Castlereagh Coal

INVINCIBLE COLLIERY
ANNUAL REVIEW 2023

1 JANUARY 2023 TO 31 DECEMBER 2023

Table of Contents

Tables

Appendices

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, CCL702, EL7517
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 2023
Annual Review end date:	31 December 2023

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 2022 to 31 December 2022, and that I am authorised to make this statement on behalf of Shoalhaven Coal.

Note.

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.

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).

Name of authorised reporting officer:	Kim Nguyen
Title of authorised reporting officer:	Chief Executive Officer
Signature of authorised reporting officer:	
Date:	11/06/2024

1.0 Statement of Compliance

This Annual Review provides a summary of the Invincible Colliery operations performance over the period 1 January to 31 December 2023 (referred to hereafter as the reporting period).

It is noted that during the reporting period an Independent Environmental Audit (IEA) was not undertaken. An IEA was undertaken in 2016 which identified non-compliances across 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. Recommencement of operations was undertaken by Shoalhaven Coal Pty Limited (Shoalhaven Coal) during the reporting period with mining of the Southern Extension commencing on 14 July 2023.

The compliance status for the reporting period is summarised in **Table 1.3**. Five (5) 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 **Table 1.3**
Environment Protection Licence (EPL) 1095	No – Refer to **Table 1.3**
WAL 36485 (10BL602586)	Yes
Mining Lease (ML) 1635, ML 1638 and Consolidated Coal Lease (CCL) 702 and Exploration Lease 7517	Yes

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: • Potential for serious environmental consequences, but is unlikely to occur; or • Potential for moderate environmental consequences, but is likely to occur
Low	**Non-compliant**	Non- compliance with: • Potential for moderate environmental consequences, but is unlikely to occur; or • Potential for low environmental consequences, but is likely to occur
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) **EPL 1095**	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – Depositional Dust no data.	Low Non-compliant	On the 14th of February 2023, contractors conducting depositional dust monitoring on behalf of Invincible Colliery, notified that an error had occurred during analysis of the January depositional dust samples resulting in loss of all results for the month of January 2023. An investigation carried out by the contractors determined that miscommunication between the contracted reporting officer and training lab technician resulted in the depositional dust samples being analysed and burned at 105 and then burned at 850 without being weighed back rendering the depositional dust results unattainable for the month of January. The contractor completed a toolbox talk on the topic. The lab technician was to be retrained on correct procedure and to receive further buddy training until deemed competent.	**Section 6.3**
PA 07_0127 (MOD 5) **EPL 1095**	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS PM10 & TSP not monitored	Low Non-compliant	Due to a power outage on 27 February 2023 and subsequent equipment fault, HVAS (PM10) and TSP air quality monitoring was not carried out in accordance with the requirements outlined in the air quality management plan approved under Schedule 3 Condition 19 of the Consent. The non-compliance was self-reported, and measures were implemented to monitor air quality at Invincible, through monitoring of the PM10 and TSP from the HVAS unit at the nearby Cullen Valley Mine site.	**Section 6.3**

Relevant Approval	Condition No.	Condition Description/Non-Compliance	Compliance Status	Comment	Where Addressed in Annual Review
PA 07_0127 (MOD 5) **EPL 1095**	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS PM10 & TSP not monitored	Low Non-compliant	On the 28th of June 2023 the Invincible HVAS operated as per schedule, with the next scheduled run due on the 4th of July 2023. 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 consultation between Castlereagh Coal and contractors was conducted to remedy the situation and avoid future non compliances.	**Section 6.3**
PA 07_0127 (MOD 5) **EPL 1095**	Schedule 3 Condition 19 Condition M2.2	Air Quality Monitoring – HVAS PM10 & TSP no data	Low Non-compliant	No data recorded for PM10 at HVAS at Invincible Colliery between 3 August 2023 to 8 September 2023 due to faulty/brittle filters. Subsequent assurance from contractor that future filters supplied are confirmed to be fit for purpose.	**Section 6.3**

Relevant Approval	Condition No.	Condition Description/Non-Compliance	Compliance Status	Comment	Where Addressed in Annual Review
PA 07_0127 (MOD 5)	Schedule 3 Condition 35	Biodiversity - Conservation Bond	Administrative Non-compliance	A request was made for an extension of time to submit a revised Biodiversity Management Plan, including a finalised Biodiversity Offset Strategy and Conservation Bond, under conditions 30, 32, 33 and 35 of Schedule 3 of the development consent for the Invincible Coal Mine (MP 07_0127). On 13 July 2023, the DPE conditionally approved the Biodiversity Management Plan (Revision 1, July 2023), subject to submitting a finalised Biodiversity Offset Strategy and a revised Biodiversity Management Plan within three months of mining recommencing (due by 14 October 2023). The Conservation Bond is required within 6 months of approval of the Biodiversity Management Plan. Work is being completed to update the Biodiversity Offset Strategy and a modification to the development consent is required to align the development consent conditions with the proposed Biodiversity Offset Strategy. DPE considers that submission of the Conservation Bond by 30 June 2024 would be consistent with the extension to the Biodiversity Management Plan submission date.	**Section 6.7**

2.0 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 **Figure 1, Appendix 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 are 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 3.1**.

