<sub>10</sub> annual average over the previous five years. The 2024 annual averages for both PM<sub>10</sub> and TSP recorded at Invincible Colliery are within the range of results over the previous five years.



**Table 6-7 Annual Averages for Particulate Matter 2020 – 2024**

Annual Average	PM <sub>10</sub> (µg/m <sup>3</sup> )	TSP (µg/m <sup>3</sup> )
2020	11.1	27.8
2021	5.4	13.6
2022	4.7	11.9
2023	9.3	17.8
2024	8.9	17.2

### 6.3.5 Proposed Improvements

Monitoring of air quality will continue to be conducted during 2024 in accordance with the Air Quality Management Plan (AQMP).

## 6.4 Surface Water

### 6.4.1 Environmental Management Measures

The surface water management system at Invincible Colliery utilises a series of settlement ponds and storage dams within the site. These ponds and dams are managed in accordance with the Water Management Plan (WMP, 2022) and are further described in **Section 7.0**. Water is discharged as required from the main colliery dam via LD002.

### 6.4.2 Performance Criteria

Shoalhaven Coal is required to manage water discharged from the site so that it does not exceed the pollutant concentration limits specified by the Project Approval and EPL. The concentration limits specified in the EPL are provided in **Table 6-8** with the surface water monitoring results discussed in **Section 6.4.3**.

**Table 6-8 Water Quality Concentration Limits**

Pollutant	Concentration limit
Oil and Grease	10 mg/L
pH	6.5 – 8.5
Total suspended solids (TSS)	30 mg/L

### 6.4.3 Environmental Outcomes

Surface water monitoring for water quality is conducted daily during discharge events at the licenced discharge point (LD002) in accordance with the WMP (2022). Monthly due diligence monitoring is also conducted within the Main Dam (LD002), Environmental Dam (SW02) and Silt Dam (SW03). It is noted that SW03 is located adjacent Sediment Dam 3 (SD3) (**Appendix 1, Figure 3**) and is not required to be sampled under the current WMP however as it is a source of passive discharge sampling is completed as due diligence. Water quality is also monitored on a monthly basis for due diligence purposes at two locations, Cullen Creek U/S and Cullen Creek D/S, which are located upstream and downstream, respectively, of Invincible Colliery.

The water quality monitoring results from LD002 are included in **Table 6-9**. Two discharge events occurred throughout the reporting period during January and July. Samples were collected at Main Dam for due diligence purposes when no discharge was occurring at LD002. Background water quality sampling has also been undertaken at the Environmental Dam (SW02), Silt Dam (SW03), Cullen Creek U/S and Cullen Creek D/S.

The results of which are included in **Appendix 2**.

A comparison of the background water quality (annual average) results during the reporting period is included in **Section 6.4.4**.

**Table 6-9 LD002 Water Quality Monitoring Results**

Sampling date	pH	TSS	Oil and grease
LD002 (licensed discharge point)			
Criteria	6.5 – 8.5	30	10
9/01/2024*	6.4	<5	<5
10/01/2024*	6.5	<5	<5
11/01/2024*	6.4	18	<5
12/01/2024*	6.5	5	<5
13/01/2024*	6.5	11	<5
14/01/2024*	6.7	6	<5
15/01/2024*	6.7	<5	<5
16/01/2024*	6.3	<5	<5
18/01/2024*	6.6	<5	<5
19/01/2024*	6.5	<5	<5
20/01/2024*	6.6	<5	<5
21/01/2024*	6.4	<5	<5
22/01/2024*	6.5	<5	<5
23/01/2024*	6.4	<5	<5
24/01/2024**	7.6	20	<5
25/01/2024	6.4	<5	<5
26/01/2024*	6.3	<5	<5
27/01/2024*	6.5	<5	<5
28/01/2024*	6.5	<5	<5
29/01/2024*	6.6	<5	<5
6/02/2024**	8.0	6	<5
6/03/2024**	7.7	8	<5
8/04/2024**	6.3	18	<5
9/05/2024**	6.9	<5	<5
11/06/2024**	6.7	<5	<5
07/07/2024**	4.5	<5	Not recorded
10/07/2024**	5.2	<5	<5
10/08/2024**	5.8	<5	<5
9/09/2024**	5.2	<5	<5
9/10/2024**	5.6	<5	<5
18/11/2024**	6.6	<5	<5
10/12/2024**	6.5	7	<5

\*Water discharge event

**BOLD** – Exceedance of assessment criteria during discharge

\*\*Monthly sampling is undertaken at Main Dam for due diligence purposes when no discharge is occurring

#### 6.4.4 Trends in Data

During the reporting period, discharge was occurring on one of the twelve monthly sampling events as shown in **Table 6-9**. All water quality monitoring results obtained during discharge events at LD002 complied with the EPL water quality concentration limits except pH non-compliances listed in **Table 1-3**.

##### 6.4.4.1 Background Water Quality Monitoring Results – Dams

Annual average of the background water quality in the on-site dams during 2024 together with monitoring results from previous years is presented in **Table 6-10**. LD002 discharge and the due diligence water quality results of available data for pH, oil and grease and TSS is displayed graphically in **Appendix 2**.

The 2024 annual average pH recorded at LD002 (Main Dam) (6.5) is generally consistent with historical averages however slightly lower than previous annual averages. The 2024 annual average pH recorded at the Environmental Dam (3.3) was similar to 2023 (3.0). The 2024 annual average pH recorded at the Silt Dam (SW03) (7.5) was consistent with the 2023 average (7.6).

The oil and grease results at the Main, Environmental and Sediment Dams for 2024 were below detection limits as seen in previous reporting years.

TSS annual average results at the Main, Environmental and Silt Dam for 2024 ranged between 11.8 and 14.8 mg/L. The 2024 results for the Main Dam, Environmental Dam and Silt Dam were within the historical range of results.

##### 6.4.4.1.1 Environmental Dam pH Investigation

The EPA attended site on 18 August 2023 in response to a complaint received regarding excess water flow from the Main Dam. The inspection primarily focused on the discharge from Main Dam in addition to a series of dams including Environmental Dam. The pH of the Environmental Dam was tested resulting in a measured pH of 3.8 and raised written concerns about uncontrolled discharge and contaminated water. The EPA issued a draft variation to the EPL 1095 requiring Invincible Colliery to undertake a low pH water investigation and identify appropriate management options to minimise any water contamination. Castlereagh Coal engaged consultants Australasian Groundwater and Environment Consultants (AGEC) to undertake an investigation.

Further investigation in 2024 included additional samples of the Environmental Dam and the completion of an investigative report by AGEC (February 2024) for the likely cause of the low pH water. The investigative report concluded the following:

*“The source of contamination is not likely to be groundwater originating from the underground workings or regional groundwater regime because a comparison of water quality data highlights significant differences in pH and EC values between groundwater bores and the Environmental Dam. Additionally, several studies have shown that the regional groundwater flow direction in the underground workings is to the northeast, away from the embankment.*

*The EPA postulated that the source of contamination could be groundwater seepage from the tailings pile and dams above the embankment west of the Environmental Dam. There is no readily available way to investigate this without additional sampling from water within or near the tailings dam, and possibly groundwater data near the Environmental Dam and Leachate Dam. The composition of the embankment is unclear but is not likely natural material and may contain waste rock from historic mining.*

*Based on the limited data, local groundwater in the vicinity of the tailings dams east of the embankment is the likely source of low-pH water entering the Environmental Dam.”*

The AGEC report was submitted to the EPA in accordance with the licence requirements. It was the view of the EPA that the AGEC report “does not fully meet the objectives of the Pollution Studies and Reduction Program (PSRP)” and a modified PSRP was provided to Castlereagh Coal for review. Castlereagh Coal

reviewed the PSRP and provided the EPA with comment for their consideration in May 2024. The EPL has not yet been finalised.

**Table 6-10 Comparison of Water Quality in On-Site Dams 2020-2024**

Annual Average Period	Location	pH	TSS	TSS
Criteria		6.5 – 8.5	30	10
2020	Main Dam	7.39	7 mg/L	<5 mg/L
	Environmental Dam	3.18	16 mg/L	<5 mg/L
	Silt Dam	7.32	62 mg/L	<5 mg/L
2021	Main Dam	6.94	6 mg/L	<5 mg/L
	Environmental Dam	3.00	12 mg/L	<5 mg/L
	Silt Dam	7.07	38 mg/L	<5 mg/L
2022	Main Dam	7.5	9 mg/L	<5 mg/L
	Environmental Dam	3.1	7 mg/L	<5 mg/L
	Silt Dam	7.4	11 mg/L	<5 mg/L
2023	Main Dam	7.8	6 mg/L	<5 mg/L
	Environmental Dam	3.0	18 mg/L	<5 mg/L
	Silt Dam	7.6	13 mg/L	<5 mg/L
2024	Main Dam	6.5	11.8 mg/L	<5 mg/L
	Environmental Dam	3.3	14.1 mg/L	<5 mg/L
	Silt Dam	7.5	14.8 mg/L	<5 mg/L

#### 6.4.4.2 Background Water Quality Monitoring Results – Creeks

The 2024 annual average water quality at Cullen Creek U/S (BSW01) which is upstream of Invincible Colliery and Cullen Creek D/S (previously BSW02) (refer to **Appendix 1, Figure 3**) which is downstream of Invincible Colliery results, together with the annual average results for the previous 5 years for Cullen Creek U/S and BSW02 are presented in **Table 6-11**. Cullen Creek D/S was added to the sampling program in 2023 to replace BSW02, in line with the Invincible Colliery WMP (2022).

The 2024 annual average pH recorded at the upstream location of Cullen Creek U/S (6.8) was equal to the 2023 annual average. The 2024 annual average pH recorded at the new Cullen Creek D/S site was 6.9.

The annual average oil and grease concentrations at Cullen Creek U/S have been low or below laboratory detection limits during every year sampled. Oil and grease at Cullen Creek D/S was below detection limits on all sampled occasions in 2024.

The 2024 annual average TSS concentration recorded at Cullen Creek U/S (21 mg/L) were comparable to previous results. The average TSS at Cullen Creek D/S during 2024 was 125 mg/L due to an anomalous result captured in October 2024.

**Table 6-11 Upstream and Downstream Creek Water Quality 2020 – 2024**

Annual Average	Location	pH	Oil & grease	TSS
2020	Cullen Ck U/S	6.79	<5 mg/L	21 mg/L
	BSW02	7.28	<5 mg/L	29.8 mg/L
2021	Cullen Ck U/S	6.54	<5 mg/L	30 mg/L
	BSW02	6.98	<5 mg/L	8 mg/L
2022	Cullen Ck U/S	6.54	<5 mg/L	30 mg/L
	BSW02*	6.98	<5 mg/L	8 mg/L
2023	Cullen Ck U/S	6.8	<5 mg/L	12 mg/L
	Cullen Ck D/S	7.3	<5 mg/L	5 mg/L
2024	Cullen Ck U/S	6.8	<5 mg/L	21 mg/L
	Cullen Ck D/S	6.9	<5 mg/L	125.1 mg/L*

\*Result affected but anomalous result collected in October 2024

#### 6.4.5 Proposed Improvements

In reviewing site surface water quality results for the Invincible Colliery, it was identified that some results from Cullen Creek D/S exceed the trigger values outlined in the WMP. Castlereagh Coal has worked through the Trigger Action Response Plan and has sought proposals from a water specialist to undertake a preliminary investigation.

Monitoring of water quality at Invincible Colliery will continue to be conducted during 2025.

### 6.5 Groundwater

Unlike most mining operations, the target coal seams at Invincible are already in a depressurised state. As such, monitoring of groundwater depressurisation is not a key concern of the monitoring program. Instead, the key groundwater issue for the Southern Extension Project is the management of water accumulated in the former Ivanhoe #2 workings. In particular, monitoring will be undertaken to ascertain the following:

- Volume and quality of water taken from the Ivanhoe #2 workings;
- Volume and quality of water in the Invincible underground workings; and
- Volumes of water pumped into the Invincible underground workings.

**Table 6-12** presents a summary of the existing Invincible Colliery monitoring bores.

At present, water levels in the Invincible workings are monitored through LD001, which is a considerable distance north-east of the Southern Extension Area. Two new bores (INV01 and INV02) will be installed near the south western limit of the Invincible underground workings to provide a better indication of water levels near the Southern Extension Area.

During the reporting period groundwater quality monitoring was undertaken monthly at the Northern Void, LD001, BH2 and BHTH12. It is noted that LD001 was inaccessible from January to June 2024 and therefore no results are available during this time. A discussion of the monitoring results is provided in the following sub-sections.

**Table 6-12 Existing Invincible Colliery Groundwater Monitoring Bores**

Bore ID	Hole Depth (mbgl)	Screen (mbgl)	Target
LD001	104	100 - 104	Lithgow Coal Seam (Invincible Colliery flooded underground workings)
BH12	36	31 -34	Lithgow Coal Seam (Ivanhoe No.2 Colliery flooded workings)
BH2	39.5	29.9 – 32.9	Lithgow Coal Seam (Coal barrier between Ivanhoe No.2 Colliery and Invincible Colliery underground workings)

### 6.5.1 Environmental Management Measures

The Invincible mining operation is located on the western escarpment of the Sydney Basin and groundwater intercepted in the monitoring bores is typically greater than 70 m below the surface. Water management will continue to be undertaken in accordance with the approved Water Management Plan (refer to **Section 6.1**).

### 6.5.2 Performance Criteria

There is no pollutant concentration limits for groundwater specified in EPL. There is also no trigger levels detailed in the currently approved Invincible Colliery WMP (2022).

### 6.5.3 Trends in Data

The long-term trends for LD001 in standing water level, electrical conductivity, hardness, sulphate, nitrate and metals are discussed below. Long term graphs and tables for these groundwater parameters can be found in **Appendix 2**. Sampling commenced at BH12, BH2 and the Northern Void in early 2022. Results from February 2022 up to the current reporting period are discussed below with data tables presented in **Appendix 2**.

#### 6.5.3.1 Standing Water Level

Results for 2024 show slight fluctuations in standing water level from month to month with the average remaining steady at 895.9 as shown graphically in **Appendix 2**. BH2 and BH12 showed similar fluctuations during the reporting period with averages consistent with results from the previous reporting period. It is noted that depth was not measured during various monthly sampling events for LD001, BH2 and BH12.

#### 6.5.3.2 pH

Between 2011 and 2022 the pH level ranges between 4.90 and 7.67 at LD001. The 2024 average pH measurement of 6.9 is consistent with the previous reporting period (refer to **Appendix 2**). Average pH measurements at BH2 and BH12 (6.1 & 6.2 respectively) have been consistent since monitoring commenced. North Void has had pH results in the neutral range consistently since monitoring began in 2022 (refer to **Appendix 2**).

#### **6.5.3.3 EC**

The 2024 average EC result of 667.3  $\mu\text{S}/\text{cm}$  was slightly higher than the previous reporting period as an anomalous value (2100  $\mu\text{S}/\text{cm}$ ) was recorded during the October monthly sample (refer to **Appendix 2**). The average EC levels at BH2 and BHTH12 are consistent with previous results (refer to **Appendix 2**).

#### **6.5.3.4 Hardness**

The 2024 hardness results were consistent with past range of results (refer to **Appendix 2**). Hardness results at BH2 and BHTH12 have been consistent since analyses began in 2022 (refer to **Appendix 2**).

#### **6.5.3.5 Sulphate**

The 2024 average sulphate levels of 10 mg/L is consistent with the historical average. Sulphate results at BH2 and BHTH12 have been consistent since analyses began in 2022 (refer to **Appendix 2**).

#### **6.5.3.6 Nitrate**

Results in 2024 were stable and values were consistent with previous 2023 readings (refer to **Appendix 2**). Nitrate has only been monitored at BH2 and BHTH12 since March 2023, so comparison trends are relatively variable for 2024 (refer to **Appendix 2**).

#### **6.5.3.7 Metals**

Dissolved metals have been monitored at LD001 for 2024 all parameters mostly returned results which were below the limit of detection with a few exceptions. Levels for all dissolved metals at LD001 were within the range of previous results.

#### **6.5.4 Proposed Improvements**

Shoalhaven will continue groundwater monitoring on a monthly basis during 2025.

### **6.6 Noise**

#### **6.6.1 Environmental Management Measures**

A Noise Management Plan (NMP, 2022) has been prepared in accordance with the Project Approval outlining the required frequency of monitoring during mining operations. During the reporting period quarterly attended noise monitoring was conducted at three locations (N01, N02 and N03) (refer to **Figure 3, Appendix 1**).

### 6.6.2 Performance Criteria

Noise impact assessment criteria for monitoring are specified in the EPL and Project Approval as outlined in **Table 6-13**.

**Table 6-13 Noise Impact Assessment Criteria**

Location	Day time limit L <sub>Aeq</sub> (15 minute)	Evening limit L <sub>Aeq</sub> (15 minute)	Night time limit L <sub>Aeq</sub> (15 minute)	Location L <sub>A1</sub> (1 minute)
393 (Billabong)	40	40	35	45
394 (Hillview)	43	43	35	45
All other privately owned land	35	35	35	45

*Note: The Billabong and Hillview properties were purchased by Coalpac in 2010.*

### 6.6.3 Environmental Outcomes

There were no exceedances of the noise performance the reporting period as shown in **Table 6-14**. On all monitoring occasions, the noise from Invincible Colliery was inaudible.

**Table 6-14 2024 Quarterly Attended Noise Monitoring Results**

Location	Criterion (dB)	Quarter 1 (L <sub>Aeq</sub> 15min)	Quarter 2 (L <sub>Aeq</sub> 15min)	Quarter 3 (L <sub>Aeq</sub> 15min)	Quarter 4 (L <sub>Aeq</sub> 15min)
Cullen Bullen Central (N01)	35	IA	IA	IA	IA
Cullen Bullen West (N02)	35	IA	IA	IA	IA
Cullen Bullen South (N03)	35	IA	IA	IA	IA

*IA – noise from the mine was inaudible*

### 6.6.4 Trends in Data

The results of noise performance monitoring for the period 2011 – 2024 are summarised in **Appendix 2**. Results for quarterly noise monitoring during 2013 to 2024 has shown the site contribution to be generally inaudible at all monitoring locations.



### **6.6.5 Proposed Improvements**

There were no noise complaints or non-compliances with noise criteria during the reporting period. Noise monitoring will continue to be undertaken quarterly during 2025.

## **6.7 Biodiversity**

### **6.7.1 Environmental Management Measures**

Biodiversity monitoring commenced at Invincible Colliery in 2011. The 2024 Biodiversity Monitoring of the Rehabilitation and Biodiversity Offset Areas was undertaken in accordance with the approved Biodiversity Management Plan (BMP) (Castlereagh Coal, 2023).

An administrative non-compliance with regard to the Biodiversity Conservation Bond was recorded during the reporting period. At the time of this report the DPHI have principally approved the acceptance of the Hillcroft area as a biodiversity offset area for the project. However, to allow a Biodiversity Stewardship Agreement to be registered against Hillcroft and therefore a Biodiversity Conservation Bond and associated management plan, The DPHI and Crown Lands are currently working on the following:

- (i) agreement to financial considerations,
- (ii) lease condition alterations indemnifying the Minister,
- (iii) reserve purpose alterations, and
- (iv) confirmation that Perpetual Special Lease 1943 – Lithgow extinguishes Native Title

It is expected these will be finalised by mid-2025 with progress to be reported in the next Annual Review.

### **6.7.2 Biodiversity Monitoring**

In 2024 biodiversity monitoring was undertaken for the Invincible Colliery Biodiversity Offset Area (BOA) and Rehabilitation Areas (refer to **Section 8.4** for the Rehabilitation Areas biodiversity monitoring results) (refer to **Appendix 1, Figure 4** for monitoring locations). The Biodiversity Monitoring Program is based on the monitoring requirements documented in the Biodiversity Management Plan (BMP).

#### **6.7.2.1 Invincible Biodiversity Offset Area**

Biodiversity values of the IC BOA were assessed based on the condition of habitat and success in the management of flora and fauna (threatened species in particular) within three parcels of land where the following five vegetation communities occur that have been described previously as:

- Cox's Permian Red Stringy Bark – Brittle Gum Woodlands
- Tableland Gully Scribbly Gum – Narrow-leafed Shrubby Open Forest
- Tableland Gully Snow Gum – Ribbon Gum Grassy Forest
- Tableland Gully Mountain Gum – Broad-leafed Peppermint Grassy Forest
- Exotic Dominated Grassland

The flora and fauna survey methodology undertaken in the IC BOA is consistent with that presented in the approved BMP.

#### **6.7.2.1.1 Flora Monitoring**

In the IC BOA there are 23 monitoring plots that are surveyed to satisfy the requirements of the BMP. Eleven of these plots were previously established and have been monitored since 2017. The additional 12 plots were established in 2023. The 23 monitoring plots were situated in indicative locations shown in the BMP; however final locations were determined based on site conditions and to complement the locations of previous monitoring points.

A comparison of observations made during the 2023 and 2024 monitoring of each BOA monitoring plot is presented in **Table 6-15**.

During the survey monitoring of the threatened flora species *Bursaria spinosa* was conducted in accordance with the project extension requirements. A total of 116 *Bursaria spinosa* plants were identified across two locations within IC BOA. The majority of plants were seeding and only two were flowering during the survey. The community was observed to be generally in good health, with some plants to showing signs of stress.