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

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 DPE. 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
Schedule 3 – Specific Environmental Conditions Monitoring of Coal Transport		
40.	The Proponent must: a) Keep accurate records of the: • Amount of coal transported from the project in each calendar year (on a monthly basis) • Number of coal truck movements generated by the project to the Mt Piper Power Station and the Shoalhaven Starches Plant (on a daily basis) b) include these records in the Annual Review.	**Section 4.0**
Schedule 3 – Specific Environmental Conditions Waste Minimisation		
43.	(e) monitor and report on effectiveness of the waste minimisation and management measures in the Annual Review.	**Section 6.10**
Schedule 5 – Environmental Management, Monitoring, Auditing and Reporting Annual Reporting		
4.	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:	**This document**
	(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;	**Sections 4.0, 6.0** and **8.0**
	(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: • relevant statutory requirements, limits or performance measures/criteria • requirements of any plan or program required under this approval • monitoring results of previous years • relevant predictions in the EA;	**Sections 6.0** and **9.2**
	(c) identify any non-compliance over the past financial year, and describe what actions were (or are being) taken to ensure compliance.	**Sections 1.0** and **11.0**
	(d) identify any trends in the monitoring data over the life of the project;	**Sections 6.0**
	(e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and	**Section 6.1**
	(f) describe what measures will be implemented over the current financial year to improve the environmental performance of the project.	**Section 6.0**

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.

3.0 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.

The Invincible Southern Extension Project 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
Project Approval (PA) 07_0127 (MOD 5)	2 Feb 2018	31 December 2025	The MOD 5 Project Approval applied through the reporting period.
Environment Protection Licence (EPL) 1095	28 Feb (anniversary date)	Renewed annually	Held by Shoalhaven Coal over the Invincible premises.
Mining Lease (ML) 1635	10 Sep 2009	10 Sep 2030	Extends to the surface and covers the existing open cut mining areas at Invincible.
Mining Lease (ML) 1638	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.
Consolidated Coal Lease (CCL) 702	26 Nov 1990	24 Nov 2024	Variable depth.
Mining Lease (ML) 1844	21 Feb 2023	21 Feb 2044	Surface to 15.24m
Mining Lease (ML) 1860	7 September 2023	7 September 2044	Ancillary Mining Activities.
Exploration Licence 7517	16 Apr 2010	16 April 2025	Variable depth.
WAL 35978 (10BL602584) "Washery Bore"	24 Dec 2012	23 Dec 2027	Authorises the extraction of 26 units from the NSW Murray-Darling Porous Rock Groundwater Sources Water Sharing Plan.
WAL 36485	1 July 2013	18 Feb 2028	Extraction Works GW

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 2023.
- Rehabilitation Strategy. Approved December 2022.
- Rehabilitation Management Plan. Approved December 2022.
- Transport Management Plan. Approved September 2022.
- Water Management Plan. Approved November 2022.

4.0 Operations Summary

A summary of the operations undertaken at Invincible Colliery during the reporting period are included in the following sections. It is noted that Invincible Colliery was on care and maintenance during the reporting period and therefore there were no mining operations undertaken.

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**). Minig commenced in the Southern Area in July 2023. Production figures for the reporting period are detailed in **Table 4.1**.

Table 4.1 Production Summary

Material	Approved limit	Previous reporting period (actual 2022)	This reporting period (actual 2023)	Next reporting period (forecast 2024)
Waste rock/ overburden (Mbcm)	Not specified	0	0.535	2.4
Coal works/Coal mining (Mt)	0 – 2Mtpa handled (EPL) 0.5 - 2Mtpa produced (EPL) 1.2Mtpa extraction (PA)	0	0.05	0.65
Coarse reject	Not specified	0	0	0
Fine reject (tailings)	Not specified	0	0	0
Saleable Coal (Mt)	Not specified	0	0.05	0.65

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 2023 is required to be included within this report. A total of 60,841.75 tonnes of coal was transported by 2,373 coal truck movements from Invincible during the reporting period.

4.3 Section 240 Notice

During 2023 activities continued 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).

Consultant specialists from Umwelt and Golder were engaged at the end of the 2021 reporting period to undertake technical investigations and provide advice on longer term recommendations to address the matters associated with the Section 240 Notices. The final report completed in May 2022 recommended a program of works to be implemented to establish long term stability of landforms. Following completion of

the Umwelt/Golder report and recommended program of works, Shoalhaven Coal consulted with the NSW Resources Regulator to develop an action plan to address the recommendations.

Detailed desktop and field work was undertaken by specialist consultants in late 2022 to develop long term actions meeting the requirements of the proposed actions and targets identified in the plan developed in consultation with the Resources Regulator. Actions resulting from the recommendations have been ongoing throughout 2023 and the recommended works will continue during the 2024 reporting period.

5.0 Actions Required from Previous Annual Review

Following submission of the 2022 Annual Review to DPE on 31 March 2021, DPE provided comment on the Annual Review in correspondence to Shoalhaven on 2 May 2023. DPE advised that the Annual Review was considered to generally satisfy the requirement of the Approval in relation to Annual Reviews and requested that the Annual Review be made publicly available on the company website.

6.0 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 PM10 concentrations from background levels plus mine emissions to be 27 µg/m3, which is well below the 50 µg/m3 24-hour goal. Predicted annual average PM10 concentrations were 20 µg/m3 (background plus mine emissions) and this is well below the annual average goal of 30 µg/m3. Maximum 24-hour average $PM_{2.5}$ concentrations, due to the Southern Extension Project, are predicted not to exceed the NEPM criteria of 25 µg/m^3 at any private residence surrounding Invincible. Similarly, annual average $PM_{2.5}$ concentrations are predicted to be below the NEPM criteria of 8 µg/m3 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 PM10, 24 hr emissions from the Southern Extension Project.

During the reporting period and the TSP, PM_{10} 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

Aspect	Approval Criteria/ EIS Prediction	Performance during the reporting period	Trend/key management implications	Implemented/proposed management actions
Air Quality (Refer to Section 6.3)	Refer **Section 6.3.2**/ Refer **Section 6.1.1**	Annual average deposited dust, PM_{10} and TSP levels were below the respective performance criteria.	Refer to **Section 6.3.4** Recorded air quality levels are generally consistent with previous years.	No further action required.
Surface Water Quality (Refer to Section 6.4)	Refer **Section 6.4.2** / Refer **Section 6.1.2**	Water quality across the Invincible Colliery water monitoring network was generally compliant with respective concentration limits.	Refer to **Section 6.4.4** Water quality is generally consistent with previous years.	No further action required.
Groundwater (Refer to Section 6.5)	Refer **Section 6.5.2** / Refer **Section 6.1.3**	Compliant	Groundwater quality monitoring results are further discussed in **Section 6.5.4**	No further action required.
Noise (Refer to Section 6.6)	Refer to **Section 6.6.2** / Refer to **Section 6.1.4**	Compliant	Refer to **Section 6.6.4** Noise emissions were inaudible at all private residences during the reporting period, which is consistent with previous years.	No further action required.
Biodiversity (Refer to Section 6.7)	Refer to **Section 6.7.2** Refer to **Section 8.3**	Compliant	Refer to **Section 6.7.3**	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.** A summary of monthly meteorological monitoring is provided in **Table 6.2**.

6.2.1 Rainfall

Invincible Colliery received 533.4 mm of rainfall over 129 rain days during the reporting period. The highest rainfall occurred during January (121.6 mm), while the lowest rainfall was recorded during May (5.6 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 March (34.8 @ 2 m, 34.8 @10 m) and the lowest temperature occurred in June (-5.9 @ 2 m, -5.1 @10 m). Maximum and minimum monthly temperatures are summarised in **Table 6.2**.

6.2.3 Humidity

The IMET1 humidity sensor was faulty during the reporting period and no valid data is available.

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_{10}) (refer to **Figure 3, Appendix 2**).

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 (mm)	Cumulative Rainfall (mm)	No. of rain days/month	Air temp @ 2m (°C)		Air temp @ 10m (°C)		Humidity (%)	
				Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
January 2023	121.6	121.6	18	7.1	31.9	8.3	31.6	15.3	151.2
February 2023	20.8	142.4	7	5.7	32.9	6.6	33.7	16.3	153.1
March 2023	70.0	212.4	11	5.3	34.8	6.4	34.8	8.2	154.7
April 2023	49.6	262.0	11	3.2	20.8	3.7	20.7	35.9	153.9
May 2023	5.6	267.6	8	-3.2	18.6	-2.5	18.6	11.2	157.4
June 2023	19.4	287.0	12	-5.9	17.3	-5.1	17.9	29.3	157.3
July 2023	18.8	305.8	14	-5.4	16.7	-4.7	16.6	18.2	161.0
August 2023	36.6	342.4	10	-2.0	19.4	-1.4	19.6	12.6	161.2
September 2023	16.6	359.0	8	-3.2	26.2	-2.6	26.1	13.1	161.0
October 2023	30.8	389.8	5	-0.7	27.6	0.1	27.6	11.1	157.4
November 2023	75.0	464.8	15	2.4	29.6	3.1	29.2	13.6	161.0
December 2023	68.6	533.4	10	7.1	33.6	7.6	33.6	12.5	161.0
Total	**533.4**	-	**129**	-	-	-	-	-	-

NA = Weather Station Failure – no data available

Table 6.3 Air Quality Performance Criteria

Pollutant	Averaging Period	Criterion
Total suspended matter (TSP) matter	Annual average	90 µg/m^3
Particulate matter <10µm (PM_{10})	Annual average	30 µg/m^3
	24 hour average	50 µg/m^3
Deposited dust	Annual average (maximum total)	4 g/m^2/month
	Annual average (maximum increase)	2 g/m2/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) (refer to **Figure 3, Appendix 1**). IDD6 was added to the monitoring program during the reporting period as per the NSW EPA recommendation. The annual average criterion for deposited dust (4 g/m^2/month) was not exceeded at any of the dust deposition gauges during the reporting period. The 2023 annual average dust levels for all locations were less than 2 g/m^2/month and therefore complied with air quality performance criteria. The monthly deposited dust monitoring results and annual averages for 2023 are shown in **Table 6.4** and is compared with historical results in **Appendix 2, Figure 2.** January deposited dust results were not recorded due to a laboratory error. Details of the non-compliance are included in **Table 1.3**.

Table 6.4 Deposited Dust Monitoring Results

Date	Total Insoluble Solids (g/m^2/month)					
	IDD1	IDD2	IDD3	IDD4	IDD5	IDD6
January 2023	--	--	--	--	--	*
February 2023	0.7	0.9	1.3	0.5	--	*
March 2023	0.3	0.6	0.3	0.5	0.7	0.3
April 2023	0.9	1.1	0.8	1.1	1.2	1.5
May 2023	1.8	0.9	0.7	1.5	0.6	0.5
June 2023	1.2	0.2	0.1	0.2	0.3	0.1
July 2023	0.4	0.7	0.1	0.3	0.3	0.3
August 2023	0.8	1.2	0.9	0.8	1.5	0.5
September 2023	0.9	1.2	1.1	1.2	0.8	2.5
October 2023	0.6	0.5	2.7	0.3	0.3	0.8
November 2023	0.1	0.1	0.5	0.4	0.1	0.5
December 2023	0.8	0.8	1.2	0.9	1.0	0.7
Annual Average 2023	**0.8**	**0.7**	**0.9**	**0.7**	**0.7**	**0.9**

-- No results available for January due to laboratory error. No sample for IDD5 for February – lab error

**IDD6 added to satisfy NSW EPA recommendation dated 23 September 2022.*

6.3.3.2 Particulate Matter

Monitoring of particulate matter was conducted during 2023. Total suspended particulates are estimated from the PM_{10} concentrations. The annual average criteria for PM_{10} (30 µg/m^3) and TSP (90 µg/m^3) were not exceeded during the reporting period. The annual average PM_{10} monitoring results for the reporting

period re 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 (PM10) and Total Suspended Particulates (TSP) Annual Average Results

Averaging period	PM_{10} (µg/m^3)	TSP (µg/m^3)*
Annual Average 2023	9.3	17.8
Annual Average Criterion	30	90

**Total suspended particulates are estimated from the PM_{10} concentrations.*

A graph of the PM_{10} and TSP monitoring data for 2023, as well as historical data trends, is shown in **Appendix 2, Figures 3 & 4**.