**Table 6-15 Biodiversity Offset Area 2023 vs 2024 Results**

Monitoring Site	Vegetation Community / Locality	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
BO1	Grassland Lot 1 DP 180294 (‘Renown Farm’)	<ul style="list-style-type: none"> <li>Wetland/grassland.</li> <li>Some Eucalyptus blakelyi regeneration.</li> <li>Sparse native canopy.</li> <li>Sparse shrubs, some Acacia dealbata and Cassinia sifton regeneration.</li> <li>Mix of mainly native and some exotic grasses.</li> <li>Hardly any bare ground observed.</li> <li>Medium-high incidence of weeds including St. Johns Wort (<i>Hypericum perforatum</i>), Yorkshire Fog (<i>Holcus lanatus</i>), Paspalum (<i>Paspalum dilatatum</i>), and Blackberry.</li> <li>Weed control recommended.</li> </ul>	<ul style="list-style-type: none"> <li>No overstorey cover. Some juvenile regenerating <i>Acacia dealbata</i> and <i>Eucalyptus dives</i> observed.</li> <li>Open midstorey.</li> <li>High groundcover species abundance.</li> <li>Groundcover dominated by <i>Rytidosperma racemosum</i>.</li> <li>Some bare ground observed.</li> </ul>
	PCT 3367 Lot 1 DP 180294 (‘Renown Farm’)	<ul style="list-style-type: none"> <li>Sparse Eucalypt canopy of <i>E. blakelyi</i>.</li> <li>Eucalypt regeneration occurring.</li> <li>Low shrub cover. Shrub regeneration of Silver Wattle (<i>Acacia dealbata</i>), Sifton Bush (<i>Cassinia sifton</i>), and White Dogwood (<i>Ozothamnus diosmifolius</i>).</li> <li>Low-medium incidence of weeds. Weeds include Blackberry, Spear Thistle (<i>Cirsium vulgare</i>), St Johns Wart (<i>Hypericum perforatum</i>), and Yorkshire Fog (<i>Holcus lanatus</i>).</li> <li>Recommendation for weed control.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. Dominated by <i>Eucalyptus blakelyi</i>.</li> <li>Good midstorey species diversity. Dominated by <i>Cassinia sifton</i>.</li> <li>Several healthy <i>Persoonia marginata</i> surveyed.</li> <li>Good groundcover species diversity. Low abundance of all communities.</li> <li>Groundcover high in fallen logs and other woody debris. Sparce leaf litter, and some bare ground present.</li> <li>Various weeds present within plot. St john’s Wort, Paspalum, Blackberry, Yorkshire Fog, Fleabane, Catsear, Lamb’s Tongues.</li> <li>Evidence of previous weed treatment observed.</li> </ul>
	PCT 3734 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Open woodland.</li> <li>Strong native canopy of Eucalyptus dives, E. rossii, and E. pauciflora.</li> <li>Sparse shrub layer.</li> <li>Young eucalyptus regeneration and shrub regeneration occurring.</li> <li>Good native diversity in the ground layer.</li> <li>Low incidence of weeds.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. Dominated by <i>Eucalyptus blakelyi</i> and <i>Eucalyptus dives</i>.</li> <li>Overstorey species regeneration observed in several species.</li> <li>Moderate midstorey species cover. Dominated by <i>Cassinia sifton</i>.</li> <li>Good diversity in groundcover species. Low abundance/occurrence in all communities.</li> <li>Moderate leaf litter and other woody debris across the plot.</li> <li>St John’s Wort and Catsear observed. Low cover, high abundance.</li> <li>Blackberry also surveyed in low abundance.</li> </ul>

Monitoring Site	Vegetation Community / Locality	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
BO4	PCT 3734 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Lots of Blakely's Red Gum (<i>Eucalyptus blakelyi</i>) spalings/regeneration.</li> <li>Some dieback was evidenced in the eucalypts.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey cover, dominated by <i>Eucalyptus blakelyi</i>.</li> <li>High native recruitment observed in <i>Acacia dealbata</i> and <i>Eucalyptus bridgesiana</i>.</li> <li>Open midstorey. Very low Occurrence of <i>Cassinia sifton</i>.</li> <li>Good diversity in grass species. Dominated by <i>Rytidosperma caespitosum</i>.</li> <li>High occurrence and cover of weed species. St John's Wort, Catsear, Paspalum, Sweet Briar, Blackberry.</li> </ul>
	PCT 3367 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>High presence of weeds, particularly Yorkshire Fog (<i>Holcus lanatus</i>), and St Johns Wort (<i>Hypericum perforatum</i>).</li> <li>Some regeneration of <i>Eucalyptus blakelyi</i>, <i>Acacia dealbata</i> and <i>Cassinia Sifton</i>.</li> <li>Tree dieback around plot.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey cover, dominated by <i>Eucalyptus blakelyi</i>.</li> <li>Open midstorey. Low occurrence of <i>Cassinia sifton</i>.</li> <li>Regeneration observed in both overstorey and midstorey species.</li> <li>Good grass species diversity. Diverse cover and abundance.</li> <li>Diverse forb species, low cover.</li> <li>High weed species cover. Dominated by Yorkshire Fog, St John's Wort.</li> </ul>
	PCT 3367 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Similar observations to previous years.</li> <li>Weed cover is low to medium with incidences of Yorshire Fog (<i>Holcus lanatus</i>), Paspalum (<i>Paspalum dilatatum</i>), and Spear Thistle (<i>Circium vulgare</i>).</li> <li>New species recorded in plot: Prickly Tea-tree (<i>Leptospermum juniperinum</i>).</li> </ul>	<ul style="list-style-type: none"> <li>Very low overstorey species cover. <i>Eucalyptus blakelyi</i> dominant.</li> <li>Strong overstorey species regeneration present.</li> <li>Open midstorey. Low occurrence of <i>Leptospermum juniperinum</i>.</li> <li>Good groundcover species diversity and high cover. <i>Rytidosperma caespitosum</i> dominant.</li> <li>Low occurrence of weed species present. Sweet Briar, Blackberry, Common Centaury.</li> </ul>
	PCT 3734 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Open grassland with a good cover of native grasses dominated by Kangaroo Grass (<i>Themeda triandra</i>), Weeping grass (<i>Microlaena stipoides</i>), and Reg grass (<i>Bothriochloa macra</i>).</li> </ul>	<ul style="list-style-type: none"> <li>Very low overstorey species diversity and cover.</li> <li>Dominant species is <i>Eucalyptus blakelyi</i>. Regeneration is strong, limited to one area.</li> <li>Open midstorey. Low occurrence of <i>Cassinia sifton</i>.</li> <li>Groundcover has good native diversity. Dominated by <i>Rytidosperma sp.</i></li> <li>Low occurrence of weed species. Patterson's Curse, Catsear, Lamb's Tongues.</li> </ul>
	Grassland Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Low weed incidence.</li> <li>Good diversity of grasses.</li> <li>Shrub and eucalypt regeneration present.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. Dominated by <i>Eucalyptus macrorhyncha</i> and <i>Eucalyptus blakelyi</i>.</li> <li>Regeneration present for various overstorey species.</li> <li>Good midstorey diversity. Low cover for all midstorey species.</li> <li>High native grass diversity and cover. <i>Rytidosperma caespitosum</i> and <i>Sporobolus crebera</i> dominant.</li> <li>Low weed species cover. St. John's Wort, Catsear, Fleabane, Scarlet Pimpernel.</li> </ul>

Monitoring Site	Vegetation Community / Locality	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
BO9	Grassland Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Degraded weedy grassland.</li> <li>High weed cover.</li> <li>No native canopy or shrubs.</li> <li>Generally low fuel loads.</li> <li>Generally no habitat salvaged features installed – to be instigated.</li> </ul>	<ul style="list-style-type: none"> <li>No overstorey species present.</li> <li>No midstorey species present.</li> <li>Groundcover species dominated by <i>Eragrostis brownii</i>.</li> <li>Majority of groundcover is composed of weed species. Yorkshire Fog dominant, followed by Phalaris, Blackberry, Sharp Rush, Sweet Briar.</li> </ul>
BO10	PCT 3732 Lot 112 DP 877190	<ul style="list-style-type: none"> <li><i>Eucalyptus dives</i> is the dominant canopy tree.</li> <li>Lots of <i>E. dives</i> regeneration in plot.</li> <li><i>Cassinia sifton</i> is the dominant shrub and is also regenerating.</li> <li>Dominant ground covers are the native Weeping Grass (<i>Microlaena stipoides</i>), and the exotic Yorkshire Fog (<i>Holcus lanatus</i>).</li> <li>Good diversity in the ground cover.</li> <li>Low-medium incidence of weeds.</li> </ul>	<ul style="list-style-type: none"> <li>High overstorey species cover. <i>Eucalyptus dives</i> dominant.</li> <li>Strong overstorey species regeneration.</li> <li>Open midstorey. Low occurrence of <i>Cassinia sifton</i>.</li> <li>Diverse native grasses. Dominated by <i>Rytidosperma racemosum</i>.</li> <li>Low occurrence of all other understorey species.</li> <li>St. John's Wort and <i>Paspalum</i> present with moderate abundance. Other weed species present in low occurrence.</li> </ul>
BO11	PCT 3367 Lot 113 DP 877190	<ul style="list-style-type: none"> <li><i>Eucalyptus blakelyi</i> (dominate canopy species) open woodland.</li> <li>open understory.</li> <li>Lots of <i>Cassinia Sifton</i> in plot.</li> <li><i>Lomandra glauca</i> is the dominant ground cover.</li> <li>Low presence of weeds – Catsear (<i>Hypochaeris radicata</i>).</li> <li>High resilience.</li> <li>Large <i>E. blakelyi</i> in plot.</li> </ul>	<ul style="list-style-type: none"> <li>Low overstorey species cover.</li> <li>Strong regeneration observed in <i>Acacia dealbata</i>, <i>Eucalyptus blakelyi</i> and <i>Eucalyptus dives</i>.</li> <li>High midstorey cover. Dominated by <i>Cassinia sifton</i>.</li> <li>Good native grass diversity. High occurrence, low cover for each present species.</li> <li>Catsear present in high occurrence.</li> <li>Sweet Briar present in moderate occurrence.</li> <li>Groundcover dominated by grasses, followed by leaf litter and woody debris.</li> </ul>
BO12	PCT 3367 Lot 112 DP 877190	<ul style="list-style-type: none"> <li><i>Eucalyptus blakelyi</i>, <i>Cassinia Sifton</i>, and <i>Acacia dealbata</i> regeneration in plot.</li> <li>The native Weeping Grass (<i>Microlaena stipoides</i>) is the dominate grass.</li> <li>Medium incidence of weeds including Common Couch (<i>Cynodon dactylon</i>), and St Johns Wort (<i>Hypericum perforatum</i>).</li> <li>Remnant trees located nearby to plot.</li> <li>Regeneration occurring.</li> <li>Grass kept generally short by constant grazing – Eastern Grey Kangaroos and the Common Wombat seen in area.</li> </ul>	<ul style="list-style-type: none"> <li>Overstorey species present in regeneration only.</li> <li>Open midstorey.</li> <li>High grass cover. Dominated by <i>Panicum effusum</i> and <i>Rytidosperma caespitosum</i>.</li> <li>St. John's Wort present with high cover and abundance.</li> <li>Other weeds present within the plot. Kikuyu, Spear Thistle, Patterson's Curse, Catsear.</li> </ul>
BO13	Grassland Lot 1 DP 180294 ('Renown Farm')	<ul style="list-style-type: none"> <li>Contains an area of transition between a wetland and grassland.</li> <li>The ground layer contains a mixture of native and exotic ground covers.</li> <li>The native Weeping Grass (<i>Microlaena stipoides</i>), is the dominant species in the ground layer.</li> <li>High incidence of weeds recorded: 10% coverage of Kikuyu Grass (<i>Cenchrus clandestinus</i>) and 5% coverage of Yourshire Fog (<i>Holcus lanatus</i>).</li> </ul>	<ul style="list-style-type: none"> <li>Individual juvenile <i>Acacia dealbata</i> observed.</li> <li>High diversity of native grasses. Dominated by <i>Juncis usitatus</i>.</li> <li>St. John's Wort, Kikuyu and Catsear present with high cover.</li> </ul>

Monitoring Site	Vegetation Community / Locality	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
BO14	PCT 3367 Lot 1 DP 180294 (‘Renown Farm’)	<ul style="list-style-type: none"> <li>Strong regeneration of <i>E. blakelyi</i> (dominant), <i>E. bridgesiana</i>, <i>Acacia dealbata</i> and <i>Cassinia sifton</i>.</li> <li>Low abundance and cover of weeds – some Blackberry and St. Johns Wart (<i>Hypericum perforatum</i>).</li> <li>Ground layer is dominated by the native Weeping Grass (<i>Microlaena stipoides</i>).</li> </ul>	<ul style="list-style-type: none"> <li>High overstorey species cover. Dominated by <i>Eucalyptus blakelyi</i>.</li> <li>Overstorey regeneration observed for all observed species.</li> <li>Open midstorey. Very low occurrence and cover of midstorey species.</li> <li>Low occurrence of groundcover species.</li> <li>Groundcover dominated by leaf litter.</li> <li>Very low weed occurrence present.</li> </ul>
	PCT 3367 Lot 1 DP 180294 (‘Renown Farm’)	<ul style="list-style-type: none"> <li>Open woodland dominated by <i>Eucalyptus blakelyi</i>.</li> <li>Minimal shrub occurrence, dominated by White Dogwood (<i>Ozothamnus diosmifolius</i>).</li> <li>Open understory dominated by Weeping Grass (<i>Microlaena stipoides</i>).</li> <li>Very low regeneration present.</li> <li>Low incidence of weeds – some Blackberry, Yorkshire Fog and St Johns Wort.</li> </ul>	<ul style="list-style-type: none"> <li>High overstorey species cover. Dominated by <i>Eucalyptus bridgesiana</i>.</li> <li>Overstorey species regeneration present.</li> <li>Open midstorey. Low cover of midstorey species.</li> <li>Moderate native grass cover. Dominated by <i>Cyperus gracilis</i> and <i>Juncus usitatus</i>.</li> <li>Paspalum and Blackberry present with moderate cover.</li> <li>Other weed species present in low occurrence.</li> <li>Large gullies throughout plot.</li> </ul>
BO16	Grassland Lot 1 DP 180294 (‘Renown Farm’)	<ul style="list-style-type: none"> <li>Brown’s lovegrass (<i>Eragrostis brownii</i>) dominant ground cover (native).</li> <li><i>Cassinia sifton</i> dominates the shrub layer.</li> <li>Some <i>E. blakelyi</i> sapling regeneration.</li> <li>Plot on edge of forest fragment.</li> <li>Low incidence of weeds.</li> </ul>	<ul style="list-style-type: none"> <li>Low overstorey species occurrence.</li> <li>Regeneration of overstorey species present.</li> <li>Dense midstorey cover. Dominated by <i>Cassinia sifton</i>.</li> <li>Good diversity of native grasses. Low cover for each community.</li> <li>Midstorey competition is hindering groundcover health.</li> <li>Low occurrence of weed species. Paspalum, Kikuyu, Yorkshire Fog.</li> <li>Moderate occurrence of bare ground.</li> </ul>
BO17	PCT 3734 Lot 112 DP 877190	<ul style="list-style-type: none"> <li><i>Eucalyptus dives</i> (dominant) and <i>Eucalyptus blakelyi</i> open woodland.</li> <li>Open understory with minimal shrubs.</li> <li>Shrub layer dominated by <i>Cassinia sifton</i>.</li> <li>Ground layer dominated by <i>Lomdandra glauca</i>.</li> <li>High resilience.</li> <li><i>Eucalypt</i> and <i>Acacia</i> regeneration present.</li> <li>Low weed cover and abundance.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. Dominated by <i>Eucalyptus blakelyi</i> and <i>Eucalyptus dives</i>.</li> <li>Open midstorey. Low midstorey species cover.</li> <li>Low cover of groundcover species.</li> <li>Very low occurrence of weed species. St. John’s Wort, Fleabane, Mallow.</li> <li>Moderate leaf litter comprises groundcover. Some bare ground present.</li> </ul>
BO18	PCT 3734 Lot 112 DP 877190	<ul style="list-style-type: none"> <li><i>Eucalyptus blakelyi</i>, <i>Acacia dealbata</i>, and <i>Cassinia sifton</i> regeneration.</li> <li>Groundlayer dominated by the native grass Weeping Grass (<i>Microlaena stipoides</i>).</li> <li>Low incidence of weeds.</li> <li>Located nearby to open woodland.</li> </ul>	<ul style="list-style-type: none"> <li>Overstorey species limited to juveniles.</li> <li>Low midstorey species cover. Dominated by <i>Cassinia sifton</i>.</li> <li>High grass species cover. Dominated by <i>Aristida vagans</i>.</li> <li>High weed cover present. St. John’s Wort comprises half of the monitoring plot. Catsear, Lamb’s Tongues and Common Centaury also present in low to moderate occurrence.</li> </ul>

Monitoring Site	Vegetation Community / Locality	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
BO19	PCT 3367 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>High resilience.</li> <li>High species diversity.</li> <li>Canopy dominated by <i>Eucalyptus dives</i>.</li> <li>Shrub layer dominated by <i>Cassinia sifton</i>.</li> <li>Ground layer dominated by <i>Lomandra glauca</i>.</li> <li><i>Eucalypt</i>, <i>Cassinia sifton</i>, and <i>Acacia</i> regeneration present.</li> <li>Low weed cover and abundance.</li> </ul>	<ul style="list-style-type: none"> <li>Low overstorey species cover. <i>Eucalyptus dives</i> dominant.</li> <li>Regeneration of overstorey species observed.</li> <li>Open midstorey. <i>Cassinia sifton</i> dominant in low occurrence.</li> <li>Good diversity of native grasses. Low cover for all communities.</li> <li>St. John's Wort observed with high cover.</li> <li>Groundcover dominated by leaf litter.</li> </ul>
BO20	PCT 3367 Lot 113 DP 877190	<ul style="list-style-type: none"> <li>Open woodland dominated by <i>Eucalyptus blakelyi</i>.</li> <li>Open understory with not many shrubs.</li> <li>Regeneration occurring in plot.</li> <li>Medium occurrence of a high diversity of weeds.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. <i>Eucalyptus blakelyi</i> dominant.</li> <li>Regeneration observed for <i>Eucalyptus blakelyi</i> and <i>Acacia dealbata</i>.</li> <li>Open midstorey. Low cover from all communities.</li> <li>High diversity in native groundcover species.</li> <li>Ground cover dominated by leaf litter followed by grasses and woody debris.</li> </ul>
BO21	PCT 3367 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Open area/wetland.</li> <li>No canopy or shrubs.</li> <li>Minimal weed coverage.</li> <li>Blackberry infestation on upper slopes, outside plot.r</li> </ul>	<ul style="list-style-type: none"> <li>No overstorey or midstorey species observed.</li> <li>Good diversity in native grasses. <i>Juncus australis</i> dominant.</li> <li>Various weed species present with low cover.</li> <li><i>Paspalum</i> present with high cover and abundance.</li> </ul>
BO22	PCT 3376 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Weedy grassland.</li> <li>No native shrubs or canopy.</li> <li>High diversity and cover of exotics.</li> <li>Past disturbance, clearing. Low resilience.</li> <li>Remnant large <i>Eucalyptus blakelyi</i> near plot.</li> <li><i>Eucalyptus bridgesiana</i> sapling in plot.</li> </ul>	<ul style="list-style-type: none"> <li>No overstorey or midstorey species present.</li> <li>Good diversity of native groundcover species. Low overall cover.</li> <li>High diversity of weed species present. Dominated by Yorkshire Fog, <i>Paspalum</i> and St. John's Wort.</li> </ul>
BO23	PCT 3747 Lot 112 DP 877190	<ul style="list-style-type: none"> <li>Plot burnt approximately 5 years ago.</li> <li>Dead trees in plot.</li> <li>Dense <i>Eucalypt</i> and <i>Acacia</i> regrowth.</li> <li>Low cover of grasses and ground covers.</li> <li>Good native resilience.</li> <li>Low incidence of weeds – Catsear (<i>Hypochaeris radicata</i>).</li> <li>Rocks, logs, and leaf litter are abundant in plot.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. <i>Eucalyptus blakelyi</i> dominant.</li> <li>Evidence of previous fire apparent.</li> <li>Strong regeneration observed for <i>Eucalyptus blakelyi</i>, <i>Eucalyptus macrorhyncha</i>, and <i>Eucalyptus mannifera</i>.</li> <li>Moderate midstorey species cover. Good species diversity. Dominated by <i>Acacia buxifolia</i>.</li> <li>Groundcover species dominated by <i>Hardenbergia violacea</i>.</li> <li>Groundcover dominated by leaf litter and woody debris.</li> <li>No weed species observed.</li> </ul>

#### 6.7.2.1.2 Fauna Monitoring

The 2024 monitoring across 11 monitoring sites recorded a decrease in overall species diversity throughout the IC BOA relative to 2023, with a total of 66 species recorded, compared to 72 species recorded during 2023 monitoring, and 82 species recorded in 2022 monitoring.

Within the IC BOA, 48% of fauna diversity is represented by birds with 32 species recorded, and 47% of fauna diversity is represented by mammals with 31 mammal species (including some possible Microbat ID's). The remaining species recorded in 2024 monitoring include one reptile species Common Skink (*Lampropholis guichenoti*), one amphibian species Spotted Marsh Frog (*Limnodynastes tasmaniensis*), and one invertebrate Common Yabby (*Cherax destructor*).