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 2023 annual average deposited dust levels are within the range of results recorded in the previous five years at all sites. The 2023 annual average dust deposition levels for all sites are well below the performance criteria (4 g/m^2/month).

Graphs of the long-term deposited dust levels are included in **Appendix 2**.

Table 6.6 Annual Averages for Dust Deposition 2018 – 2023

Reporting period	Total Insoluble Solids (g/m^2/month)					
	IDD1	IDD2	IDD3	IDD4	IDD5	IDD6
Criteria	**4**	**4**	**4**	**4**	**4**	**4**
2018	1.0	0.9	1.2	1.4	1.5	--
2019	1.1	1.0	1.8	1.1	1.5	--
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

--IDD6 added to program in 2023

The 2023 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_{10} annual average over the previous five years. The 2023 annual averages for both PM_{10} 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 2018 – 2023

Annual Average	PM_{10} (µg/m^3)	TSP (µg/m^3)*
2018	8.8	22.1
2019	19.2	48.1
2020	11.1	27.8
2021	5.4	13.6
2022	4.7	11.9
2023	9.3	17.8

**Total suspended particulates are estimated from the PM_{10} concentrations.*

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 (SW01) and Silt Dam (SW02). 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.** Three discharge events occurred throughout the reporting period. 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 (SW01), Silt Dam (SW02), 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**
4/01/2023**	8.2	5	<5
2/02/2023**	7.6	<5	<5
6/03/2023**	8.1	5	<5
5/04/2023*	8.0	10	<5
17/05/2023**	8.2	9	<5
8/06/2023*	7.6	<5	NR
31/07/2023**	8.2	7	<5
21/08/2023**	8.0	<5	<5
7/09/2023*	7.6	<5	<5
31/10/2023**	6.7	<5	<5
20/11/2023**	8.2	<5	<5
6/12/2023**	7.7	6	<5

* Water discharge event

**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 three 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.

6.4.4.1 Background Water Quality Monitoring Results – Dams

Annual average of the background water quality in the on-site dams during 2023 together with monitoring results from previous years is presented in **Table 6.10**. LD002 discharge and the due diligence water quality results between 2011 and 2023 for pH, oil and grease and TSS is displayed graphically in **Appendix 2**.

The 2023 annual average pH recorded at LD001 (Main Dam) (7.8) is consistent with historical averages which have been consistently in the neutral pH range. The 2023 annual average pH recorded at the Environmental Dam (3.0) was similar to 2022 (3.1) and less than the 2018 annual average (5.55), and is consistent with the range of annual averages since 2016. The 2023 annual average pH recorded at the Silt Dam (7.6) was within the historical range of annual averages (6.75 to 7.47) for the Silt Dam.

The oil and grease results at the Main, Environmental and Silt Dams for 2023 were below detection limits, which is consistent with the results for 2016 to 2022.

TSS annual average results at the Main, Environmental and Silt Dams for 2023 ranged between 6 and 18 mg/L. The 2023 results for the Main Dam, Environmental Dam and Silt Dam were within the historical range of results.

Discharge 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, requiring Shoalhaven Coal to engage specialist groundwater consultants AGE to undertake an investigation.

The investigation was inconclusive as to the source of the low pH with further investigations recommended to be undertaken. The results of further investigations will be included in the next reporting period.

Table 6.10 Comparison of Water Quality in On-Site Dams 2018-2023

Annual Average Period	Location	pH	TSS	TSS
Criteria		**6.5 – 8.5**	**30**	**10**
2018	Main Dam	7.50	6 mg/L	<5 mg/L
	Environmental Dam	5.55	16 mg/L	<5 mg/L
	Silt Dam	7.43	23 mg/L	<5 mg/L
2019	Main Dam	7.50	11 mg/L	<5 mg/L
	Environmental Dam	3.57	17 mg/L	<5 mg/L
	Silt Dam	7.47	38 mg/L	<5 mg/L
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

6.4.4.2 Background Water Quality Monitoring Results – Creeks

The 2023 annual average water quality at Cullen Creek U/S which is upstream of Invincible Colliery and Cullen Creek D/S which is downstream of Invincible Colliery, together with the annual average results for the previous 5 years for Cullen Creek U/S and BSW02 is presented in **Table 6.11**. Cullen Creek D/S was added to the sampling program in 2023 in line with the Invincible Colliery WMP (2022). BSW02 which was historically sampled as the downstream site became inaccessible from February 2022 due to the erection of a barbed wire fence.

The 2023 annual average pH recorded at the upstream location of Cullen Creek U/S (6.8) was similar to the 2022 annual average (6.9) and was similar to the historical range of annual averages (6.45 to 6.9). The 2023 annual average pH recorded (based on limited data) at the new Cullen Creek D/S site was 7.3.

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 2023.

The 2023 annual average TSS concentration recorded at Cullen Creek U/S (12 mg/L) were comparable to results from the 2016 to 2022 period. The average TSS at Cullen Creek D/S during 2023 was 5 mg/L.