Eight threatened fauna species were recorded in January/February 2025 in the IC BOA during the 2024 monitoring, comprising birds and bats. Threatened birds recorded included the Pacific Blue Duck (*Hymenolaimus malacorhynchus*) listed as Endangered under the EBPC Act, Yellow Tailed Black Cockatoo (*Calyptorhynchus funereus*) and the Red Tail Black Cockatoo (*Calyptorhynchus banksii*) both listed as Vulnerable under the EBPC Act. Threatened bats recorded included the Large-eared Pied Bat (*Chalinolobus dwyeri*) listed as Endangered under the EBPC Act and BC Act, Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Greater Broad-Nosed Bat (*Scoteanax rueppellii*) both listed as Vulnerable under the BC Act, and the Eastern Bent-Wing Bat (*Miniopterus orianae oceanensis*), Southern Myotis (*Myotis macropus*) both listed as Vulnerable under the EBPC Act.

The majority of these species have previously been recorded from the IC BOA previous monitoring surveys. The Gang-gang Cockatoo (*Callocephalon fimbriatum*) was recorded in the 2023 monitoring survey in the Invincible Colliery Biodiversity Offset Area as well as in 2022 and 2021, listed as Endangered under the EBPC Act. The Dusky Woodswallow (*Artamus cyanopterus*) was previously recorded in 2023 and 2021 in the Invincible Colliery Biodiversity Offset Area (Umwelt 2021). The Dusky Woodswallow (*Artamus cyanopterus*) listed as Vulnerable under the BC Act was recorded in 2023, and the Glossy Black-Cockatoo (*Calyptorhynchus lathami*) listed as Vulnerable under the BC act was recorded in 2021 and 2023. The 2023 and 2022 monitoring surveys recorded the Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Southern Myotis (*Myotis macropus*), the Large Bent-winged Bat (*Miniopterus orianae oceanensis*), and the Eastern Cave Bat (*Vespadelus trougtoni*). The Greater Broad Nosed Bat (*Scoteanax rueppellii*) was recorded for the first time in the 2023 monitoring period.

Sixteen positively identified call types were assigned to 14 distinct species and two undifferentiated congeneric species groups (*Nyctophilus geoffroyi* / *N. gouldi* and *Vespadelus trougtoni* / *V. vulturnus*).

Seven feral pest fauna species were recorded within the IC BOA. These species include the House Sparrow (*Passer domesticus*), Black bird (*Turdus merula*), Indian myna (*Acridotheres tristis*), Starling (*Sturnus vulgaris*), Brown hare (*Lepus capensis*), European Rabbit (*Oryctolagus cuniculus*), and the Red fox (*Vulpes vulpes*).

No nest boxes are located in the IC BOA.



#### **6.7.2.2 Summary of Observations and Recommendations**

The results of the 2024 biodiversity monitoring show that the IC BOA is in good ecological condition. In general, the floristic composition and biodiversity values recorded in the 2024 monitoring surveys are consistent with the results of previous years monitoring and there does not appear to be a downward trend in species diversity nor for the health or vigour and cover of the vegetation in the rehabilitation areas. To support this, native regeneration and recruitment were observed at almost every monitoring plot.

There was a medium to high abundance of exotic weed species such as St. John's Wort (*Hypericum perforatum*), Fleabane (*Conyza bonariensis*), Yorkshire Fog (*Holcus lanatus*), Blackberry complex (*Rubus fruticosus* spp. aggregate), Spear Thistle (*Cirsium vulgare*) and Catsear (*Hypochaeris radicata*). It was recommended that weed control is undertaken across the IC BOA as a priority during the next reporting period.

### **6.7.3 Proposed Improvements**

Biodiversity Monitoring and management of the Biodiversity Offset Areas will continue to be conducted during 2025 in accordance with the approved BMP (Castlereagh Coal, 2023).

## **6.8 Blasting**

No mining operations were undertaken and no blasting was conducted during the reporting period.

## **6.9 Waste Management**

During the report period only minimal oil and greases were stored on site. Any maintenance works required on machinery and equipment is undertaken within existing bunded areas.

Waste oils and grease stored at the maintenance workshop are collected by a licensed waste recycling contractor on an as needs basis. All paper and general wastes from administration and workshop areas is disposed of in garbage bins located adjacent to the administration buildings. The bins are collected as required and the contents placed in large waste skip bins positioned adjacent to the heavy vehicle maintenance building to await removal by a licensed industrial waste collector. Industrial waste collection is undertaken as required.

Sewage from the workshop areas is directed to a septic system which is pumped out by a licensed waste collection and disposal contractor on an as-needs basis.

## **6.10 Hazardous Material Management**

Hazardous material kept on site include oils, grease and degreasers contained in storage tanks. Storage tanks are collected by an appropriately licenced contractor.

Storage tanks remaining on site that contain these materials were kept emptied during the care and maintenance period. One of the above ground self-bunded diesel tanks (75,000L Transtank) is operational (i.e. in use). A second Transtank (95,000L) is kept on site but is currently not in use.

Diesel is delivered to site as required. In addition, waste oil and grease are stored adjacent to the workshop in a bunded area which is removed as required by a licensed contractor.

## **6.11 Heritage**

### **6.11.1 Indigenous Heritage**

Several artefact scatters, open camp sites and an isolated find were located during an archaeological field survey conducted in 2010. Only one of these sites (Invincible OS1 artefact scatter) was determined to have high archaeological significance.

An Aboriginal Cultural Heritage Management Plan (ACHMP) (OzArk, 2022) has been prepared and implemented in accordance with the Project Approval (Mod 4) and in consultation with the then Department of Environment and Climate Change and the Aboriginal community. The artefact scatter site OS1 is located outside the mine disturbance area and has been fenced and signposted in accordance with the AHMP. No disturbance of OS1 occurred during the reporting period.

### **6.11.2 Non-Indigenous Heritage**

No items of European heritage are present within the Invincible Colliery site and therefore there are no specific management measures required to be implemented.

### **6.12 Spontaneous Combustion**

There are no known occurrences of spontaneous combustion at Invincible Colliery. Experience to date in mining at the Invincible Colliery has demonstrated that the waste material, stockpiled coal and other relevant materials have a low propensity to spontaneously combust. Any future extraction, processing and stockpiling of coal will continue to be managed to ensure any potential for spontaneous combustion is minimised.

### **6.13 Bushfire**

Bushfire prevention is required under the Rural Fires Act 1997. The absence of fire will lead to a build-up of fire fuel and risk of high intensity bushfire. Shoalhaven Coal as the owner and lessee of the land is required to take practicable steps to prevent the occurrence of bushfires on the land and minimise the spread of bushfire. The primary management objective in relation to fire management is to protect lives, long-term biodiversity values and infrastructure assets from the impacts of bushfires. Key control measures will focus on:

- Use of cool burns when deemed necessary (with any required approvals and/or permits from the Rural Fire Service) to reduce fuel build-up to protect biodiversity and conservation values. Cool burns will only be undertaken following prior assessment by and under the direction of a suitably qualified fire management contractor;
- Appropriate investment in fire suppression assets; and
- Communication of bushfire control measures and measures and response procedures for provision to key stakeholders, including employees and contractors, neighbours, and the RFS.

Any fuel hazard reduction burns will be planned in accordance with the Bush Fire Environmental Assessment Code for New South Wales (NSW Rural Fire Service, 2006a) and the guidelines contained in the Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code (NSW Rural Fire Service, 2006b).

### **6.14 Mine Subsidence**

Mining operations at Invincible Colliery ceased in 2013 and recommenced in July 2023. No subsidence management measures were required to be implemented during the reporting period.

### **6.15 Public Safety**

Access to working areas of the open cut are controlled by locked gates. Access to the site by members of the public is via contact at the mine office where visitors or contractors can only be escorted around the site by site personnel. Warning signs have been placed on extremities of operations to make members of the public aware of the presence of the open cut. There were no public safety incidents during the reporting period.

## 7 Water Management

### 7.1 Water Management System

The strategy behind the surface water management plan is to keep the clean and dirty water systems separate by interception and diversion of stormwater runoff from operational and non-operational areas. The water management system at Invincible Colliery has been designed (as far as possible) as a closed loop system. Water that enters the site via rainfall or through the water table is diverted to a series of settlement dams within the site.

There are 5 active sediment dams (SD2, SD3, SD4, SD5 and SD6) (refer to **Appendix 1, Figure 3**), one Environmental Dam (SW02), one storage dam (Main Water Dam – LD002), 2 sediment traps above Main Dam, one clean water storage dam (SW03) (refer to **Appendix 1, Figure 3**) located within the Aboriginal Heritage site (OS-1) and 7 inactive fine reject dams currently on site. An additional sediment dam (SD8) was under construction during the 2024 reporting period with a capacity of 38.8 ML and is due for completion in 2025. The Main Water Dam has a total capacity of 117 ML. The remaining dams have the following capacities:

- SD1 – 0.5 ML
- SD2 – 4.8 ML
- SD3 – <0.5 ML
- SD4 – 47.8 ML
- SD5 – 2.3 ML
- SD6 – 1.5 ML

The Environmental Dam which contains acid water is monitored on a regular basis by site personnel. The Environmental Dam is fitted with a pump out unit to ensure the water level remains low. Due to the permeable nature of the waste rock that is back-filled into the completed open cut excavation, and the proximity of the open cut to the abandoned underground workings, the majority of surface water runoff collected in pit sumps, fine reject dams, coal stockpile areas, active mining areas and waste dumps seeps down into the abandoned underground workings. Water from the abandoned underground workings is used for dust suppression and accessed from Pit 205. Any excess water, that meets the required water quality criteria, will be released from the Main Dam, LD002 which is a licenced discharge point under the EPL.

## 7.2 Water Take

There has been no water drawn from external sources under licences detailed in **Section 1**. Water is currently sourced from the existing connection to the Fish River Water Supply pipeline. Refer to **Table 7-1** for 2024 water take.

**Table 7-1 Water Take**

Water Licence #	Water sharing plan, source and management zone (as applicable)	Entitlement	Take Period – 2023 (ML)	Take Current Period – 2024 (ML)
WAL 35978 (10BL602584)	NSW Murray-Darling Porous Rock Groundwater Sources Water Sharing Plan	26 units	0	0

## 7.3 Erosion and Sediment Control

### 7.3.1 Environmental Management Measures

Permanent erosion and sediment control (ESC) measures within the Invincible Colliery include containment and diversion of “clean” water around disturbed areas and containment of runoff from these disturbed areas within on-site sediment dams. Temporary measures include contour banks, drainage lines, and rock lined drop structures. Where inspections identify failure of ESC measures, repairs and rectification works are undertaken as required.

### 7.3.2 Environmental Outcomes and Proposed Improvements

An indication of the effectiveness of the sediment and erosion control structures is obtained through regular visual inspections. These inspections focus on permanent erosion and sediment control structures and areas where the ground has been disturbed and soils are exposed. Recently disturbed sites are most vulnerable to erosion and loss of sediment following periods of heavy rainfall.

James Bailey & Associates (JBA) were commissioned by Castlereagh Coal to complete a review of water management and erosion and sediment control (ESC) structures located within areas of rehabilitation established at Invincible Colliery. The review was based on a desktop review of related environmental management plans and recent monitoring documents completed for Invincible Colliery, as well as observations made during subsequent field inspections completed by JBA in December 2022.

The review complements the work undertaken by Umwelt (2022) in response to directives provided to Castlereagh Coal from the NSW section Regulator in relation to ESC management within the Invincible Colliery as discussed in **Section 4.3**.

A summary of the key observations and recommendations from the ESC review are provided below.

*“In general, ESC management principles are being implemented in accordance with site approvals and management documentation, with no significant failures identified. However, it is recommended that Castlereagh Coal implement a risk-based process to complete and document regular ESC inspections at both sites. This procedure should include an outline of key monitoring locations to be assessed by Castlereagh Coal personnel during ESC inspections. These inspections should be undertaken at least quarterly, with additional inspections to be completed following significant rainfall events;*

*Localised erosion issues and deficiencies in drainage and water management structures are present within rehabilitation areas that should be scheduled for maintenance (see **Section** Error! Reference source not found.). However, it is noted that constraints exist at both CVM and Invincible that may impact on the ability to access some areas of the rehabilitation and water management systems, primarily due to with steep slopes and vegetation communities developing within the rehabilitation. It is recommended that Castlereagh Coal review each area prior to scheduling any physical work to balance these constraints against the need to complete remedial actions;*

*Legacy issues relating to the design of and materials used for the drop structures in rehabilitation areas at both sites. Contour drains reporting to these structures is showing evidence of scouring, with the rock lining of the drop structures also showing evidence of weathering, which reduces their overall effectiveness in supporting rehabilitation development. It is noted that these structures were initially developed as temporary ESC controls for the rehabilitation establishment t and development phase. Removal of these structures will be considered during detailed mine closure planning;*

*SD3 at Invincible requires maintenance work to ensure that it is desilted, adequately sized and maintained in accordance with Blue Book (Landcom, 2004) requirements;*

*While vegetation cover is generally present in rehabilitation areas, some areas of limited vegetation cover were identified at both sites. The relatively poor performance of vegetation growth within these areas may impact on the stability of rehabilitation areas in the long term due to a heightened risk of erosion.”*

## 8 Rehabilitation

Rehabilitation is undertaken in accordance with the 2024-2026 Forward Works Program and Rehabilitation Management Plan (RMP). A summary of the rehabilitation objectives, performance indicators and completion criteria relevant to the Invincible rehabilitation domains is provided in the RMP. Plan 1 (Appendix A) in the RMP shows the conceptual final landform features.

### 8.1 Status of Mining and Rehabilitation

Unshaped emplacement areas as well as access tracks and water management structures are inspected by site personnel with maintenance and repairs undertaken as required. The current status of mining and rehabilitation areas within the mine domains established is provided in **Table 8-1**.

**Table 8-1 Invincible Colliery Rehabilitation Status**

Mine Area Type	Previous reporting period (actual) 2023 (ha)	This reporting period (actual) 2024 (ha)	Next reporting period (forecast) 2025 (ha)
Total Mine Footprint – Surface Disturbance	160.82	167.14	196.42
Total Active Disturbance	98.82	95.15	101.57
Rehabilitation – Land Preparation	0	0	0
Ecosystem and Land Use Establishment	0	0	0
Ecosystem and Land Use Development	62.00	72.07	72.07
Rehabilitation Completion	0	0	0

### 8.2 Post Rehabilitation Land Uses

The proposed final land use aims to emulate the pre-mining environment and will enhance local and regional ecological linkages across the site and with adjacent areas. The primary objective of site revegetation and regeneration is to create a stable final landform with acceptable post-mining land use and suitability. In the long term, rehabilitation areas will become integrated with adjacent native vegetation communities.

A Rehabilitation Strategy (Castlereagh Coal, 2022a) has been prepared for Invincible Colliery and incorporates the Southern Extension Project area. The Rehabilitation Strategy includes an investigation into the various options for backfilling of the remaining voids onsite, options to avoid the disturbance of vegetation in proximity to the Eastern Void and includes a detailed description of the measures to be implemented and a plan for the implementation of these measures.

Rehabilitation areas will continue to be monitored on an annual basis and will be managed until self-sustaining. Final rehabilitation areas will achieve the rehabilitation completion criteria prior to relinquishment.

### 8.3 Completion Criteria Assessment

On 20 March 2023 the Resource Regulator (RR) provided feedback and refused the Invincible Colliery Rehabilitation Objectives Statement originally submitted in 2022. Invincible Colliery made revisions addressing the reasons for refusal, and re-submitted the Objectives Statement to the RR in November 2024.

**Table 8-3** provides a summary and assessment of compliance of the monitoring results against the relevant biodiversity and rehabilitation performance and completion criteria for Invincible Colliery.

### 8.4 Rehabilitation Activities

Invincible Colliery has been in care and maintenance until recommencement of mining in July 2023. Rehabilitation management and monitoring is currently undertaken in accordance with the Invincible Colliery Rehabilitation Management Plan.

Rehabilitation activities undertaken during the reporting period included:

- assessment of rehabilitation areas to determine if further works are required / how they have performed following improved rainfall conditions (i.e. monitoring) ; and
- repair of erosion washouts on site.
- Rehabilitation land preparation for the North West Void.
- Emplacement of sub-soil on the eastern highwall.

In the long term, rehabilitation areas are to become integrated with adjacent native vegetation communities with this process detailed in the revised RMP and BMP which have been submitted to regulatory authorities for comment.

An assessment of rehabilitation performance against completion criteria is included in Table 8-3 below. As noted previously these criteria are being refined and waiting approval from the RR as part of the Rehabilitation Management Plan. It is noted that there are areas which have been disturbed by mining which are yet to be rehabilitated. These disturbed areas do not form part of the general assessment presented in **Table 8-3**.

#### 8.4.1 *Invincible Colliery Rehabilitation Area Biodiversity Monitoring*

The Invincible Colliery Rehabilitation Area contains six (6) monitoring plots located across four (4) rehabilitation areas defined by the year they were established (see **Table 8-2**).

##### 8.4.1.1 *Flora Monitoring Observations*

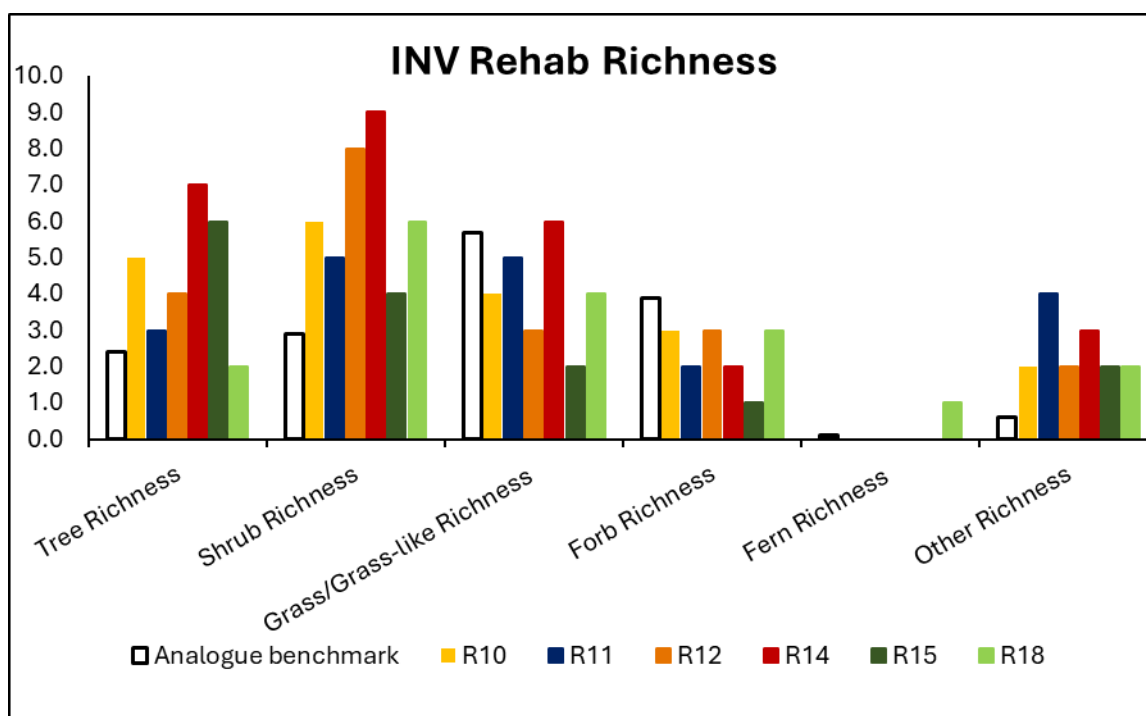
A comparison of observations made during the 2023 and 2024 monitoring of each Rehabilitation monitoring plot is presented in **Table 8-2**. Species richness and percentage foliage cover for each CHA monitoring plot, as measured using BAM, were compared to their respective PCT benchmarks. These comparisons are presented in **Graph 1** and **Graph 2**.



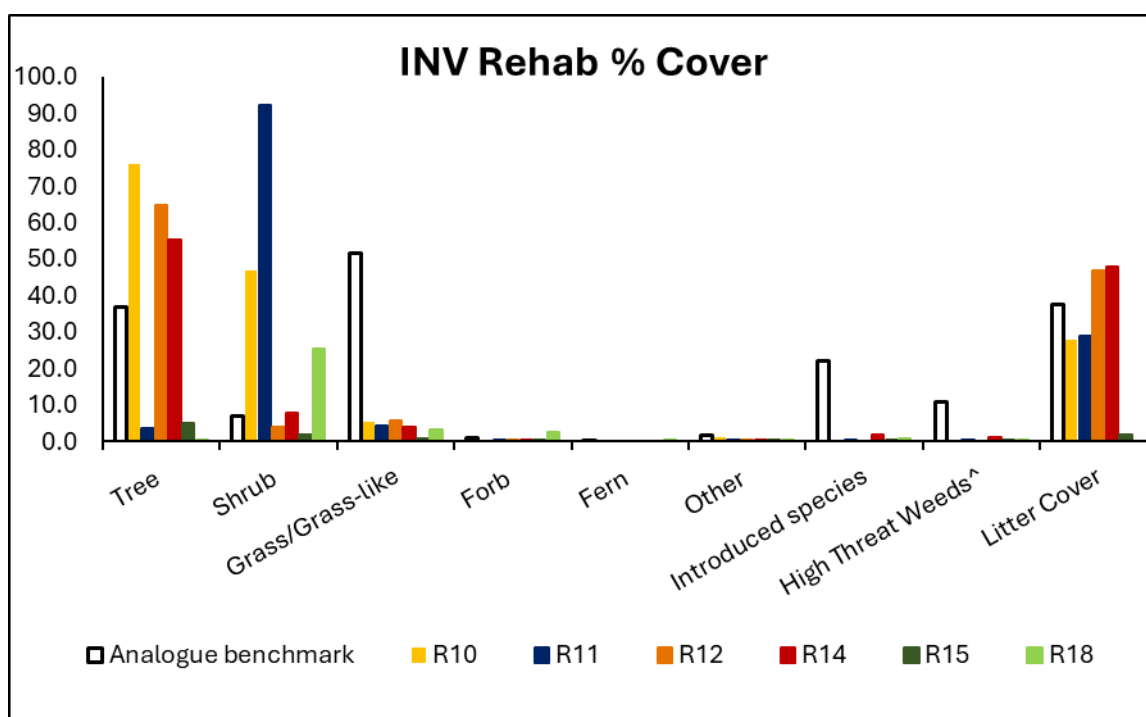
**Table 8-2 Rehabilitation Area 2023 vs 2024 Results**

Monitoring Site	Rehabilitation Year	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
R10	2012	<ul style="list-style-type: none"> <li>No canopy but young eucalypt regeneration.</li> <li>Dense Acacia regrowth in the midstorey.</li> <li>Presence of dead or senescing Acacias.</li> <li>Low abundance of groundcovers and grasses.</li> <li>Good amount of introduced logs, and leaf litter. Some bare earth.</li> <li>Low incidence of weeds.</li> </ul>	<ul style="list-style-type: none"> <li>High overstorey species cover. Dominated by <i>Acacia decurrens</i>.</li> <li>High midstorey species cover. Dominated by <i>Acacia decora</i>.</li> <li>Some Acacias were noted to be senescent, however high levels of regeneration were observed for both overstorey and midstorey species.</li> <li>Good diversity of groundcover species. Low overall cover.</li> <li>Groundcover is comprised of mulched timber, leaf litter and large stones.</li> <li>Blackberry was identified in moderate abundance, with low cover.</li> </ul>
R11	2011	<ul style="list-style-type: none"> <li>High density shrub cover of <i>Cassinia sifton</i> and <i>Acacia</i> spp.</li> <li>Weed presence is low with occasional herbaceous weeds and one Blackberry seedling.</li> <li>Ground layer diversity is low.</li> <li>Sparse native canopy trees.</li> <li>Regenerating Eucalypts</li> <li>No further plantings required but continue to monitor <i>Acacia</i> and Eucalypt regrowth.</li> </ul>	<ul style="list-style-type: none"> <li>Overstorey species are mostly juvenile with very low cover.</li> <li>High midstorey species cover. Dominated by <i>Cassinia sifton</i> and <i>Acacia deanei</i>.</li> <li>Good diversity of native groundcover species. Low cover in all communities.</li> <li>Blackberry and Catsear were observed in very low abundance/cover.</li> <li>Groundcover is comprised of bare ground, leaf litter, mulched timber.</li> </ul>
R12	2008	<ul style="list-style-type: none"> <li>A few eucalypt saplings regenerating.</li> <li><i>Acacia</i> and <i>Cassinia sifton</i> dominating.</li> <li>A lot of dead or senescing acacia.</li> <li>Very minimal weed occurrence – Paterson’s Curse and St. John’s Wort.</li> </ul>	<ul style="list-style-type: none"> <li>High overstorey species cover. Dominated by <i>Acacia decurrens</i>.</li> <li>Overstorey species populations are mostly juvenile.</li> <li>Open midstorey.</li> <li>Midstorey species present are diverse, but low in cover.</li> <li>Good diversity in groundcover species. Very low cover.</li> <li>Ground cover is comprised of moderate leaf litter, scattered patches of bare ground, and scattered stands of groundcover species.</li> <li>No weed species observed.</li> </ul>

Monitoring Site	Rehabilitation Year	Observations 2023 (Cumberland Ecology)	Observations 2024 (Atlantech)
R14	2009	<ul style="list-style-type: none"> <li>No established canopy, however there is young eucalypt saplings and regeneration occurring (<i>E. sieberi</i>, <i>E. Macrorhyncha</i> and <i>E. blakelyi</i>).</li> <li>Strong shrub and mid layer regeneration and establishment of acacias (<i>A. deanei</i>, <i>A. decurrens</i>, <i>A. littoralis</i> and <i>A. rubida</i>).</li> <li>Dense shrub layer.</li> <li>Lots of open ground, shaded space and leaf litter.</li> <li>Sparse grasses and groundcovers.</li> <li>Low incidence of weeds – Blackberry and Catsear (<i>Hypochaeris radicata</i>).</li> <li>Recommendations are for weed management and monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate overstorey species cover. Dominated by <i>Eucalyptus macrorhyncha</i>.</li> <li>Evidence of previous dieback apparent. Canopy is currently regenerating.</li> <li>Good diversity in midstorey species. Low cover.</li> <li>Overstorey and midstorey communities are mostly juvenile.</li> <li>Good diversity of groundcover species. Low cover.</li> <li>Blackberry observed in moderate abundance. Catsear and Common Centaury observed with very low cover.</li> <li>Ground cover is comprised of leaf litter, large stones, mulched timber and patches of bare ground.</li> </ul>
R15	2011	<ul style="list-style-type: none"> <li>Young eucalypt and shrub regeneration.</li> <li>Low amount of ground cover and grasses with little regeneration evident in this layer.</li> <li>Low weed incidence.</li> <li>Open, bare and gravelly/rocky ground.</li> </ul>	<ul style="list-style-type: none"> <li>Overstorey and midstorey species are mostly juvenile. Both communities have very low cover.</li> <li>Groundcover species are very limited. All have very low cover.</li> <li>Weed species that are present are in very low occurrence.</li> <li>Ground cover is mostly bare comprised of large stones and mulched timber.</li> <li>Various gullies were observed running through the plot.</li> </ul>
R18	2012	<ul style="list-style-type: none"> <li>Site dominated by <i>Cassinia sifton</i> (Sifton Bush) with some <i>Acacia dealbata</i>.</li> <li>No eucalypt regeneration or canopy.</li> <li>Low weed density - a few scattered occurrences of herbaceous weeds, plus one small Blackberry seedling.</li> <li>Very rocky terrain with a hard surface crust.</li> </ul>	<ul style="list-style-type: none"> <li>Overstorey species are all juvenile. Very low cover.</li> <li>Midstorey species are mostly juvenile. The only mature species is the dominant <i>Cassinia sifton</i>.</li> <li>Good diversity of groundcover species. Very low cover.</li> <li>Blackberry, Catsear, Kikuyu and Lamb's Tongues all present with low cover.</li> <li>Groundcover is mostly bare. Comprised of large stones and sparse grass stands.</li> <li>Gully erosion was observed throughout the plot.</li> <li>A water body was observed pooling on the side of the plot.</li> </ul>



**Graph 1 Invincible Rehabilitation Monitoring Plot Species Richness**



**Graph 2 Invincible Rehabilitation Monitoring Plot Percent Foliage Cover**

#### 8.4.1.2 Fauna Monitoring Observations

The 2024 monitoring recorded a decrease in overall species diversity throughout the Invincible Colliery Rehabilitation Area relative to the previous year's monitoring, with a total of 45 species recorded, compared to 55 species recorded during the 2023 monitoring, and 69 in 2022. However, the 2024 results are similar to those of the 2021 monitoring that recorded 41 fauna species in the area.

Within the Invincible Colliery Rehabilitation Area, 55% of fauna diversity is represented by mammals with 25 species recorded and 42% of fauna diversity is represented by birds. The remaining one species recorded in the 2024 monitoring was a reptile, the Common Skink (*Lampropholis guichenoti*).

Seven threatened species were recorded in January/February 2025 in the Invincible Colliery Rehabilitation Area during the 2024 monitoring period. Threatened species included the Yellow Tiled Black Cockatoo (*Calyptorhynchus funereus*), Superb Lyrebird (*Menura novahollandiae*), Large-eared pied bat (*Chalinolobus dwyeri*) listed as Endangered under the EBPC Act, Eastern false pipistrelle (*falsistrellus tasmaniensis*), Greater brad-nosed bat (*scoteanax rueppellii*) and Squirrel Glider (*Petarurus norfolcensis*), all listed Vulnerable under the BC Act, and the Eastern bent-wing bat (*miniopterus orianae oceanensis*) listed as Vulnerable under the EBPC Act. Previously other threatened species have been recorded in the area including the Eastern Cave Bat (*Vespadelus trougtoni*) and the Large Bent-winged Bat (*Miniopterus orianae oceanensis*), both listed as Vulnerable under the BC Act.

Two feral pest fauna species were recorded within the Invincible Colliery Rehabilitation Area. These were the House Sparrow (*Passer domesticus*), and the Spotted Neck Dove (*Spilopelia chinensis*). These did not appear to be in high abundance and no control measures are recommended at this time.

As with the IC BOA area At least 16 and possibly 19 species were detected during the rehabilitation survey. Sixteen positively identified call types were assigned to 14 distinct species and two undifferentiated congeneric species groups (*Nyctophilus geoffroyi* / *N. gouldi* and *Vespadelus trougtoni* / *V. vulturinus*). Two (2) *Vespadelus* species are sometimes distinguishable, based on slightly different characteristic frequencies, their calls are almost identical in the Sydney Basin, no attempt was made to differentiate them in this report.

Two clusters of six Nest Boxes are located in the Rehabilitation Area. Animals were recorded occupying four (4) nest boxes near monitoring site R12 (Nest Boxes 1-6). Three (3) squirrel gliders (*Petarurus norfolcensis*), listed as Vulnerable under the NSW BC Act, was recorded in NB 3. At least 1 squirrel glider was observed in NB 2, and another in NB 5. A Brush tail possum (*Trichosurus vulpecula*) was found in NB 6.

#### **8.4.2 Summary**

The results of the 2024 monitoring within the Invincible Colliery Rehabilitation Area demonstrated similar species diversity and cover of rehabilitation vegetation to observations made during the 2023 monitoring round. The monitoring outcomes of rehabilitation area indicated a consistent increase in the vegetation recovery and development of ecosystem functionality as established vegetation matures. Older rehabilitation vegetation was found to be separated into different strata as eucalypts mature and emerge further from the midstory. Previously senesced acacias were observed at many sites, and a juvenile regenerating midstorey layer is present at most sites.

There was generally a low abundance of exotic vegetation across the Invincible Colliery Rehabilitation Area. However, some exotic vegetation was present including the weed species such as St. John's Wort (*Hypericum perforatum*), Fleabane (*Conyza bonariensis*), Yorkshire Fog (*Holcus lanatus*), Blackberry complex (*Rubus fruticosus* spp. aggregate), Spear Thistle (*Cirsium vulgare*) and Catsear (*Hypochaeris radicata*). It is recommended weed control is undertaken within the next reporting period.

A number of the rehabilitation monitoring points across Invincible Colliery Rehabilitation Area were noted as having present habitat features such as hollow bearing trees from previous clearing works and further habitat features have been retained for future rehabilitation works.

**Table 8-3 Assessment of 2024 Monitoring Results against Invincible Colliery Completion Criteria**

Action/Items	Performance Criteria	Completion Criteria	2024 Monitoring findings
Natural and Active Regeneration	Biodiversity Offset Areas are managed for biodiversity using natural regeneration in areas with significant native vegetation remaining, and using active regeneration in areas lacking sufficient native vegetation.	The number of native plant species for each growth form group will be at or above benchmark value after 5 years. Structure of each growth form group will increase to at least local reference site benchmark after 10 years	Overstorey species richness is generally below all benchmark values across all BOA sites, except for BO15. BO15 is equal to its overstorey species benchmark. The other mentioned sites Native regeneration is present at most sites. However, sites BO13, BO21 and BO22 had no regeneration observed. Midstorey species richness were below benchmark values for all sites. Ground cover species are generally below benchmark values across all sites except for BO10, BO17, BO18 and BO23, which were equal to their respective values.
Increase in native fauna species	Increased in biodiversity is evidenced in the Biodiversity Offset Areas by an increase in native species abundance and diversity	Native fauna species diversity and abundance is higher than baseline levels after 10 years	The fauna species diversity recorded in 2024 was less than recorded in 2023, and 2022, but similar to results recorded in 2021. It is expected that faunal communities will continue to establish, and become more diverse, similar to fauna biodiversity in the surrounding un-mined vegetation as the diversity of habitats progressively improves.
Reuse of salvaged habitat features	Habitat features present in the disturbance footprint will be relocated into the rehabilitation areas or Biodiversity Offset Areas under supervision of an ecologist	All habitat features have been relocated in designated areas within one year of removal and details included in the Annual Biodiversity Monitoring Report.	Pre-clearance inspections were conducted <ul style="list-style-type: none"> <li>18 July</li> <li>28 October (re-inspection of previous area)</li> <li>7 November (re-inspection of previous area).</li> </ul> The recovered habitat features are currently stockpiled and awaiting placement in designated areas.
Access control	Access control measures outlined in Section 4.3.3 will be implemented.	All access control measures have been implemented within one year of commencement of the project and documented in Annual Biodiversity Monitoring Report	Access control measures have been implemented, however performance could be improved through boundary fence repair and ensuring all access gates are locked.
Weed Management	Weeds in the Biodiversity Offset Areas will be managed according to the measures outlined in Section 4.3.4 (IC BMP)	Cover of exotic weed species at, or less than benchmark value after 5 years and less than 5% cover after 10 years	Weed cover is currently beneath 5% cover at 13 of the BOA sites. BO4, BO5, BO9, BO12, BO13, BO18, and BO22 all significantly exceed 5% weed cover.
Fire Management	Fire risk managed as specified in Section 4.3.6 (IC BMP)	Fire management is consistent with Bush Fire Environmental Assessment Code for New South Wales (NSW Rural Fire Service, 2006a) and the guidelines contained in the Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code (NSW Rural Fire Service, 2006b).	It was not considered that the fuel loads present in any of the monitoring areas would likely exceed regulatory requirements. Please note, bushfire advice is outside of our area of expertise and if there is potential for fuel loads to exceed regulatory requirements, a bushfire consultant will be required to make an assessment prior to the undertaking of any control burns.

Action/Items	Performance Criteria	Completion Criteria	2024 Monitoring findings
Pest animal species	Pest animal species are managed in accordance with Section 4.3.5 (IC BMP)	Pest species are not affecting the quality of biodiversity offset areas as evidenced by monitoring, and there is no increase in pest species abundance or diversity relative to the baseline levels	There are some pest species present across sites including the Red Fox ( <i>Vulpes vulpes</i> ), House Sparrow ( <i>Passer domesticus</i> ), Brown Hare ( <i>Lepus capensis</i> ), and European Rabbit ( <i>Oryctolagus cuniculus</i> ). There is no evidence of pest species affecting general diversity and is not requiring any intervention currently.
Sediment and erosion	Sediment and erosion is managed appropriately and no increase is observed	Erosion is not affecting the quality of biodiversity offset areas as evidenced by monitoring and no additional erosion is recorded relative to baseline levels.	All landforms are generally stable across most BOA sites. Notably, BO15 was observed to have large gullies running through the plot but is currently stable.

## 9 Community

### 9.1 CCC Meetings

Two community consultation meetings were held during the reporting period. The meetings were held in April and October 2024.

The outcomes of the CCC meetings are detailed in the meeting minutes available on the Castlereagh Coal website.

There was one (1) action required from the April 2024 CCC meeting which required further investigation regarding water leaving IVM discharge point and crossing the Castlereagh Highway. The outcomes of the investigation were concluded in the October 2024 CCC meeting. After review of the Development Approval and Invincible Water Management Plan (WMP) there is no clear indication of a specific flow path required for discharge. As water is discharged from the nominated location and follows the unnamed tributary to Cullen Creek it is deemed to be generally in alignment with the Invincible WMP. Minor excavation work was carried out to clean the culvert build up ensuring discharged water flows through the culvert.

### 9.2 Complaints

In accordance with Condition M5 of the EPL, a community complaints line is operated by Invincible Colliery during the hours of operation. The complaints line is 04 92007958 which is also displayed on the Castlereagh Coal website. This contact point provides the community with a mechanism by which to raise any concerns that they have with operations at Invincible Colliery.

Shoalhaven Coal maintains a complaint register to record and respond to complaints received from the community. There were one complaints received from the local community in relation to activities at Invincible Colliery during the reporting period. A comparison of complaints received between 2020 and 2024 is outlined in **Table 9-1**.

Invincible Colliery was in care and maintenance from 2013 until recommencing operations in July 2023. One complaint was received during the 2024 reporting period related to coal material on the Castlereagh Highway adjacent the project site.

**Table 9-1 Comparison of Complaints for Invincible Colliery 2020 – 2024**

Complaint Type	2020	2021	2022	2023	2024
Noise	0	0	0	0	0
Air quality	0	0	0	0	0
Blasting	0	0	0	0	0
Traffic	0	0	0	0	0
Water	0	0	0	1	0
Other	0	0	0	1	1
Total	0	0	0	2	1

## 10 Independent Audit

An Independent Environmental Audit (IEA) was conducted during 2024 in accordance with Schedule 5, Condition 11 and 12 of the Project Approval. The audit assessed compliance against the following:

- Project Approval (PA) MP07\_0127.
- Environment Protection Licence (EPL) 1095.
- Mining Leases (ML 1635, ML 1638, ML 1844 and ML 1860) – Standard Mining Lease Conditions.
- WAL 36485 (10BL602586).
- Environmental Management Plans.
- 2016 IEA Audit Actions.

An action plan was developed as an outcome of the audit findings and follow up actions have been implemented as required in consultation with DPHI. The status of each audit action plan item can be found in **Appendix 3**.

In accordance with Condition 11 of Schedule 5 of the Project Approval, an IEA is required within a year of the recommencement of mining operations and three yearly thereafter. As such the next IEA is due to be undertaken in 2027. The results of the IEA when completed, will be reported in the subsequent Annual Review. The 2024 IEA and Invincible Colliery response to recommendations can be found on the Castlereaugh Coal website.



## 11 Incidents and Non-Compliances during the Report Period

There was one environmental incident reported to the EPA during the reporting period. The reportable incident involved a coal spill on Castlereagh Highway. The Invincible Pollution Incident Response Management Plan was not activated during the reporting period with review of the PIRMP being undertaken in December 2024 (refer to the Castlereagh Coal website). Non-compliances which occurred during the reporting are discussed in **Section 1** and summarised below in **Table 11-1**.

**Table 11-1 Summary of Non-Compliance Recorded during the Reporting Period**

Relevant Approval	Condition No.	Condition Description/Non-Compliance	Compliance Status	Where Addressed in Annual Review
PA 07_0127 (MOD 5)	Schedule 3 Condition 16	Exceedance of air quality 24 hr assessment criteria for particular matter (PM <sub>10</sub> ) on 22 November 2024.	Low Non-compliant	Section 6.3
PA 07_0127 (MOD 5)	Schedule 3 Condition 19	Air Quality Monitoring – HVAS PM10 & TSP not monitored	Low Non-compliant	Section 6.3
PA 07_0127 (MOD 5)	Schedule 3 Condition 19	Air Quality Monitoring – HVAS PM10 no data	Low Non-compliant	Section 6.3
PA 07_0127 (MOD 5) EPL 1095	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS TSP no data	Low Non-compliant	Section 6.3
PA 07_0127 (MOD 5) EPL 1095	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS PM10 and TSP no data	Low Non-compliant	Section 6.3
PA 07_0127 (MOD 5) EPL 1095	Schedule 3 Condition 24 Condition L2.4	Discharge Quality Monitoring – Outside of pH assessment criteria at LD002	Low Non-compliant	Section 6.4
PA 07_0127 (MOD 5)	Schedule 3 Condition 24 (b)	Discharge exceedances for ANZG trigger values for 95% species – Cadmium, Chromium, Silver and Boron.	Low Non-compliant	Section 6.4

<b>CCL702</b> <b>ML1635 and ML 1638</b>	Condition 3(1) (AEMR) Condition 4 (EMR)	Failure to submit an AEMR/EMR in the timeframe approved by the Director General.	Administrative Non-compliant	<b>NA</b>
<b>PA 07_0127 (MOD 5)</b>	Schedule 3 Condition 35	Biodiversity - Conservation Bond	Administrative Non-compliance	<b>Section 6.7</b>

## 12 Activities to be Completed in the Next Reporting Period

Activities to be completed in the next reporting period (i.e. during 2025) will include:

- Undertake works required by the Project Approval and EPL.
- Review relinquishment opportunities for rehabilitation areas that have met relevant criteria.
- Completion of annual CCC meetings, as agreed with CCC members.
- Continuation of environmental monitoring.
- Submission of modification 6 (Mod 6) to PA 07 -0127 to enable extended project life and modify mining operational conditions.
- Construction completion of Sediment Dam 8
- Completion of PRSP requirements for Environmental Dam low pH
- Address close out requirements of Section 240 Notice
- Implementation of actions required from the 2024 IEA
- Attend to rehabilitation activities as per **Section 8.4**

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- Castlereagh Coal (2022a). Invincible Colliery Rehabilitation Strategy.
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- Coalpac Pty Ltd (2009e). Invincible Open Cut Coal Mine Extension Blast Monitoring & Management Plan.
- Coalpac Pty Ltd (2009f). Landscape Management Plan for the Invincible Open Cut Coal Mine Extension.
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R.W. Corkery & Co. Pty Limited (2008). Environmental Assessment of the Proposed Extension to the Invincible Colliery Open Cut Mine and Production Increase.

R.W. Corkery & Co. Pty Limited (2009). Proposed Modification to Project Approval 07\_0127 for the Invincible Colliery Open Cut Mine. Prepared for Coalpac Pty Limited.