Table 6.11 Upstream and Downstream Creek Water Quality 2018 – 2023

Annual Average	Location	pH	Oil & grease	TSS
2018	Cullen Ck U/S	6.57	5 mg/L	33 mg/L
	BSW02	7.92	<5 mg/L	8 mg/L
2019	Cullen Ck U/S	6.76	<5 mg/L	90 mg/L
	BSW02	7.94	<5 mg/L	8 mg/L
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

*Results for BWS02 based on one sample event due to access issues

6.4.5 Proposed Improvements

Monitoring of water quality at Invincible Colliery will continue to be conducted during 2024.

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. 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 (mgbl)	Target
LD001	104	100 - 104	Lithgow Coal Seam (Invincible Colliery flooded underground workings)
BHTH12	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 are no pollutant concentration limits for groundwater specified in EPL. There are 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 BHTH12, 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

Since 2012 the standing water level in LD001 has steadily increased from 884.81 to 890.88 in 2017. The 2019 measurement of 889.14 was below the 2017 maximum and above the 2012 low. Results for 2023 show slight fluctuations in standing water level rom month to month with the average remaining steady at 897.9 as shown graphically in **Appendix 2**. BH2 and BHTH12 showed similar fluctuations during the reporting period with averages consistent with results from the previous reporting period.

6.5.3.2 pH

Between 2011 and 2022 the pH level ranges between 4.90 and 7.67 at LD001. The 2023 average pH measurement of 6.8 is consistent with the average pH over the 2011 to 2022 period at LD001 (refer to **Appendix 2, Figure 9**). Average pH measurements at BH2 and BHTH12 (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, Tables 6 & 7**).

6.5.3.3 EC

The conductivity level between 2011 and 2022 ranges between 120 µS/cm and 349 µS/cm at LD001. The 2023 average EC result of 298 µS/cm was consistent with historical results (refer to **Appendix 2, Figure 10**). The average EC levels at BH2 and BHTH12 are consistent with results from 2022 (refer to **Appendix 2, Tables 6 & 7**).

6.5.3.4 Hardness

Between 2011 and 2022 hardness has ranged between 35 mg $CaCO_3$/L and 123 mg $CaCO_3$/L at LD001. Between 2013 and 2017 the hardness results show a linear increase (refer to **Appendix 2, Figure 11**), decreasing in 2018 to 49 mg $CaCO_3$/L. The 2023 hardness results were consistent with the historical range of results. Hardness results at BH2 and BHTH12 have been consistent since analyses began in 2022 (refer to **Appendix 2, Tables 6 & 7**).

6.5.3.5 Sulphate

Since 2011 the sulphate level declined from a maximum of 25 mg/L to 13 mg/L in 2016, with a minimum of 11 mg/L occurring in 2013. Since 2013, the sulphate results show little variation, ranging between 9 and 15 mg/L (refer to **Appendix 2, Figure 12**). The 2023 average sulphate levels of 12.5 mg/L concurs with the historical average. Sulphate results at BH2 and BHTH12 have been consistent since analyses began in 2022 ((refer to **Appendix 2, Tables 6 & 7**).

6.5.3.6 Nitrate

Between 2011 and 2018 nitrate levels have ranged from non-detectable (i.e. <0.01) to a maximum of 0.26mg/L (refer to **Appendix 2, Figure 13**). The September 2022 nitrate level of 1.92 mg/L is outside the historical range. Nitrate levels returned to the low levels consistent with historical for the October to December 2022 sampling rounds. Results in July and September were elevated with all other results during 2023 consistent with the historical range (refer to **Appendix 2, Figure 10**). Nitrate has only been monitored at BH2 and BHTH12 since March 2023 so no comparison or trends are available yet ((refer to **Appendix 2, Tables 6 & 7**).

6.5.3.7 Metals

Dissolved metals have been monitored at LD001 since 2013. For 2023 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 2024.

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 6.12** and **Table 6.13**. As a result of the approval of PA07_0127 (MOD 5) in February 2018, there are currently inconsistencies in noise criteria specified in the EPL and Project Approval. This will be addressed through the EPL licence Variation process to be undertaken prior to the recommencement of mining operations.

Table 6.13 EPL Noise Impact Assessment Criteria

Location	Day time limit L_{Aeq}(15 minute)	Evening limit L_{Aeq}(15 minute)	Night time limit L_{Aeq}(15 minute)	Location L_{A1}(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.

Table 6.14 Noise Impact Assessment Criteria PA 07_0127 (MOD 5)

Location	Day time limit L_{Aeq}(15 minute)	Evening limit L_{Aeq}(15 minute)	Night time limit L_{Aeq}(15 minute)	Location L_{A1}(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 6.15 2023 Quarterly Attended Noise Monitoring Results

Location	Criterion (dB)	Quarter 1 ($L_{Aeq\ 15min}$)	Quarter 2 ($L_{Aeq\ 15min}$)	Quarter 3 ($L_{Aeq\ 15min}$)	Quarter 4 ($L_{Aeq\ 15min}$)
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 – 2023 are summarised in **Appendix 2**. Results for quarterly noise monitoring during 2013 to 2023 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 2024.

6.7 Biodiversity

6.7.1 Environmental Management Measures

Biodiversity monitoring commenced at Invincible Colliery in 2011. The 2023 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. A request was made for an extension of time to submit a revised Biodiversity Management Plan, including a finalised Biodiversity Offset Strategy and Conservation Bond, under conditions 30, 32, 33 and 35 of Schedule 3 of the development consent for the Invincible Coal Mine (MP 07_0127). On 13 July 2023, the DPE conditionally approved the Biodiversity Management Plan (Revision 1, July 2023), subject to submitting a finalised Biodiversity Offset Strategy and a revised Biodiversity Management Plan within three months of mining recommencing (due by 14 October 2023). The Conservation Bond is required within 6 months of approval of the Biodiversity Management Plan.

Work is being completed to update the Biodiversity Offset Strategy and a modification to the development consent is required to align the development consent conditions with the proposed Biodiversity Offset Strategy. DPE considers that submission of the Conservation Bond by 30 June 2024 would be consistent with the extension to the Biodiversity Management Plan submission date.

6.7.2 Monitoring

In 2023 biodiversity monitoring was undertaken for the Invincible Colliery Biodiversity Offset Area (BOA) and Rehabilitation Areas (refer to **Appendix 1, Figure 4** for monitoring locations). The Biodiversity Monitoring Program is based on the monitoring requirements documented in the BMP.

The Invincible Colliery Biodiversity Offset Area consists of 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

Previously, a total of 11 monitoring locations have been established in the Invincible Colliery Biodiversity Offset Area and have been monitored annually. These were surveyed during the 2023 monitoring field surveys, however due to the requirements of the approved BMP prepared for the SEA, Cumberland Ecology established a further 12 flora monitoring locations in the Invincible Colliery Biodiversity Offset Area (a total of 23 monitoring locations).

Furthermore, the BMP stipulated a change in methodology to the Biodiversity Assessment Methodology (BAM) that has been introduced since the monitoring began. Accordingly, the 2023 flora monitoring of the Biodiversity Offset Area utilised the BAM for all 23 monitoring sites in this area.

The BMP also stipulates different fauna monitoring methodologies in the Invincible Colliery Biodiversity Offset Area, to what had been undertaken previously. The updated fauna survey methods were used for the 2023 round of monitoring surveys in the Invincible Colliery Biodiversity Offset Area; however, the original number and location of fauna survey sites (11) were surveyed as the BMP does not stipulate a particular number of fauna survey sites.

6.7.2.1 Summary of Observations and Recommendations

The results of the 2023 biodiversity monitoring show that conservation areas of the Invincible Colliery continue to recover from drought and bush fire impacts from 2019 and early 2020, assisted by the relatively higher rainfall that occurred during the 2022 and 2023. The BO Area is considered to be in good ecological condition and generally exhibits a low density of weed species. In general, the floristic composition and biodiversity values recorded in the 2023 monitoring surveys are consistent with the 2022 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. This confirms that the conservation values of the BO Area are unlikely to be at any risk in the short to medium term provided there is a continuation of current management regime.

In 2023 Rehabilitation vegetation demonstrate similar species diversity and cover to monitoring in 2022. The monitoring outcomes of rehabilitation areas indicate an overall increase in the vegetation recovery and development of ecosystem functionality established vegetation matures. Older rehabilitation vegetation were found to differentiating stratum as Eucalyptus spp. begin to emerge from the midstory, while mature acacias senesce and increase leaf litter and fallen timber to develop topsoil organics.

At least ten Squirrel Gliders (Petaurus norfolcensis) listed as vulnerable under the NSW BC Act were recorded occupying two nest boxes in the cluster of nest boxes near monitoring site R12. These nest boxes and others in the cluster are in poor condition and are in need of repair or replacement. Due to the demonstrated need for supplementary habitat in the form of nest boxes for this threatened species, these nest boxes should be replaced as a priority.

In the Invincible Colliery Biodiversity Offset Area, there is a low to medium abundance of exotic vegetation .

During the 2023 Ecological Monitoring Surveys it was also noted that certain access tracks throughout certain management areas were derelict or blocked by fallen trees and logs. It is recommended that ongoing management of access tracks is conducted to ensure that they remain accessible and functional.

A range of recommendations are provided below to assist in the ongoing management of the Invincible Colliery Mine site. A summary and assessment of compliance of the monitoring results against the relevant biodiversity and rehabilitation performance and completion criteria is provided in **Table 8.2**.

- Biodiversity Monitoring and management of the Rehabilitation and BOA will continue to be conducted during 2024 in accordance with the approved management plans.
- Given the high number of hollow-dependant fauna that has been observed, consider further installation of compensatory habitat features (such as nest boxes, salvaged hollows, or hollow logs) into rehabilitation areas with well-established vegetation. These works should be considered as a part of a viable management strategy to improve corridors and increase habitat connectivity.
- Re-affix any fallen nest boxes or broken lids. Numerous nest boxes are damaged or not up to standard.
- Control of rill erosion at noted monitoring plots on the steeper slopes.
- For any additional future revegetation works, primarily plant out with species commensurate with the respective plant community type (PCT) adjacent to the rehabilitation area.
- Control Blackberry and other high threat exotic species.
- Feral animal control of any exotic fauna species present.

- Maintenance of access tracks throughout the Biodiversity Monitoring Areas.

6.7.3 Proposed Improvements

Biodiversity Monitoring and management of the Rehabilitation and Biodiversity Offset Areas will continue to be conducted during 2024 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 are 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 Heritage Management Plan (AHMP) (Coalpac, 2009c) has been prepared and implemented in accordance with the Project Approval (Mod 3) 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. A new Aboriginal Cultural Heritage Management Plan (ACHMP) (OzArk, 2022) was approved on 31 January 2023.

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 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 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.

7.0 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), one Environmental Dam (SD1), one storage dam (Main Water Dam – LD002), 2 sediment ponds, one clean water storage dam located within the Aboriginal Heritage site (OS-1) and 7 inactive fine reject dams currently on site. 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 an automatic 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 Error! Reference source n ot found. **7.1**). Water is currently sourced from the existing connection to the Fish River Water Supply pipeline.