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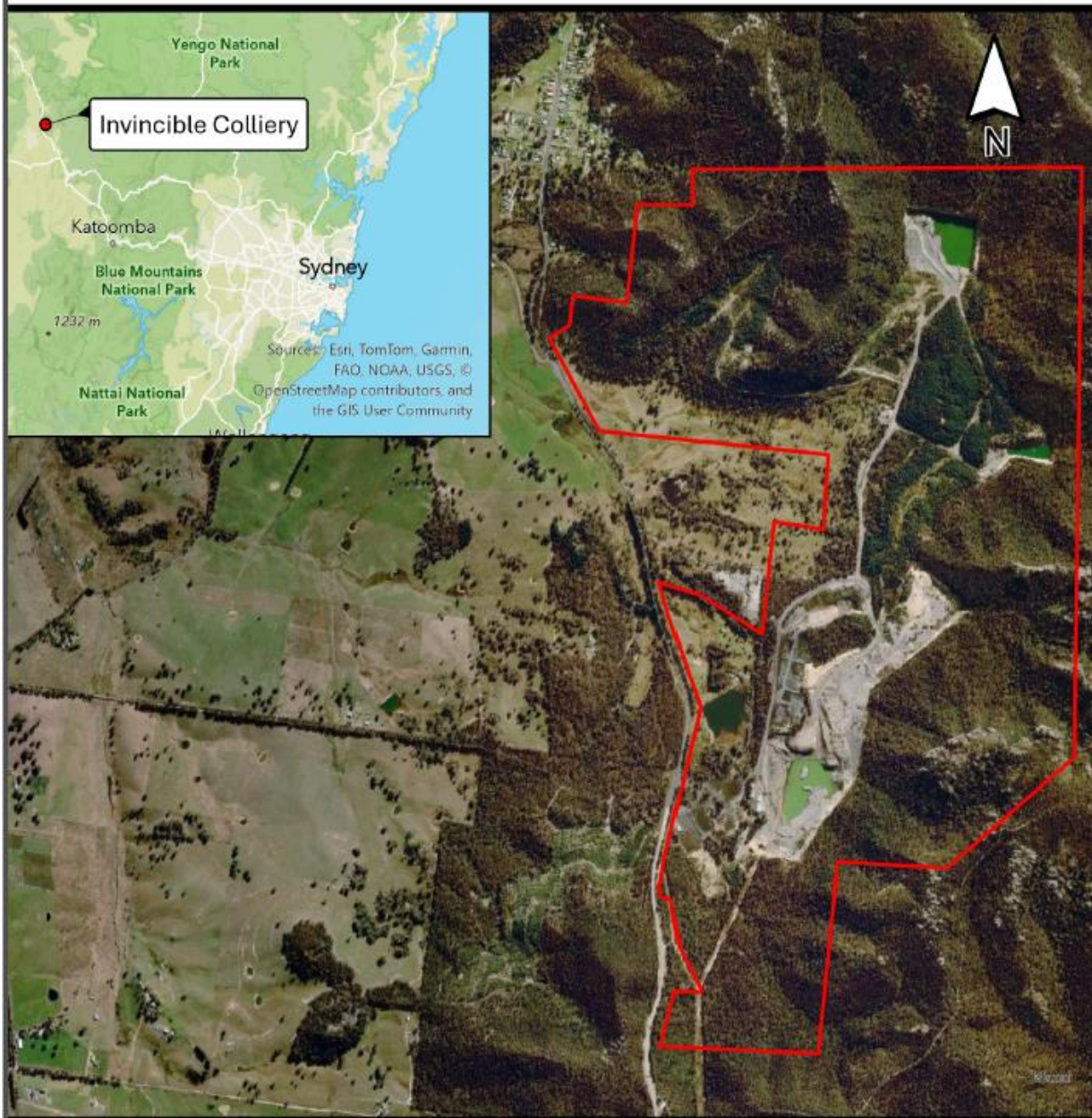
Atlantech (2025). 2024 Biodiversity Monitoring Report Cullen Valley Mine and Invincible Colliery, Cullen Bullen, Draft.


Umwelt (Australia) Pty Limited (2016). Invincible Southern Extension Project – Environmental Assessment. Prepared for Shoalhaven Coal Pty Limited. Umwelt (Australia) Pty Limited (2017). 2016 Biodiversity Offset Monitoring of Cullen Valley Mine and Invincible Colliery. Prepared for Shoalhaven Coal Pty Limited.

## **APPENDIX 1 - FIGURES**

# Invincible Colliery

## Site Locality



 Invincible Project Approval  
Boundary (PA 07/0127)

0 0.28 0.55 1.1  
 Kilometers

Date Created: 13/03/2025  
Map Created By: J Pawson (Atlantech)  
Map Size: A4 Portrait  
Coordinate System: GDA2020 MGA Zone 56  
Map Reference: ATLGIS25-002\_A4-1

Figure 1





# Invincible Colliery

## 2024 Mining & Rehabilitation Areas



- Invincible Project Approval Boundary (PA 07/0127)
- Mining Lease Boundaries
- Exploration Lease Boundaries

- Active Mining Area (Open cut void)
- Infrastructure Area
- Overburden Emplacement Area
- Rehabilitation Area
- Tailings Storage Facility
- Water Management Area
- Biodiversity Offset Area

0 0.25 0.5 1  
Kilometers

Date Created: 13/03/2025  
Map Created By: J Pawson (Atlantech)  
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Coordinate System: GDA2020 MGA Zone 56  
Map Reference: ATLGIS25-002\_A4-2

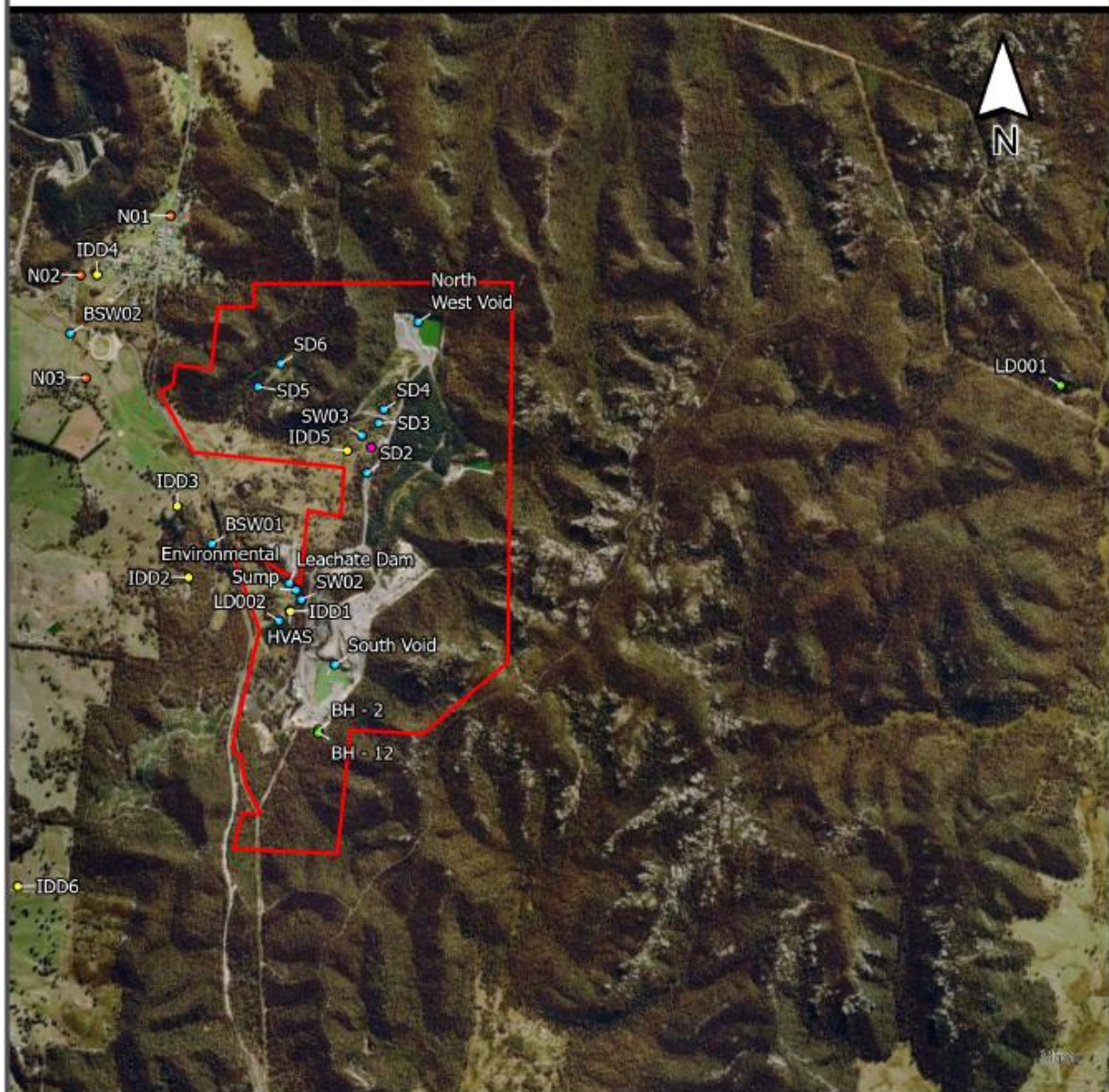
Figure 2





# Invincible Colliery

## Environmental Monitoring Locations



- Invincible Project Approval Boundary (PA 07/0127)
- Air Quality Monitoring Locations
- Weather Station
- Surface Water Monitoring Locations
- Groundwater Monitoring locations
- Noise Monitoring Locations

0 0.42 0.85 1.7  
Kilometers

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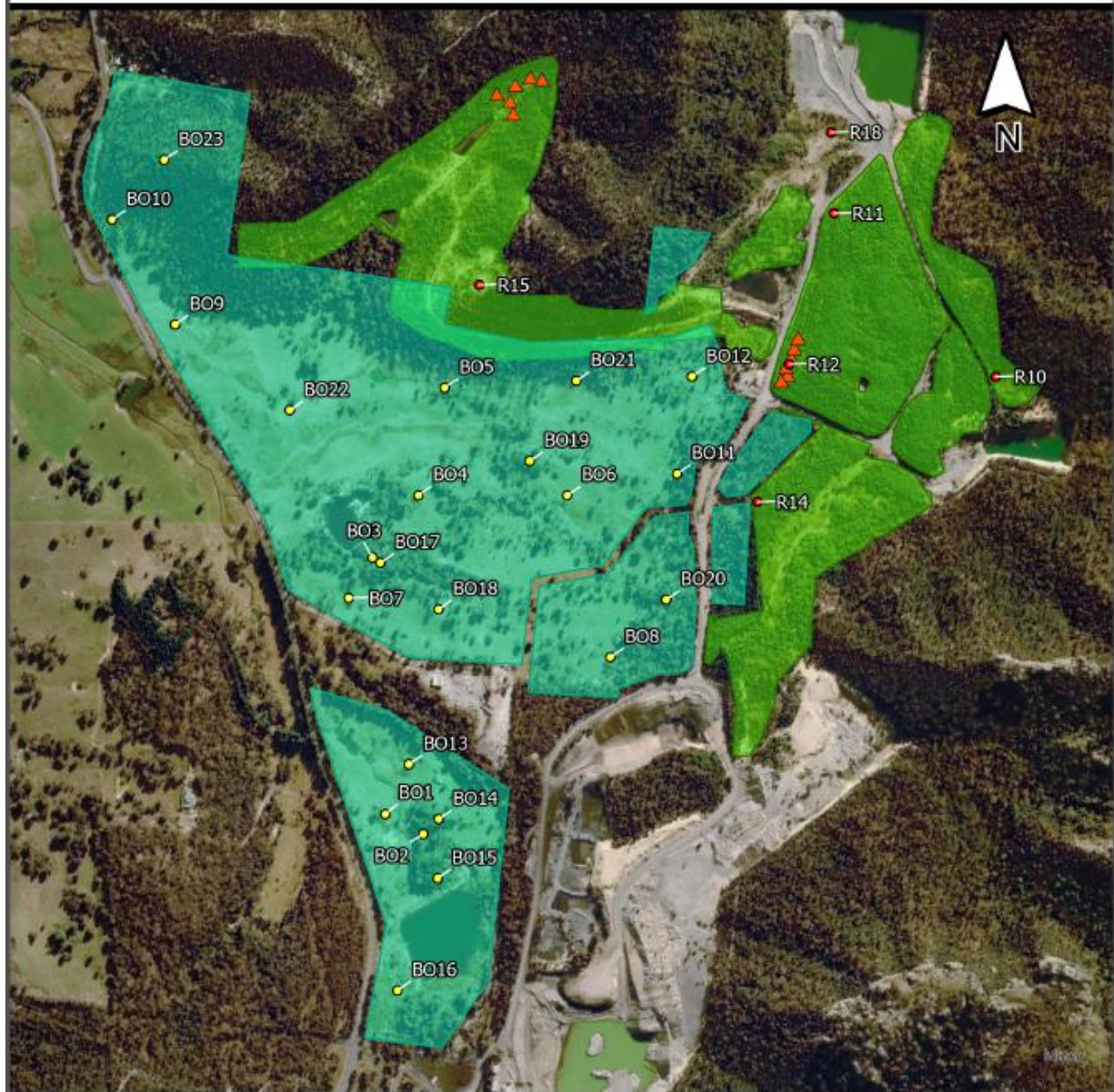
Figure 3





# Invincible Colliery

## Ecological Monitoring Sites



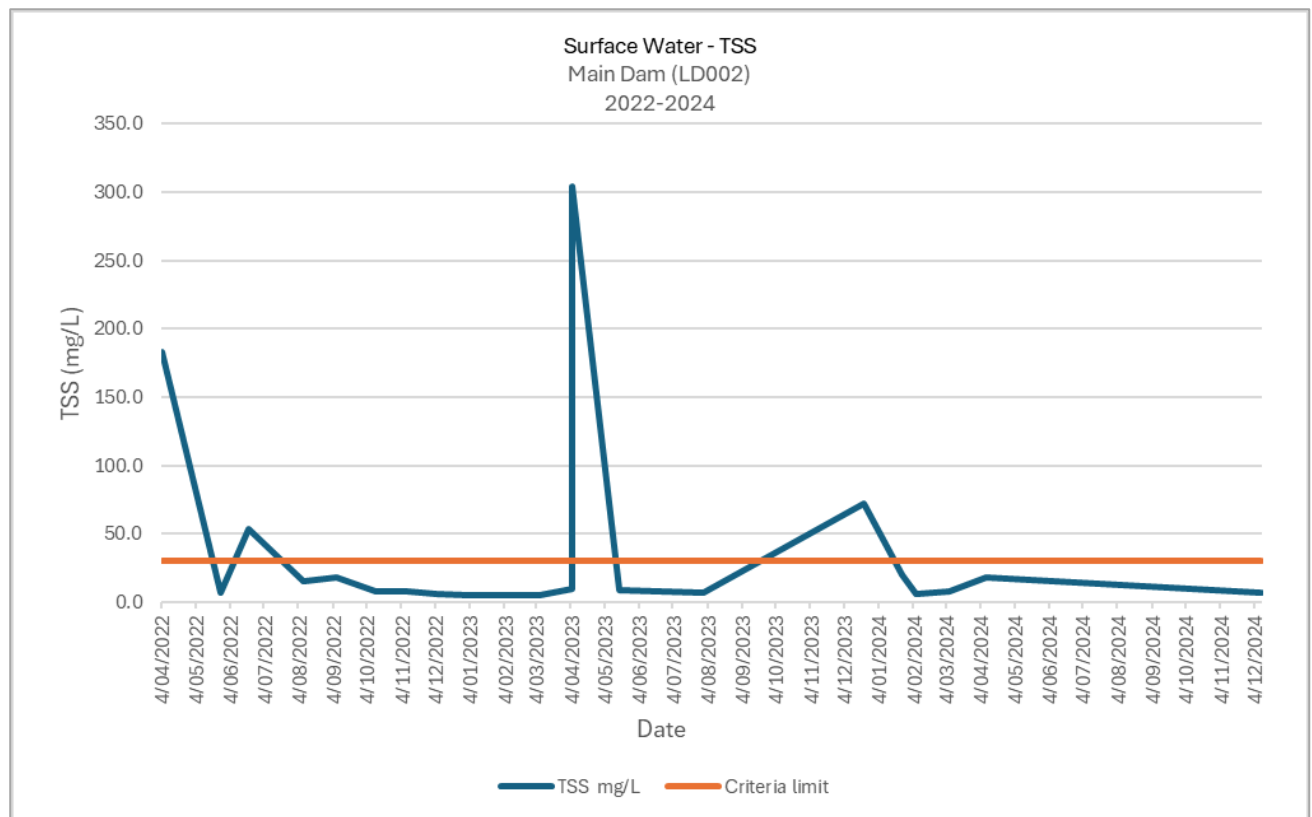
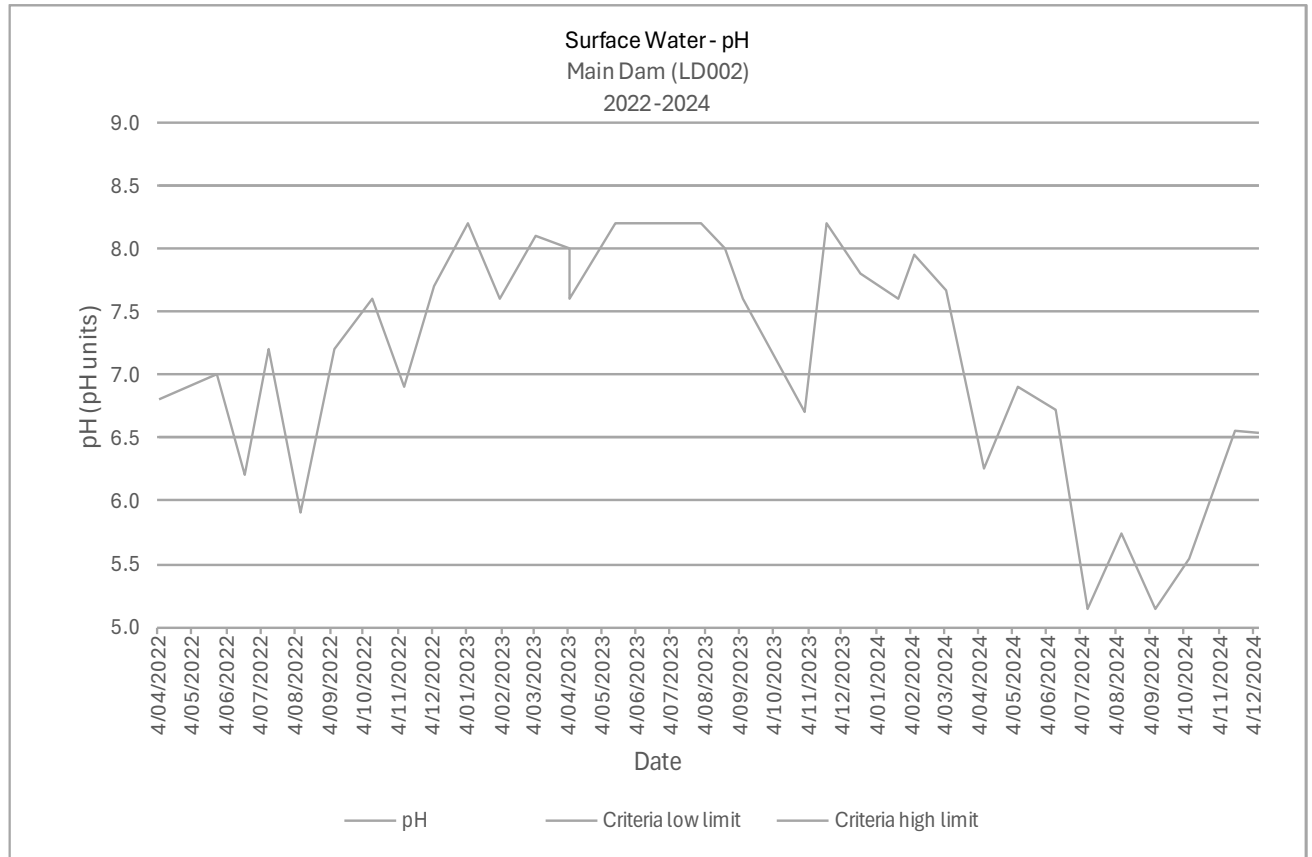
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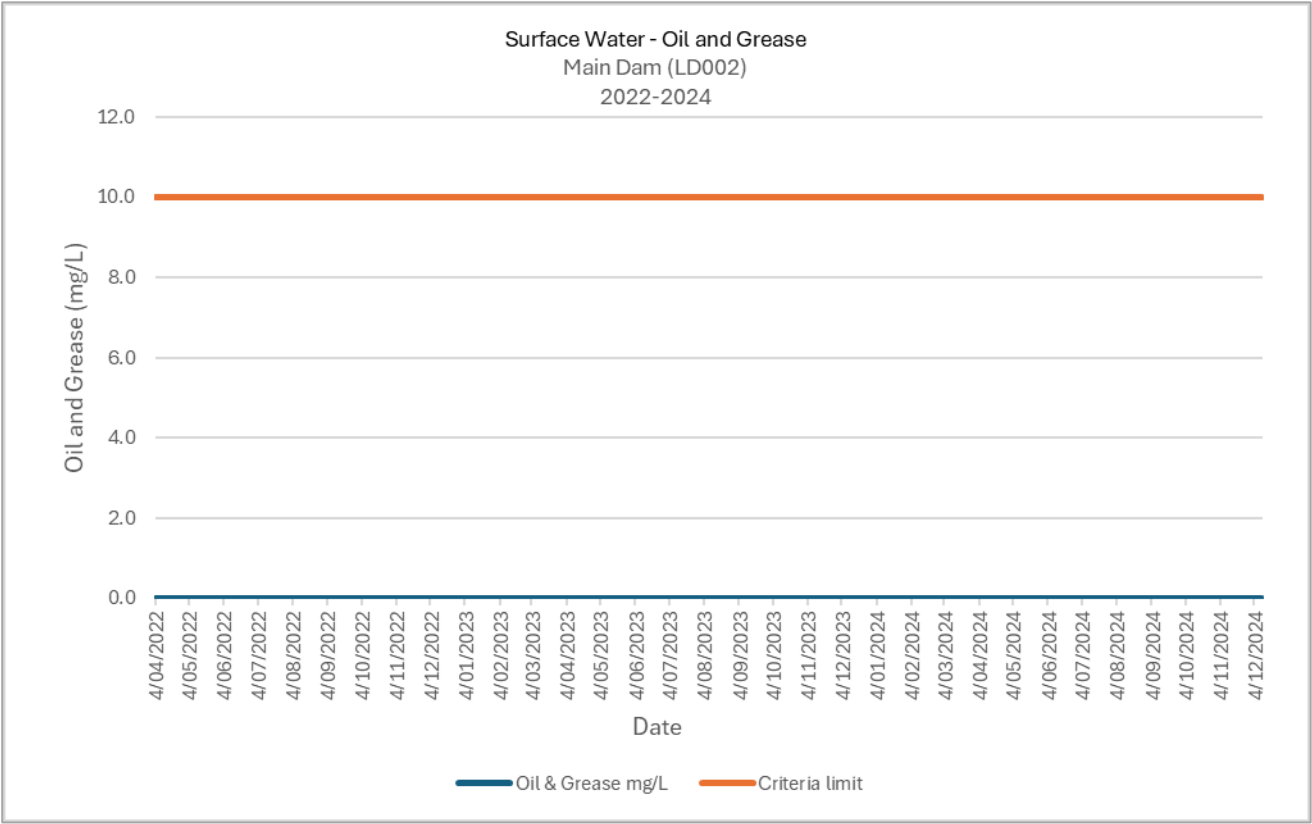
Figure 4