Table 7.1 Water Take

Water Licence #	Water sharing plan, source and management zone (as applicable)	Entitlement	Estimated Take Previous Period – 2022 (ML)	Estimated Take Current Period – 2023 (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 Resources 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 t hat 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 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."

8.0 Rehabilitation

Rehabilitation of disturbed land at Invincible Colliery has previously been undertaken in accordance with the approved Mining Operations Plan (C&M MOP) required under the Mining Lease conditions and Development Consent (PA 07_0127).

A Rehabilitation Management Plan (RMP) was prepared by Invincible Colliery to satisfy the requirements of the Invincible Colliery ML conditions and PA 07_0127 in July 2022.

An amendment to the Mining Regulation 2016 under the Mining Act 1992, commenced on 1 July 2021. The amendment provided new standard rehabilitation conditions for mining leases which replaces existing mining lease conditions. The RMP replaces the Invincible Colliery Mining Operations Plan (Invincible MOP). The RMP is available on the Castlereagh Coal website.

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) 2022 (ha)	This reporting period (actual) 2023 (ha)	Next reporting period (forecast) 2024 (ha)
Total Mine Footprint – Surface Disturbance	160.64	160.82	167.32
Total Active Disturbance	98.72	98.82	95.25
Rehabilitation – Land Preparation	0	0	0
Ecosystem and Land Use Establishment	0	0	0
Ecosystem and Land Use Development	61.93	62.00	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

The revised rehabilitation objectives and completion criteria for Invincible Colliery were submitted to the Resources Regulator (RR), during the previous reporting period, for review and approval as a requirement of the new Rehabilitation Management Plan process. On 20 March 2023 the RR provided feedback and refused the Invincible Colliery Objectives Statement. Invincible Colliery submitted a new Rehabilitation Objectives Statement in March 2024, addressing the reasons given by the RR for refusal. **Table 8.2** 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. Management and monitoring of rehabilitation areas was previously undertaken in accordance with the Invincible Colliery LMP (Coalpac, 2009f). Rehabilitation management and monitoring is currently undertaken in accordance with the Invincible Colliery Rehabilitation Management Plan which was approved in December 2022.

Areas of rehabilitation to the north of the site were shaped in 2015. 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.

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 8.2** below. As noted previously these criteria are being refined as part of revised 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 8.2**.

Table 8.2 Assessment of Monitoring Results against Invincible Colliery Completion Criteria

1. Planning Stage			
Consideration of the completion criteria for the planning stage of the project are not relevant to this monitoring report and have not been considered further			
2. Establishment Stage			
Consideration of the completion criteria for the establishment phase of the project are not relevant to this monitoring report and have not been considered further.			
3. Development and Sign-Off Stages			
3.1 Vegetation Establishment and Sustainability			
Tree species composition is compatible with that of other vegetation types in the lease, i.e. it includes:			
Local eucalypt species	A range of local eucalypt species are present	Plant or seed more species if required	A range of local eucalypt species are present within the Rehabilitation Areas
Local tall *Acacia* species	A range of local *Acacia* species are present	Plant or seed more species if required	A range of local Acacia species are present within the Rehabilitation Areas
Tree health	More than 75% of trees are healthy and growing as indicated by monitoring	Investigate causes of the problem and correct if required	**Satisfied.** Over 75% of trees within the Invincible Colliery Rehabilitation areas appeared to be healthy during the 2023 monitoring. Tree health demonstrated continued increase from 2022 monitoring with regenerating foliage cover and many healthy Eucalyptus spp. Recruits establishing. Future monitoring will determine how the tree health within rehabilitation areas will respond following favourable environmental conditions.
Leaf nutrient analysis	Nutrient analyses conducted on trees in representative areas indicate no deficiencies of key macro- or micro-nutrients	Investigate causes of any problems and address as required	**Generally satisfied.** No nutrient analyses were undertaken as part of the 2023 biodiversity monitoring. No nutrient deficiencies were observed (e.g., leaf discolouration, unusual growth forms, etc)

Tree density	Monitoring or visual estimation show the density of eucalypt trees >2m tall to be >200 stems/ha, averaged over the rehabilitated area monitored	Plant or seed more trees if required	**Satisfied.** Tree densities within the rehabilitation areas appeared to be greater than 200 stems per hectare.
Presence of treeless areas	No treeless areas greater than 0.5 ha are present	Correct using planting or seeding if required	**Satisfied.** No treeless area greater than 0.5 ha was observed during the 2023 monitoring.
Evidence of tree regeneration	Second generation tree seedlings are present or likely to be, based on monitoring or research in comparable older sites	Conduct follow-up assessment later, or add seed if required	**Satisfied.** Some second-generation Acacia seedlings were found to occur in proximity to patches of senescence (plant death due to age), thereby indicating that regeneration is occurring. Eucalypt seedlings were recorded at monitoring sites R10, R11, R12, R14, and R15.Further monitoring is to be undertaken in subsequent years to confirm the success of natural regeneration over time.
Sufficient grass or shrub cover, rocks, logs, etc. are present on steeper slopes to control erosion in the long-term	Monitoring and visual estimation show grass or shrub cover to be >50% on these areas, or sites have sufficient rock cover to maintain erosion below target standards (see Criteria 3.3)	Where necessary, delay closure until grass and shrub cover increases, or increase cover by seeding	**Satisfied.** Monitoring and visual estimation during 2023 recorded grass or shrub cover to be >50% in the Invincible Colliery Rehabilitation Areas monitored. Observations of ground cover were similar to 2022 monitoring. No major areas of erosion were evident during monitoring.
Presence of bare areas on outer slopes	No bare areas that have obviously failed and are greater than 0.1ha in total area, or greater than 5m in width extending >10m down the slope, are present	Increase soil quality to assist grass and herb cover on bare areas, this may include increasing organic matter content to promote soil structures	**Satisfied.** An increase in the cover of vegetation in the ground layer was recorded in 2023, similar to 2022 monitoring. Subsequently, areas of bare ground were uncommon and overall, the Invincible Colliery Rehabilitation Areas met this criteria.