## **APPENDIX 2 – Monitoring Results**

## Surface Water





### Monthly Monitoring Results Environmental Dam (SW02)

Environmental Dam (SW02)			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
24/01/2024	3.59	24	<5
06/02/2024	3.5	<5	<5
06/03/2024	3.15	<5	<5
08/04/2024	3.19	8	<5
09/05/2024	3.17	8	<5
11/06/2024	3.25	5	<5
10/07/2024	3.18	<5	<5
10/08/2024	3.18	<5	<5
09/09/2024	3.25	11	<5
09/10/2024	3.07	<5	<5
18/11/2024	3.53	19	<5
10/12/2024	3.9	<5	<5

### Monthly Monitoring Results Silt Dam (SW03)

Silt Dam (SW03)			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
24/01/2024	8.25	24	<5
06/02/2024	7.95	29	<5
06/03/2024	7.54	6	<5
08/04/2024	7.54	10	<5
09/05/2024	7.63	<5	<5
11/06/2024	6.59	<5	<5
10/07/2024	7.32	<5	<5
10/08/2024	7.23	5	<5
09/09/2024	7.43	<5	<5
09/10/2024	7.57	<5	<5
18/11/2024	6.84	8	<5
10/12/2024	7.76	12	<5

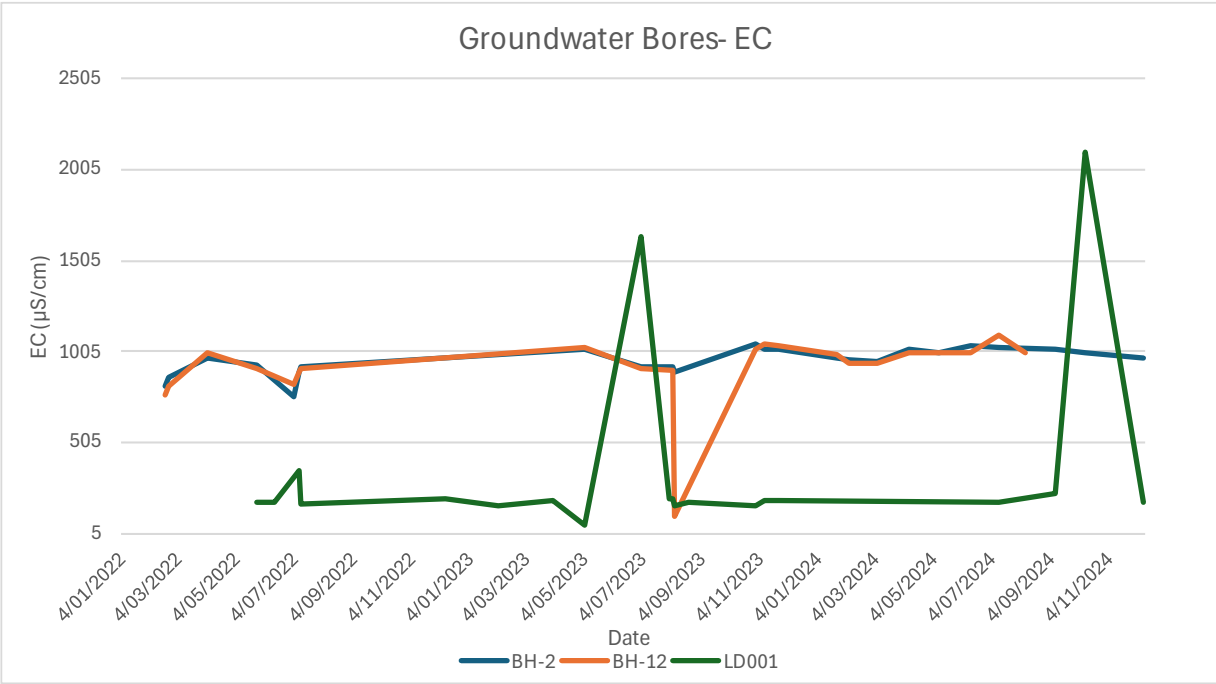
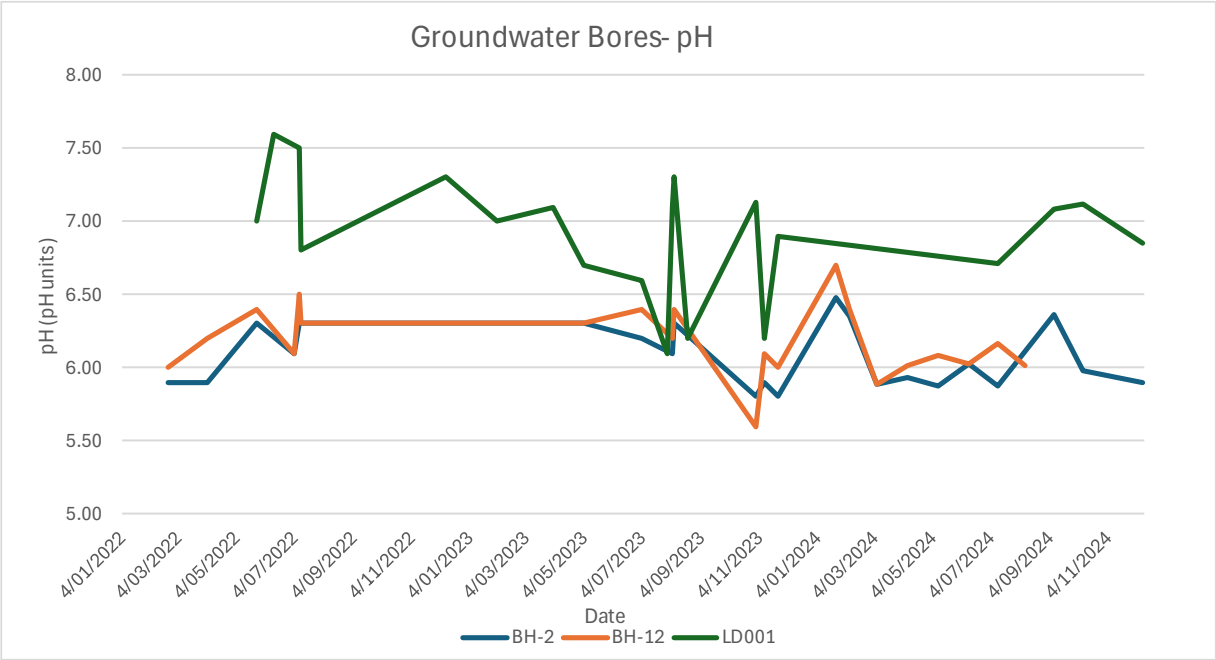
### Monthly Monitoring Results Cullen Creek U/S

BSW01 - Cullen Creek Upstream			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
24/01/2024	7.5	33	<5
06/02/2024	7.5	30	<5
06/03/2024	7.4	16	<5
08/04/2024	7.3	29	<5
09/05/2024	6.7	32	<5
11/06/2024	6.5	9	<5
10/07/2024	6.3	12	<5
10/08/2024	6.3	7	<5
09/09/2024	6.7	18	<5
09/10/2024	6.7	17	<5
18/11/2024	6.7	29	<5
10/12/2024	6.1	20	<5

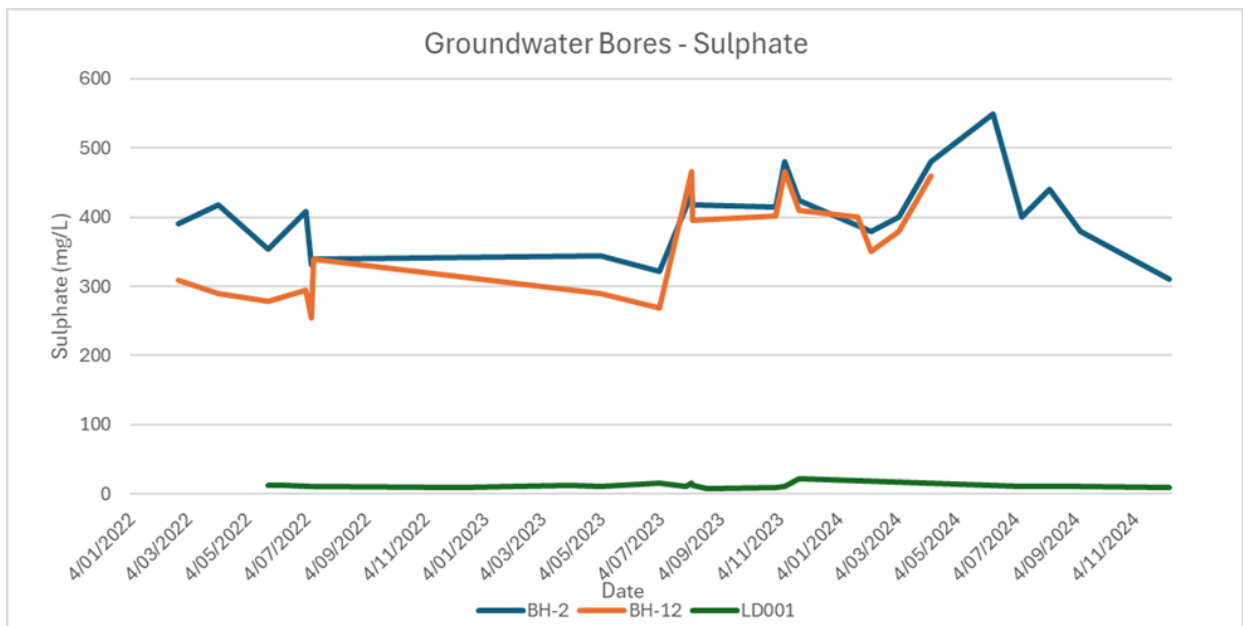
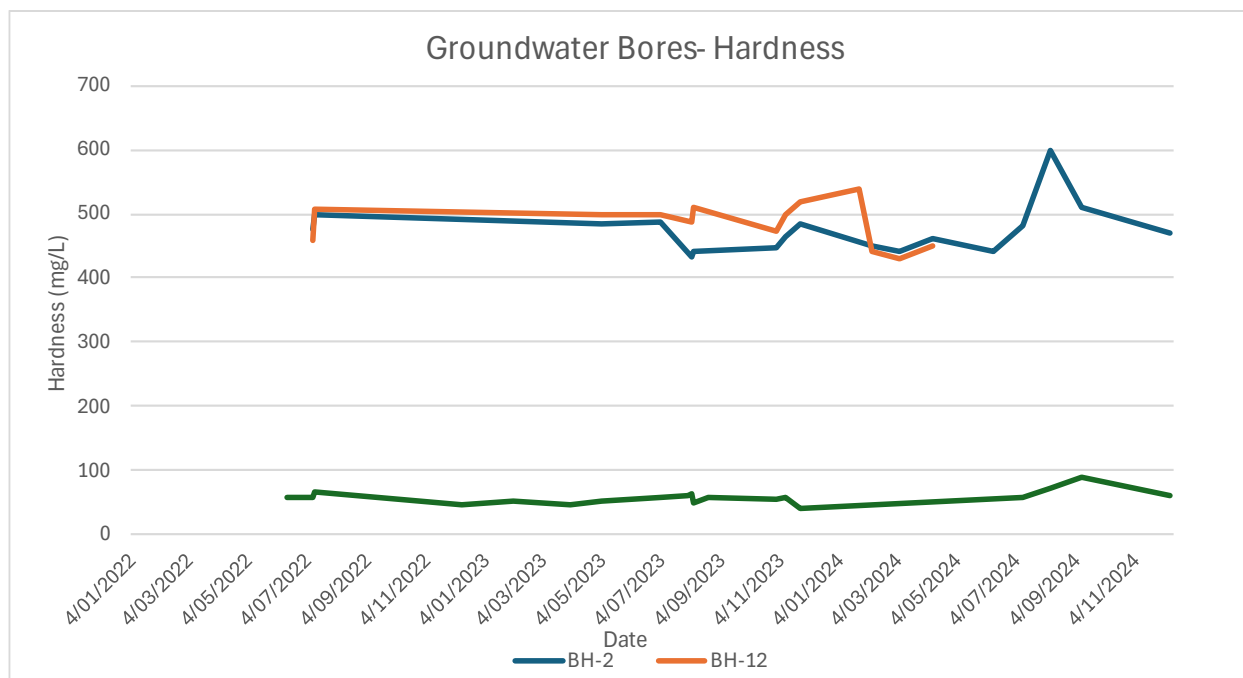
### Monthly Monitoring Results Cullen Creek D/S

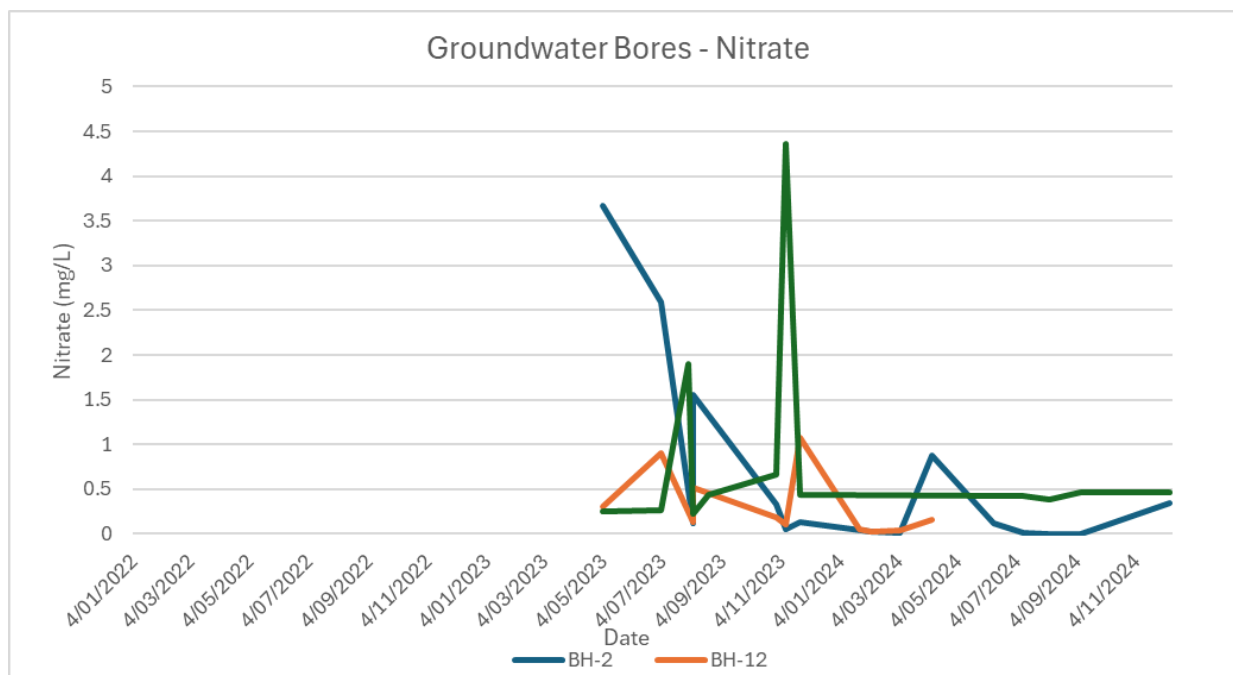
Cullen Creek Downstream			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
24/01/2024	7.7	21	<5
06/02/2024	7.5	41	<5
06/03/2024	6.8	34	<5
08/04/2024	7.3	<5	<5
09/05/2024	7.0	<5	<5
11/06/2024	6.6	<5	<5
10/07/2024	6.4	9	<5
10/08/2024	6.6	<5	<5
09/09/2024	6.9	<5	<5
09/10/2024	6.8	754	<5
18/11/2024	6.5	9	<5
10/12/2024	6.7	8	<5

**Groundwater**









Historical noise monitoring results for years 2011 and 2012 are shown below. Contribution from Invincible was inaudible for all monitoring undertaken for 2013 – 2024.

#### Quarterly Noise Monitoring Results 2011

2011 Quarterly Noise Monitoring Results					
Location	Criterion (dB)	Q1 (L <sub>Aeq</sub> 15 min)	Q2 (L <sub>Aeq</sub> 15 min)	Q3 (L <sub>Aeq</sub> 15 min)	Q4 (L <sub>Aeq</sub> 15 min)
Cullen Bullen Central (N01)	40	IA	IA	IA	IA
Cullen Bullen West (N02)	40	IA	IA	IA	IA
Cullen Bullen South (N03)	40	IA	NM	IA	IA

IA – Noise from the mine was inaudible

NM – Noise was inaudible but not measurable

#### Quarterly Noise Monitoring Results 2012

2012 Quarterly Noise Monitoring Results					
Location	Criterion (dB)	Q1 (L <sub>Aeq</sub> 15 min)	Q2 (L <sub>Aeq</sub> 15 min)	Q3 (L <sub>Aeq</sub> 15 min)	Q4 (L <sub>Aeq</sub> 15 min)
Cullen Bullen Central (N01)	40	IA	<30	IA	IA
Cullen Bullen West (N02)	40	IA	<30	IA	IA
Cullen Bullen South (N03)	40	IA	34	IA	IA

IA – Noise from the mine was inaudible

## **APPENDIX 3 – IEA 2024 Action Plan**

Unique Finding Identifier	Aspect	Recommendation	Proponent's Proposed Action / Action Taken / Response (as applicable)	Proposed Action Due Date (if applicable)	2024 Annual Review Updates
<b>NC1</b>	Obligation to Minimise Harm to the Environment	<b>NC REC 1</b> As per Recommendations raised in this audit report.	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC2</b>	Final Layout Plans	<p>Undertake a detailed Mine Planning process that produces a Life of Mine rehabilitation schedule, materials balance and supporting operational strategies to facilitate achievement of rehabilitation commitments.</p> <p>2. Review compliance and operational management systems and processes to ensure that the outcomes of the detailed Mine Planning process are integrated into Business-As-Usual activities to ensure compliance with applicable measures and requirements and progression of rehabilitation activities in accordance with planned activities and timings.</p> <p>3. Implement a program of temporary rehabilitation to minimise disturbance based on commitments within the RMP and EIS.</p> <p>4. Undertake remedial works on the west pit rehabilitation area to address land stability issues (dump slip) and drainage line scouring</p>	<p><b>NC REC 2.1 ACTION</b> Castlereagh Coal (CC) has engaged a contract mine planner to assist with the Life of Mine plan. Changes to operations and the rehabilitation schedule will be reflected in the annual Rehabilitation Report Program, and Forward Work Program.</p> <p><b>NC REC 2.2 ACTION</b> CC will review the current compliance and operational management system to determine whether the mine planning is integrated adequately. CC will if necessary implement a new compliance systems to the requirements of the operation.</p> <p><b>NC REC 2.3 ACTION</b> CC will engage with the contractor mine planner to investigate opportunities to conduct temporary rehabilitation for the project life.</p> <p><b>NC REC 2.4 ACTION</b> CC will undertake an investigation to determine appropriate remedial works (if required) to repair the land stability issues and drainage line scouring</p>	<p><b>2.1</b> 01/03/25</p> <p><b>2.2</b> 21/03/25</p> <p><b>2.3</b> 31/01/25</p> <p><b>2.4</b> 01/08/25</p>	<p><b>2.3</b> Mine Planner has been engaged to investigate opportunities for temporary rehabilitation.</p> <p>Update 28/02/25: consideration by site is currently being undertaken for temporary rehabilitation areas in terms of cost of seed and time of final rehabilitation.</p> <p><b>Action Complete</b></p>
<b>NC3</b>	Notification of Recommencement	<p>1. Engage with DPHI to seek confirmation of the recommencement notification. If notification was completed, seek a copy of the correspondence. If correspondence cannot be verified, submit a retrospective notification.</p> <p>2. Following Item 1, ensure a copy of the recommencement notification is retained and is accessible within the mine's environmental compliance management system.</p>	<p><b>NC REC 3.1 ACTION</b> CC will engage with DPHI to seek confirmation of the recommencement notification and if possible, seek a copy of the correspondence. If correspondence cannot be verified, CC will submit a notification in accordance with Schedule 2, Condition 12.</p> <p><b>NC REC 3.2 ACTION</b> A copy will be filed appropriately in the CC filing system</p>	<p><b>3.1</b> 17/01/25</p> <p><b>3.2</b> N/A</p>	<p><b>3.1</b> DPHI were engaged on 12/12/24 regarding an RFI.</p> <p><b>Action Closed</b></p>
<b>NC4</b>	Blast Management Plan	Engage with DPHI to seek confirmation of agreement by the Secretary to not prepare a Blast Management Plan for the current phase of mining activities.	<p><b>NC REC 4.1 ACTION</b> CC will engage with DPHI to seek confirmation of an agreement by the Secretary to not prepare a Blast Management Plan, and if possible, seek a copy of the correspondence. If correspondence cannot be verified, CC will submit a request to be exempt of preparing a Blast Management Plans unless CC plan to blast.</p>	<b>4.1</b> 17/01/25	<p><b>4.1</b> DPHI were engaged on 12/12/24 regarding an RFI.</p> <p>DPHI responded not finding evidence of an agreement on 04/02/25. An exemption letter was submitted to DPHI on 10/02/25.</p> <p><b>Action Closed</b></p>
<b>NC5</b>	Operating Conditions	Introduce a maintenance regime for cleaning the access road, existing the site following the wheel wash.	<p><b>NC REC 5.1 ACTION</b> CC have introduced a maintenance regime for cleaning the access road, by modifying the water cart to spray water vertically downwards on to the road.</p>	<b>5.1</b> Completed	
<b>NC6</b>	Air Quality Management Plan	<p>1. Review, and update where necessary, the Air Quality Management Plan (AQMP) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the AQMP is fit for purpose given the recommencement of operations and EIS commitments.</p> <p>2. Ensure key measures to address Air Quality operating conditions and to protect air quality are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to Air Quality are mitigated. (Action also refers to EPL Condition O3.2)</p>	<p><b>NC REC 6.1 ACTION</b> CC will review and revise the AQMP where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>NC REC 6.2 ACTION</b> CC will ensure key measures to address Air Quality operating conditions and to protect air quality are implemented when reviewing and revising the AQMP</p>	<p><b>6.1</b> 08/03/25</p> <p><b>6.2</b> 08/03/25</p>	<p><b>6.1</b> The AQMP has been reviewed and found to be up to date, with no revisions required. However, it was noted that the actions outlined in Table 5.1 of the AQMP had not been fully implemented. These actions have since been reviewed, and any that were not previously carried out have now been addressed and completed.</p> <p><b>Action Closed</b></p>
<b>NC7</b>	Water Management Performance Measures	<p>1. Undertake an assessment of water management systems and implementation measures for separate clean, dirty and mine water systems by a suitably qualified person.</p> <p>2. Complete an improvement program for the wastewater, oily water separator and associated infrastructure. (Refer also to findings at Schedule 3, Condition 15).</p> <p>3. Complete drainage repairs for LPD2 to divert water away from the highway and restore</p>	<p><b>NC REC 7.1 ACTION</b> CC will engage a suitably qualified person to review and revise the Water Management Plan and the water management system and implementation.</p> <p><b>NC REC 7.2 ACTION</b> CC will undertake an investigation to determine appropriate repair and if required replace the wastewater and oily water separator system to make functional. CC if required will investigate other options in terms of wastewater management.</p>	<p><b>7.1</b> 08/03/25</p> <p><b>7.2</b> 26/09/25</p> <p><b>7.3</b> 31/01/25</p>	<p><b>7.1</b> CC has requested the endorsement of suitably qualified persons to review and revise the Water Management Plan by DPHI on 28/02/25.</p>

		Note: Recommendations regarding the EPL PRP are included within the EPL Checklist	<b>NC REC 7.3 ACTION</b> CC will undertake drainage repairs downstream of LDP002 to divert water back into the natural drainage pathway.		<b>Action not completed.</b>  <b>7.3</b> Drainage diversion has been consulted with corresponding neighbour to re-divert into the property. Ongoing correspondence is required with an expected resolution by 28/03/25 or sooner if an LDP002 discharge is to occur. (note no discharges from LDP002 has occurred since the completion of the IEA). Update 28/02/2025: No resolution has been reached with the neighbour. The EPA was notified on February 19 regarding the re-diversion and any potential complications that may arise during its implementation. CC is currently awaiting feedback from the EPA. <b>Action outstanding.</b>
<b>NC8</b>	Water Management Plan	1. Engage with DPHI to seek confirmation of expert endorsement of the approved Water Management Plan (Water MP). If endorsement was completed, seek a copy of the correspondence. If endorsement cannot be verified, submit an updated request for expert endorsements for the next management plan revision trigger.  2. Undertake an assessment of the surface water management system and associated implementation measures by a suitably qualified person.  3. Undertake Dam Integrity Inspections on key dam embankments such as the Main Storage Dam.  4. Implement measures to manage pipeline/pump failure risks for infrastructure associated with seepage management. 5. Review the current operations against the Aquifer Interference Policy.  6. Engage the EPA for a modification of the Environment Protection Licence to permit discharge via the underground workings.  7. Document staged Progressive Erosion and Sediment Control Plans (PESCPs) as per the Water MP for key areas across the site	<b>NC REC 8.1 ACTION</b> CC will engage with DPHI to seek confirmation of expert endorsement of the approved Water MP, and if possible, seek a copy of the correspondence. If endorsement cannot be verified, CC will request endorsement for the Water MP revision. <b>NC REC 8.2</b> Finding and recommendation noted. No further action is proposed. Covered under NC REC 7.1 Action <b>NC REC 8.3 ACTION</b> CC will conduct a Dam Embankment Integrity Inspection on the Main Storage Dam by a person qualified in surveillance of embankment dam inspections. <b>NC REC 8.4 ACTION</b> CC will review the pipeline/pump failure risks for infrastructure associated with seepage management and if necessary, revise the seepage management process. <b>NC REC 8.5 ACTION</b> Finding and recommendation noted. No further action is proposed. Covered under NC REC 7.1 Action <b>NC REC 8.6 ACTION</b> CC will engage with EPA to determine if a EPL variation is necessary and will submit an application to modify if required. <b>NC REC 8.7</b> Finding and recommendation noted. No further action is proposed.	<b>8.1</b> 08/03/25  <b>8.2</b> N/A  <b>8.3</b> 08/04/25  <b>8.4</b> 16/05/25  <b>8.5</b> N/A  <b>8.6</b> 23/05/25  <b>8.7</b> N/A	<b>8.1</b> DPHI were engaged on 12/12/24 regarding an RFI. DPHI have yet to respond regarding this RFI. CC are currently finalising the scope of the WMP revision and will be seeking endorsement of personnel undertaking the revision. Update 28/02/25: CC has finalised the scope of the WMP revision and is currently working through the revision process. A formal request for an extension to complete revision of the WMP will be sort by CC through the Major Projects Portal by 08/03/2025.
<b>NC9</b>	Water Management Plan	As for Schedule 3, Condition 25. <b>(OBS4)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC10</b>	Biodiversity Offset Strategy	1. Prepare and implement a detailed action plan to resolve all outstanding requirements / commitments / conditions related to Biodiversity.  2. Provide quarterly updates of action plan implementation to relevant agencies.	<b>NC REC 10.1 ACTION</b> CC will prepare and implement an action plan to resolve the outstanding requirements/ commitments/ conditions related to biodiversity. <b>NC REC 10.2 ACTION</b> CC will provide quarterly updates of the action plan to relevant agencies when the action plan is triggered and until the action plan is completed.	<b>10.1</b> 02/05/25  <b>10.2</b> N/A	<b>10.1</b> No update has been received from Crown Lands regarding Biodiversity Offset. Crown lands have notified again.
<b>NC11</b>	Retirement of Credits	As for Schedule 3, Condition 29. <b>(NC10)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC12</b>	Biodiversity Management Plan	1. Review, and update where necessary, the Biodiversity Management Plan (BMP) to revise the current status of the operation, consider implementation status of mitigation measures and consider if the level of detail is fit for purpose given the recommencement of	<b>NC REC 12.1 ACTION</b> CC will review and revise the BMP where necessary in accordance with Schedule 5, Condition 5. <b>NC REC 12.2</b>	<b>12.1</b> 08/03/25  <b>12.2</b> N/A	<b>12.1</b> The BMP has been reviewed, and it is noted that a revision

		<p>operations and EIS commitments. Consideration should also be given to increasing the timing and specificity of outlining the measures to be implemented and how / when these are to be implemented.</p> <p>2. Ensure key measures to address Biodiversity Management and to protect biodiversity are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to biodiversity are mitigated.</p> <p>3. Ensure site clearing limits and no-go areas are clearly delineated and/or fenced.</p> <p>4. Reinstate exclusion fencing around translocation areas.</p> <p>5. Undertake assessment of the need for vertebrate pest control and implement as required.</p>	<p>Finding and recommendation noted. No further action is proposed. This is covered under NC REC 12.1 ACTION.</p> <p><b>NC REC 12.3 ACTION</b> CC has surveyed and pegged out the clearing limits and the no-go areas are clearly marked.</p> <p><b>NC REC 12.4 ACTION</b> CC will reinstate exclusion fencing around translocation areas.</p> <p><b>NC REC 12.5 ACTION</b> CC will review the latest inspection reports and determine whether a pest control plan is required and will implement if required.</p>	<p><b>12.3</b> Completed</p> <p><b>12.4</b> 31/10/25</p> <p><b>12.5</b> 30/05/25</p>	<p>will be necessary in the near future concerning the biodiversity offset areas. However, no immediate revision is required, as the BMP serves as a document for the entire Southern Extension project, rather than a rolling plan updated to reflect the current status of clearing or rehabilitation throughout the project's lifecycle. Additionally, the implementation of mitigation measures has been reviewed, and any that were previously carried out have now been addressed and completed.</p> <p><b>Action Completed</b></p> <p><b>12.4</b> Adequate exclusion fencing has been reinstated.</p> <p><b>Action Completed</b></p>
<b>NC13</b>	Aboriginal Cultural Heritage Management Plan	1. Engage with DPHI to seek confirmation regarding approval of the Aboriginal Cultural Heritage (ACH) Management Plan. If approval was completed, seek a copy of the correspondence. If correspondence cannot be verified, submit a retrospective approval.	<p><b>NC REC 13.1 ACTION</b> CC will engage with DPHI to seek confirmation regarding approval of the ACH Management Plan. If approval was completed, seek a copy of the correspondence. If correspondence cannot be verified, submit a retrospective approval.</p>	<b>13.1</b> 17/01/25	<p><b>13.1</b> DPHI were engaged on 12/12/24 regarding an RFI. On 17/12/24 DPHI sent an email finding the ACH approval closing this action out.</p> <p><b>Action Completed</b></p>
<b>NC14</b>	Hours of Work	<p>1. Review, and update where necessary, the Transport Management Plan (TMP) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the TMP is fit for purpose given the recommencement of operations and EIS commitments. (Action also applies at EPL Condition O3.1)</p> <p>2. Ensure key measures to address Transport Management and to protect environmental and amenity quality are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to the environment and amenity are mitigated.</p>	<p><b>NC REC 14.1 ACTION</b> CC will review and revise the TMP where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>NC REC 14.2</b> Finding and recommendation noted. No further action is proposed.</p>	<b>14.1</b> 08/03/25	
<b>NC15</b>	Rehabilitation Objectives	As for Schedule 2, Condition 11. <b>(NC2)</b>	Finding and recommendation noted. No further action is proposed.		
<b>NC16</b>	Rehabilitation Strategy	As for Schedule 2, Condition 11. <b>(NC2)</b>	Finding and recommendation noted. No further action is proposed.		
<b>NC17</b>	Rehabilitation Management Plan	<p>1. Following approval of the Rehabilitation Objectives and Criteria, revise the Rehabilitation Management Plan (RMP) based on the amendment requirements of current Mining Lease Conditions.</p> <p>2. Ensure RMP measures are implemented in accordance with planned activities and timings.</p>	<p><b>NC REC 17.1 ACTION</b> CC will revise the RMP following approval of the Rehabilitation Objectives and Criteria.</p> <p><b>NC REC 17.2</b> Finding and recommendation noted. No further action is proposed.</p>	<b>17.1</b> Trigger based action	
<b>NC18</b>	Rehabilitation Management Plan	<p>1. Review, and update where necessary, the Rehabilitation Management Plan (RMP) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the RMP is fit for purpose given the recommencement of operations and EIS commitments.</p> <p>2. Ensure key rehabilitation measures are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to the</p>	<p><b>NC REC 18.1 ACTION</b> CC will review and revise the RMP where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>NC REC 18.2</b> Finding and recommendation noted. No further action is proposed.</p>	<b>18.1</b> 08/03/25	

		environment are mitigated.			
<b>NC19</b>	Annual Review	Introduce a systematic process to ensure commitments that have been included in management plans for reporting within Annual Reviews are addressed for future submissions.	<b>NC REC 19.1 ACTION</b> CC will investigate and if required implement a compliance database where all actions will be registered.	<b>19.1</b> 27/06/25	
<b>NC20</b>	Regular Reporting	Introduce a systematic process to ensure commitments that have been included in management plans for reporting within Annual Reviews are addressed for future submissions.	<b>NC REC 20.1</b> Refer to NC REC 19.1 ACTION	N/A	
<b>NC21</b>	Access to Information	Introduce a systematic process to ensure website uploads occur in accordance with the Consent.	<b>NC REC 21.1</b> Refer to NC REC 19.1 ACTION	N/A	
<b>NC22</b>	Concentration Limits	Investigate the pH results reported outside the parameters of the EPL and implement corrective actions as necessary to mitigate non-compliance with Conditions L2.1 and L2.2 of EPL1095.	<b>NC REC 22.1 ACTION</b> CC has engaged a contractor to investigate the exceedance of pH results outside the parameters of the EPL. An investigation will be completed in accordance with the WMP.	<b>22.1</b> 25/04/25	
<b>NC23</b>	Concentration Limits	As per Condition L2.1.	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC24</b>	Dust	1. Review, and update where necessary, the Transport Management Plan (TMP) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the TMP is fit for purpose given the recommencement of operations and EIS commitments. (Action also applies at MP07_0127 MOD5, Schedule 3, Condition 43)  2. Review, and update where necessary, the Air Quality Management Plan (AQMP) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the AQMP is fit for purpose given the recommencement of operations and EIS commitments. (Action also refers to MP07_0127 MOD5 Schedule 3, Condition 20)  3. Ensure key measures to address Air Quality operating conditions and to protect air quality are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to Air Quality are mitigated. (Action also refers to MP07_0127 MOD5 Schedule 3, Condition 20)	<b>NC REC 24.1</b> Refer to NC REC 14.1 ACTION <b>NC REC 24.2</b> Refer to NC REC 6.1 ACTION <b>NC REC 24.3</b> Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC25</b>	Dust	As per Condition O3.1. ( <b>NC24</b> )	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC26</b>	Dust	1. Clean up coal tracked onto Castlereagh Highway near the site entrance.  2. Review and advance the arrangements to prevent coal tracking onto the Castlereagh Highway.  (Actions also apply at MP07_0127 MOD5, Schedule 3, Condition 41) ( <b>OBS7</b> )	<b>NC REC 26.1 ACTION</b> CC will further liaise with Road Maritime Services to further clean up the small remainder of coal on the side of the Castlereagh Highway. <b>NC REC 26.2</b> Refer to NC REC 5.1 ACTION	<b>26.1</b> 11/07/25  <b>26.2</b> N/A	<b>26.1</b> contractor was engaged in consultation with Road Maritime Services to clean up the small remainder of coal on the side of the Castlereagh Highway on 19/12/2024. <b>Action Closed</b>
<b>NC27</b>	Requirement to monitor concentration of pollutants discharged – Air Monitoring Requirements	1. Review environmental sample collection and monitoring data protocols and procedures to ensure timely collection, compliance review and investigation of environmental quality data is carried out and followed up where necessary.  2. Finalise and implement contractual arrangements with monitoring contractors to ensure timely collection of environmental monitoring data in accordance with EPL1095 and MP07_0127 MOD5 requirements.	<b>NC REC 27.1 ACTION</b> CC will review the sample collection and protocols to ensure timely collection, compliance review and investigation of data. <b>NC REC 27.2</b> CC has finalised the contractual arrangements with monitoring contractors and continues to liaise regarding timely reporting.	<b>27.1</b> 13/06/25  <b>27.2</b> N/A	
<b>NC28</b>	Low pH Water Investigation and Management	Engage with EPA regarding the proposed EPL Variation (DOC24/308221)	<b>NC REC 28.1</b> CC has made comment on the EPL draft variation and responded to EPA. The response is currently sitting with EPA in review as of 15/11/2024. CC will continue to liaise with EPA regarding the draft EPL variation.	<b>28.1</b> N/A	
<b>NC29</b>	Protection of the environment and rehabilitation - Must prevent or minimise harm to environment	Refer to Items Below	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC30</b>	Protection of the environment and rehabilitation - Rehabilitation to occur as soon as reasonably practicable after disturbance	As for MP07_0127 MOD 5, Schedule 3, Condition 11. ( <b>NC2</b> )	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC31</b>	Risk Assessment – Rehabilitation Risk Assessment	Introduce Rehabilitation Resourcing, Planning and Scheduling process that is linked to budget cycles and considers the forward program to ensure key rehabilitation risks are mitigated.	<b>NC REC 31.1</b> Covered under NC 2.1 ACTION	N/A	
<b>NC32</b>	Rehabilitation Documents –	As for MP07_0127 MOD 5, Schedule 2, Condition 11. ( <b>NC2</b> )	Finding and recommendation noted. No further action is proposed.	N/A	



	Rehabilitation management plans for large mines				
<b>NC33</b>	Rehabilitation Documents – Rehabilitation outcome documents	As for MP07_0127 MOD 5, Schedule 3, Condition 52. <b>(NC16)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC34</b>	Rehabilitation Documents – Forward program and annual rehabilitation report	Finalise and submit the 2024 Annual Rehabilitation Report and Forward Program.	<b>NC REC 34.1 ACTION</b> Finding and recommendation noted. The 2024 Annual Rehabilitation Report and Forward Program will be submitted in accordance with the guideline post the 2024 reporting period.	<b>34.1</b> 01/03/25	<b>34.1</b> The Annual Rehabilitation Report and Forward Program is currently being prepared in accordance with the guideline. The following will be submitted in Regulator portal. <b>Action Complete</b>
<b>NC35</b>	Rehabilitation Documents – Forward program and annual rehabilitation report	As for RMP ML Condition 13(1). <b>(NC34)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC36</b>	Rehabilitation Documents – Times at which documents must be prepared and given	As for RMP ML Condition 13(1). <b>(NC34)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC37</b>	Rehabilitation Documents – Times at which documents must be prepared and given	As for RMP ML Condition 13(1). <b>(NC34)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC38</b>	Rehabilitation Documents – Certain documents to be publicly available	As for RMP ML Condition 9. <b>(NV11)</b>	Finding and recommendation noted. No further action is proposed.	N/A	
<b>NC39</b>	Records, reporting and notification – records demonstrating compliance	Consider the development of a comprehensive system / tool for compliance management. The system / tool would identify regulatory commitments and obligations with actions and timeframes to facilitate planning and execution of compliance actions.	<b>NC REC 39.1</b> Refer to NC 2.2 ACTION	N/A	

Unique Finding Identifier	Aspect	Recommendation	Proponent's Proposed Action / Action Taken / Response (as applicable)	Proposed Action Due Date (if applicable)	2024 Annual Review Updates
<b>NV1</b>	Water Supply	1. Complete the current works program for updating the Site Water Balance.  2. Introduce a systematic method to ensuring the Site Water Balance is reviewed and reported in accordance with the Water Management Plan.  3. Include a clear and definitive description within the 2024 Annual Review of the outcomes of the current works program for updating the Site Water Balance.	<b>NV REC 1.1</b> Refer to NC 7.1 ACTION <b>NV REC 1.2</b> Refer to NC 2.2 ACTION <b>NV REC 1.3 ACTION</b> Recommendation noted. The works program for the site water balance will be included in the 2024 Annual Review	<b>NV1.1</b> N/A  <b>NV1.2</b> N/A  <b>NV1.3</b> 31/03/25	<b>1.3</b> Umwelt consulting have been engaged to update the site water balance for the WMP. <b>Action incomplete</b>
<b>NV2</b>	Biodiversity Offset Strategy	As for Schedule 3, Condition 29. <b>(NC10)</b>	Recommendation noted. No further action is proposed.	N/A	<b>9.1</b> On 18/12/24 a meeting on site with the monitoring consultant regarding was undertaken with the consultant agreeing to update future reporting and confirming that monitoring is conducted in accordance with the applicable conditions. <b>Action Complete</b>
<b>NV3</b>	Retirement of Credits	As for Schedule 3, Condition 29. <b>(NC10)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV4</b>	Biodiversity Management Plan	As for Schedule 3, Condition 29. <b>(NC10)</b>	Recommendation noted. No further action is proposed.	N/A	

<b>NV5</b>	Conservation Bond	As for Schedule 3, Condition 29. <b>(NC10)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV6</b>	Determination of Meteorological Conditions	As for Schedule 3, Condition 21. <b>(OBS4)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV7</b>	Compliance Monitoring	As for Schedule 3, Condition 21. <b>(OBS4)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV8</b>	Pollution of Waters	<p>1. Investigate potential diesel contamination of the Environmental Dam, including an assessment of compliance against Section 120 of the Protection of the Environment Operations Act 1997, noting also the definitions provided in Schedule 6 of that Act for harm, environment, pollution, pollution incident, water pollution / pollution of waters and waters.</p> <p>2. Ensure actions are taken to remove the source of the diesel spill and remediate any contamination of surrounding land, water or groundwater that may have occurred due to the spill.</p> <p>3. Following the assessment outlined in Item 2, in the event that environmental harm and/or non-compliance with EPL1095 Condition L1.1 is indicated, provide notification to EPA and DPPI in accordance with Conditions R2.1 and R2.2 of EPL1095 and Schedule 5, Condition 9 of MP07_0127 MOD 5 respectively.</p>	<p><b>NV REC 8.1 ACTION</b> CC has undertaken an investigation of the diesel contamination. A incident form was completed and actions to rectify the contamination were also completed which included the removal of contaminated soil.</p> <p><b>NV REC 8.2</b> Refer to NV 8.1 ACTION</p> <p><b>NV REC 8.3</b> Recommendation noted. No further action is proposed.</p>	<p><b>NV8.1</b> Completed</p> <p><b>NV8.2</b> N/A</p> <p><b>NV8.3</b> N/A</p>	
<b>NV9</b>	Noise Limits	<p>1. Review noise monitoring protocols, including the Noise Management Plan and associated procedures as relevant, and update as relevant to reference current requirements of EPL1095 Condition L4.4 and also Schedule 3, Conditions 1-3 and Appendix 4 of MP07_0127 MOD5.</p> <p>2. Following Item 1, implement updated noise monitoring protocols to ensure compliance with requirements of EPL1095 Condition L4.4 and also Schedule 3, Conditions 1-3 and Appendix 4 of MP07_0127 MOD5.</p>	<p><b>NV REC 9.1 ACTION</b> CC will review the monitoring protocols and make sure that these protocols are understood by the sampling contractor, and it is detailed in the monitoring report. The reports will also be published with reference to the most up to date EPL1095 conditions.</p> <p><b>NV REC 9.2</b> Refer to NV 9.1 ACTION</p>	<p><b>NV 9.1</b> 31/12/24</p> <p><b>NV 9.2</b> N/A</p>	
<b>NV10</b>	Low pH Water Investigation and Management	As per Condition U1.1 <b>(NV28)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV11</b>	Rehabilitation Documents – General requirements for documents	Introduce a systematic process to ensure website uploads occur in accordance with the ML.	<p><b>NV REC 11.1</b> Refer to NC 2.2 ACTION</p>	N/A	
<b>NV12</b>	Rehabilitation Documents – Certain documents to be publicly available	As for RMP ML Condition 9. <b>(NV11)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>NV13</b>	Water Access Licence – Water Accounts	Engage with WaterNSW to obtain copies of current water accounts.	<p><b>NV REC 13.1 ACTION</b> CC will engage with WATERNSW to obtain copies of current water accounts and WAL Part A conditions.</p>	<b>NV13.1</b> 15/01/25	<p><b>13.1</b> On 12/12/24 an email was sent to WATERNSW requesting the following information.</p> <p>Copies were provided to CC by WATER NSW on 13/12/24. <b>Action Complete</b></p>
<b>NV14</b>	Water Access Licence - Part A Conditions	<p>Engage with WaterNSW to obtain copies of the WAL Part A conditions and include a detailed compliance report as part of the next annual review.</p> <p>Additionally the report should address:</p> <ul style="list-style-type: none"> <li>- storage, diversion, interception or extraction is clearly documented and is authorised by a relevant Water Access Licence or exemption under the Water Management (General) Regulation 2018</li> <li>- Water metering at the site is in accordance with the NSW Non-Urban Metering Framework</li> <li>- Water Access Licence/s used to account for water take by the project nominates the work where the water is being</li> </ul>	<p><b>NV REC 14.1 ACTION</b> CC will engage with WATERNSW as per NV REC 13.1 ACTION. If copies of the WAL Part A conditions are received CC will include a detailed compliance report within the next annual review from receiving the information</p>	<b>14.1</b> Trigger based action	

		taken from			
<b>NV15</b>	S240 Notice Action Plan	Continue to engage with the Resources Regulator regarding the status of the action plan, obtain copies of the Warning Letter and any subsequent actions contained within. Include a detailed compliance report as part of the next annual review. (NV15).	<b>NV REC 15.1 ACTION</b> CC will provide an update of any non-compliances and active notices from the reporting period within the 2024 Annual Review.	<b>15.1</b> 31/03/25	

Unique Finding Identifier	Aspect	Recommendation	Proponent's Proposed Action / Action Taken / Response (as applicable)	Proposed Action Due Date (if applicable)	2024 Annual Review Updates
<b>OBS1</b>	Mining Restrictions	<p>1. Ensure geographic survey and peg-out of approved project boundary and disturbance areas is completed.</p> <p>2. Following Item 1, ensure the site survey plan is integrated into the mine's compliance and operational management systems and processes to ensure that mining activities are only undertaken within the approved boundaries.</p>	<p><b>OBS REC 1.1</b> Refer to NC REC 12.3</p> <p><b>OBS REC 1.2</b> Refer to NC REC 2.2</p>	N/A	
<b>OBS2</b>	Operation of Plant and Equipment	<p>1. Undertake maintenance and cleaning of the wastewater catch drain system.</p> <p>2. Conduct a maintenance inspection and integrity test of the wastewater collection system including bunding, tanks and piping.</p> <p>3. Repair the breakage in the piping that leads from the wastewater catch drain to the oil/water separator and waste oil collection tank. Investigate whether any soil contamination has resulted from the breakage.</p> <p>4. Install bunding around the waste oil collection tank (if it is to remain operational).</p> <p>5. Review chemical storage areas and implement corrective actions to ensure that all chemicals are stored within secondary containment; the chemical register and SDS are current and readily available; the waste collection system is inspected, maintained and repaired (as required).</p> <p>6. Review housekeeping arrangements in workshop, equipment, tools and waste storage areas to ensure appropriate storage arrangements are in place to prevent leaks, spills and other potential environmental impacts.</p> <p>7. Consideration should be given to documenting a Training Needs Analysis, followed by the development of training packages and a site wide training program.</p>	<p><b>OBS REC 2.1</b> Refer to NC REC 7.2</p> <p><b>OBS REC 2.2 ACTION</b> CC will implement a periodic maintenance inspection workorder to inspect the integrity of the wastewater collection system.</p> <p><b>OBS REC 2.3</b> Refer to NC REC 7.2</p> <p><b>OBS REC 2.4 ACTION</b> CC have engaged a contractor to install bunding around the waste oil collection tank so that it can be made operational.</p> <p><b>OBS REC 2.5 ACTION</b> CC has reviewed the chemical storage areas, housekeeping arrangements and has implemented corrective actions to ensure all chemicals and hydrocarbons are stored within secondary containment. All chemicals on site and any chemicals that are introduced to site require SDS as per the Work Permit.</p> <p><b>OBS REC 2.6</b> Refer to OBS REC 2.5 ACTION</p> <p><b>OBS REC 2.7 ACTION</b> CC will investigate a Training Needs Analysis program and implement it if required.</p>	<p><b>2.1</b> N/A</p> <p><b>2.2</b> 04/04/25</p> <p><b>2.3</b> N/A</p> <p><b>2.4</b> 31/01/25</p> <p><b>2.5</b> Completed</p> <p><b>2.6</b> N/A</p> <p><b>2.7</b> 29/08/25</p>	<b>2.4</b> A contractor completed the bunding for the waste oil tank on 30/01/25. The oil tank has been commissioned <b>Action Complete</b>
<b>OBS3</b>	Planning Agreement	Introduce a systematic method to ensuring payments are made in accordance with the nominated agreement timeframes.	<b>OBS REC 3.1</b> Refer to NC REC 2.2 ACTION	N/A	
<b>OBS4</b>	Meteorological Monitoring	Complete a review of the existing and/or proposed upgraded meteorological station / sensors to ensure the meteorological station complies with requirements of Schedule 3, Condition 21, including the capability to measure temperature inversions in accordance with the NSW Industrial Noise Policy.	<b>OBS REC 4.1 ACTION</b> Finding and recommendation noted. CC will review the meteorological station to ensure compliance with application requirements.	<b>4.1</b> 22/08/25	
<b>OBS5</b>	Clean Water Diversion Strategy	<p>1. Review, and update where necessary, the Water Management Plan (WMP) to revise the current status of the operation, consider implementation status of mitigation measures and consider if the level of detail is fit for purpose given the recommencement of operations and EIS commitments. Consideration should also be given to increasing the timing and specificity of outlining the measures to be implemented and how / when these are to be implemented.</p> <p>In the review, a suitability qualified and experienced person should be engaged to review water management systems and implementation measures for separate clean, dirty and mine water systems against requirements of Schedule 3, Condition 26.</p> <p>2. Ensure key measures to address Water Management and to</p>	<p><b>OBS REC 5.1</b> Recommendation noted. Covered under NC REC 7.1 ACTION.</p> <p><b>OBS REC 5.2</b> Recommendation noted. Covered under NC REC 7.1 ACTION.</p>	N/A	

		protect water quality are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to Water Quality are mitigated.			
<b>OBS6</b>	Aboriginal Cultural Heritage Management Plan	<p>1. Review, and update where necessary, the Aboriginal Cultural Heritage Management Plan (ACHMP) to revise the current status of the operation, consider implementation status of mitigation measures and consider if the level of detail is fit for purpose given the recommencement of operations and EIS commitments. Consideration should also be given to increasing the timing and specificity of outlining the measures to be implemented and how / when these are to be implemented.</p> <p>2. Ensure key measures to address ACH Management and to protect ACH are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to ACH are mitigated.</p> <p>3. Review current ACH management status and approved management strategies as part of updating the ACH Database for ongoing use as part of Ground Disturbance Permitting.</p>	<p><b>OBS REC 6.1 ACTION</b> CC will review and revise the ACHMP where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>OBS REC 6.2</b> Refer to OBS REC 6.1 ACTION</p> <p><b>OBS REC 6.3</b> Refer to OBS REC 6.1 ACTION</p>	<p><b>6.1</b> 08/03/25</p> <p><b>6.2</b> 08/03/25</p> <p><b>6.3</b> 08/03/25</p>	
<b>OBS7</b>	Approved Plans to be On-Site	<p>1. Clean up coal tracked onto Castlereagh Highway near the site entrance.</p> <p>2. Review and advance the arrangements to prevent coal tracking onto the Castlereagh Highway.</p> <p>(Actions also apply at EPL1095, Condition O3.4) <b>(NC26)</b></p>	<p><b>OBS REC 7.1</b> Refer to NC REC 26.1 ACTION</p> <p><b>OBS REC 7.2</b> Refer to NC REC 26.1 ACTION</p> <p><b>OBS REC 7.2</b> Refer to NC REC 5.1 ACTION</p>	<b>N/A</b>	
<b>OBS8</b>	Rehabilitation Strategy (RS)	<p>1. Review, and update where necessary, the Rehabilitation Strategy (RS) to reflect the current status of the operation. In undertaking the review, consider implementation status of mitigation measures. Also give consideration whether the level of detail within the RS is fit for purpose given the recommencement of operations and EIS commitments.</p> <p>2. Undertake a detailed review of all commitments, requirements and regulatory/enforcement actions related to rehabilitation to ensure key rehabilitation measures are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to the environment are mitigated. Incorporate the outcomes of the detailed review into the revised Rehabilitation Strategy and/or Rehabilitation management Plan.</p>	<p><b>OBS REC 8.1 ACTION</b> CC will review and revise the RS where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>OBS REC 8.2</b> Refer to OBS REC 8.1 ACTION</p>	<p><b>8.1</b> 08/03/25</p> <p><b>8.2</b> N/A</p>	
<b>OBS9</b>	Environmental Management Strategy (EMS)	<p>1. Review, and update where necessary, the Environmental Management Strategy (EMS) to revise the current status of the operation, consider implementation status of mitigation measures and consider if the level of detail is fit for purpose given the recommencement of operations and EIS commitments. Consideration should also be given to increasing the timing and specificity of outlining the measures to be implemented and how / when these are to be implemented.</p> <p>2. Ensure key measures to address Environmental Management and to protect environmental quality are implemented, including monitoring for ongoing effectiveness and implementation of corrective actions as required to ensure risks to Environmental Quality are mitigated.</p>	<p><b>OBS REC 9.1 ACTION</b> CC will review and revise the EMS where necessary in accordance with Schedule 5, Condition 5.</p> <p><b>OBS REC 9.2</b> Refer to OBS REC 9.1 ACTION.</p>	<b>9.1</b> 08/03/25	
<b>OBS10</b>	Community Consultative Committee	Confirm that the CCC has adopted and is operating in accordance with the 2023 CCC Guidelines.	<p><b>OBS REC 10.1 ACTION</b> CC will liaise with the CCC Chairperson to confirm that it is adhering to the 2023 CCC Guidelines</p>	<b>10.1</b> 25/04/25	
<b>OBS11</b>	Voluntary Planning Agreement	Introduce a systematic method to ensuring payments are made in accordance with the nominated agreement timeframes.	<p><b>OVS REC 11.1</b> Refer to NC REC 2.2 ACTION</p>	N/A	
<b>OBS12</b>	Activities must be carried out in a competent manner	Consideration should be given to establishing a fit for purpose compliance database to capture commitments and obligations across all approvals, authorisations and licences, and for collation of records and evidence that demonstrate compliance against applicable requirements.	<p><b>OVS REC 12.1</b> Refer to NC REC 2.2 ACTION</p>	N/A	
<b>OBS13</b>	Other Operating Conditions - Truck Wheel Wash	As per Condition O3.4. <b>(NC26)</b>	Recommendation noted. No further action is proposed.	N/A	

<b>OBS14</b>	Recording of Pollution Complaints	Review the format of Complaint Reports and update as relevant to explicitly address each item of EPL1095 Condition M4.2 (a to f).	<b>OBS REC 14.1 ACTION</b> CC will review the format of the site Complaint Reports and revise if required to meet the M4.2 condition	<b>14.1</b> 28/02/25	<b>14.1</b> Template updated on 12/12/24 closing this action out.  <b>Action Closed</b>
<b>OBS15</b>	Records, reporting and notification – Nominated contact person	Confirm with the Resources Regulator portal that Tim Haig is the nominated contact person for CC.	<b>OBS REC 15.1 ACTION</b> CC will confirm the status of the nominated contact person for CC	<b>15.1</b> 18/01/25	<b>15.1</b> The Resources Regulator noted that Tim Haig was not the nominated contact for CC. CC has now updated the nominated contact.  <b>Action Closed</b>
<b>OBS16</b>	Pollution Incident Response Plan	Consideration should be given to updating the site Pollution Incident Response Plan (PIRMP) to address the updated Regulations Protection of the Environment Operations (General) Regulation 2022 (the General Regulation) and the updated Guideline: Pollution Incident Response Management Plans (2022).	<b>OBS REC 16.1 ACTION</b> CC will review and revise the PIRMP following the next PIRMP test scheduled in December 2024	<b>16.1</b> 31/12/2024	<b>16.1</b> On 19/12/24 The PIRMP was tested and the revised.  <b>Action Closed</b>
<b>OBS17</b>	Training and Competence	Consider documenting a Training Needs Analysis, followed by the development of training packages and a site wide training program.	<b>OBS REC 17.1</b> Refer to OBS REC 2.7 ACTION	N/A	
<b>OBS18</b>	Inspections and Maintenance	Consider reinstating the general monthly environmental inspections described in the EMS, including the formalisation of the inspection checklist and reporting outcomes to the mine manager.	<b>OBS REC 18.1 ACTION</b> CC is currently undertaking monthly environmental inspections in accordance with the EMS. CC will investigate the transition of moving to digital inspection reporting.	<b>18.1</b> 05/12/25	<b>18.1</b> Monthly test inspection created on online version through cloud assess.  <b>Action Closed</b>
<b>OBS19</b>	Inspections and Maintenance	Consider undertaking a comprehensive Walkover Inspection of all rehabilitation areas (to complement the existing rehabilitation monitoring) to capture all current maintenance requirements for prioritisation and rectification. It is noted that the Annual Walkover for rehabilitation is included within the EMS but not the RMP.	<b>OBS REC 19.1 ACTION</b> CC will implement the comprehensive walkover inspection of all rehabilitation areas.	<b>19.1</b> 31/12/24	<b>19.1</b> Monthly test inspection created on online version through cloud assess which includes comprehensive a walkover inspection. <b>Action Closed</b>
<b>OBS20</b>	Environmental Monitoring and Measurement	In conjunction with management plan revisions, consider increasing the utilisation of monitoring results and long terms trends, including ANZECC results for identifying change and managing environmental performance.	<b>OBS REC 20.1 ACTION</b> CC will review and revise management plans where necessary in accordance with Schedule 5, Condition 5	<b>20.1</b> 08/03/25	
<b>OBS21</b>	Environmental Monitoring and Measurement	Consider implementing a system / process / tool for easily tracking monitoring data against criteria, annual trends, long term trends.	<b>OBS REC 21.1 ACTION</b> CC has implemented a new filing system which includes long term trend data.	<b>21.1</b> Completed	
<b>OBS22</b>	Environmental Monitoring and Measurement	Monthly environmental monitoring reports to include the results of visual inspections for ferrous iron oxidation and other contamination.	<b>OBS REC 22.1 ACTION</b> CC will include the visual inspections of ferrous iron oxidation and other contamination with the monthly inspection report template.	<b>22.1</b> 31/01/25	<b>22.1</b> Monthly test inspection created on online version through cloud assess. This includes visual inspections of iron oxidation and other contamination in the template.  <b>Action Closed</b>
<b>OBS23</b>	Compliance Management, Systems and Reporting	As per Division 4, Condition 17. <b>(NC39)</b>	Recommendation noted. No further action is proposed.	N/A	
<b>OBS24</b>	Compliance Management, Systems and Reporting	Consider adopting environmental performance management systems commonly used in the NSW mining industry, such as weather forecasting tools, compliance databases, monitoring databases, spatial databases.	<b>OBS REC 24.1 ACTION</b> CC will investigate environmental performance management systems and determine whether there are any databases that will need to be purchased.	<b>24.1</b> 10/04/26	
<b>OBS25</b>	Life of Mine	Given the current Life of Mine, noting commencement of MOD6 and the Forward Program, prepare and implement a Mine Closure Plan in accordance with the relevant guidelines (which may include but are not limited to: Australian and New Zealand Minerals and Energy Council (ANZMEC) Strategic Framework for Mine Closure (ANZMEC/MCA 2000), Standards for mine closure and reclamation management ISO/TC 82/SC 7 and the International Council of Mining and Metals (ICMM) Planning for Integrated Mine Closure Toolkit).	<b>OBS REC 25.1 ACTION</b> Investigate the implementation of a Mine Closure Plan within three years of consent expiration, with the exemption if a development consent extension approval process is underway.	<b>25.1</b> Trigger based action	
<b>OBS26</b>	Aquatic Monitoring	Consider establishing an aquatic monitoring program in Cullen Creek to assess mining impacts.	<b>OBS REC 26.1 ACTION</b> Refer to NC REC 7.1 ACTION regarding to WMP Review	N/A	

## **APPENDIX 4 – Section 240 Notice Action Plan**

Work Required	Action	Target Action Date	2024 Update
Complete detailed monitoring, including an ecological evaluation, of established areas of final landform at both Invincible and CVM to establish current status. Biodiversity/rehabilitation/subsurface heating monitoring is an annual program (due 31/12/yearly) and can be complemented with the physical landform and structures stabilisation considerations.	Shoalhaven Coal has initiated and RFQ to an appropriately qualified consultancy capable of managing both the existing annual biodiversity program and the physical landform and structures stabilisation considerations (as part of a combined report) across both mine sites. The findings of the initial annual report and relevant actions will inform further actions in this Table.	Completion by 31 December 2022	Completed and reported in the 2023 Annual Review.
Consider sourcing high density LiDAR and develop DTM of both Invincible and CVM following completion of current mining at CVM, the Invincible Southern Extension and completion of review of future mining options at both CVM and Invincible sites.	Following completion of a review of future mining options, mining at both sites and final landform completion, Shoalhaven will source high density LiDAR and develop a high resolution DTM to enable detailed ongoing assessment of the stability of established areas of final landform.	Post completion of final landforms	Completed at Invincible Colliery. Yet to be completed at Cullen Valley Mine however will be completed prior operations beginning again.
Develop an ongoing monitoring and assessment strategy to identify established areas of final landform at both Invincible and CVM that require intervention to achieve long term stability	Areas requiring intervention are to be identified in the initial (and ongoing) annual biodiversity and the physical landform and structures stabilisation considerations (as part of a combined report) program across both mine sites. A strategy for regular monitoring and intervention will be an output of that report and be implemented to maintain and improve stability outcomes for each site identified.	Completion by 31 December 2022	Completed and reported on in the 2023 Annual Review.
Develop detailed final landform designs for areas at Invincible and CVM yet to be established	This currently forms part of the rehabilitation reforms process, forward and final plans which captures both sites to the end of their current approvals in 2025. Nevertheless, with respect to the outcomes of a review of potential future mining options at both sites being undertaken by Shoalhaven Coal, it is acknowledged that final landform designs could vary. Shoalhaven Coal will amend in consultation with the Resources and Regulator and in line with existing and / or future approvals detailed final landform designs for both sites if required	Current Rehabilitation Reforms – Implement existing plans developed as part of the Rehabilitation reforms. Shoalhaven Coal will hold a better understanding of future mining options over and above those currently approved following completion of the options review 30 June 2023.  Shoalhaven Coal will review and amend plans as required to capture final landform changes should they be required by 30 June 2023.	Completed, and are reported in accordance with the annual rehabilitation reporting.