Shrubs, grasses and other understorey plants	A range of native shrubs, grasses and other understorey species have established through topsoil, seeding or recolonisation	Investigate the feasibility of establishing more shrub or grass species and do so if practicable	**Satisfied.** Cover and abundance for a range of native shrubs, grasses and other understorey species was shown to be good for the 2023 monitoring. Future monitoring will determine how the native species diversity of rehabilitation areas will respond following favourable environmental conditions.
Noxious weeds	A management program for the control of declared plants and other weeds such as Pampas Grass and Crofton Weed has been implemented on the site	Control declared plants and other problem weeds as per the management program	**Partially satisfied.** No evidence of weed control measures were detected in any areas of the Invincible Colliery during the 2023 monitoring. Most sites had a low weed incidence; however, Blackberry seedlings were evident in a number of the sites and Blackberry infestations were noted in areas of the Invincible Colliery Rehabilitation Area. Further, several Pampas Grasses (Cortaderia sp.) were detected close to the main access track through the Invincible Colliery. A spraying program for the control of high threat and priority weeds needs to be implemented on site.
Fire tolerance	Tree, understorey and grass species are capable of either surviving or regenerating following a fire	Rehabilitation may be too young to determine this; investigate using research and/or literature review of relevant research on other mines	**Satisfied.** Impacts to rehabilitation areas from the 2019/2020 bushfires were less severe than in remnant vegetation, indicating that the rehabilitation has some degree of fire tolerance. Future biodiversity monitoring will inform the level of fire tolerance for this area.

Drought tolerance	Tree, understorey and grass species are capable of surviving drought	If large-scale deaths have occurred, consider the need for replanting or reseeding, and whether more drought tolerant species should be included in the seed mix	**Satisfied.** Drought conditions have eased in the region following extended drought conditions 2017-2020 (DPI 2021). Monitoring results since 2017 indicate the rehabilitation areas, appear to be relatively tolerant given the lack of rainfall. This was evident in the 2023 monitoring results as shrub and tree health did not appear to decline as a result of the drought. This degree of drought tolerance is also evidenced by the presence of Acacia and Eucalypt saplings and reproductive material at most sites. Ongoing monitoring is required to determine the condition of biodiversity values as they continue to respond to suitable conditions following the extended drought period.
Sustainability	Monitoring and research results indicate that the rehabilitation is likely to be sustainable over the long-term, if managed according to the procedures defined in Criteria 4 below	Continue monitoring in accordance with approved Flora and Fauna Management Plan / Biodiversity Management Plan	**Generally satisfied.** Consistency seen in qualitative descriptions suggest that the rehabilitation may be sustainable over time, however ongoing monitoring is required to assess these criteria.
3.2 Fauna habitat and faunal recolonisation			
Habitat	Fauna habitat in rehabilitated areas matches that in some surrounding un-mined open forest/woodland areas, or will do so in time	Investigate whether further planting or seeding might be required as per Criterion 3.1	**Generally satisfied.** Rehabilitated Areas are not old enough to support the range of habitats provided by the surrounding remnant forests and woodlands. The rehabilitated areas are progressing towards the pre-existing or surrounding landforms.

Diversity of vegetation	Includes a range of vegetation structural habitats, e.g. eucalypts, shrubs, ground cover and a developing litter layer	Investigate whether further planting or seeding might be required as per Criterion 3.1	**Satisfied.** All Invincible Colliery Rehabilitation Areas include a range of vegetation structural habitats. The overall diversity of native flora species at this stage of rehabilitation is still limited by the initial seeding mix and the soil substrates used during works, and age of the rehabilitation areas. It is expected that the areas will trend over time to satisfy the completion criteria.
Fauna recolonisation - invertebrates	Studies demonstrate that key invertebrate functional groups such as ants and soil faunal communities are re-establishing	Investigate the causes where key groups have not recolonised	Specialist Invertebrate studies have not been undertaken previously and were not conducted in 2023.
Fauna recolonisation - vertebrates	Vertebrate surveys demonstrate that bird, mammal, reptile and frog communities are becoming established in rehabilitated sites	Investigate the causes where key vertebrate groups have not recolonised	**Satisfied.** The fauna species diversity recorded in 2023 was less than recorded in 2022, but similar to that recorded previously in 2021. This demonstrates that fauna populations are becoming established in rehabilitation areas. It is expected that faunal communities will continue to establish towards a similar number to those recorded in the surrounding un-mined vegetation as the diversity of habitats progressively improve. Further evidence will be drawn from future monitoring events as habitat corridors continue to establish and permanent habitat features become more frequent.
Management of fauna habitat in un-mined areas	Fauna habitat of adjacent un-mined areas has been protected as stipulated in this Plan	Protect areas of adjacent native fauna habitat	**Satisfied** Fauna habitat of adjacent un-mined areas has been protected as stipulated in the BMP.

Management of rare species habitat	Habitat of rare or vulnerable fauna species, such as the Common Bent- winged Bat, Little Bent-winged Bat and the Squirrel Glider, has been managed to promote the species conservation	Take necessary steps to conserve habitat considered likely to provide habitat for these species	**Not satisfied** At least ten Squirrel Gliders (Petaurus norfolcensis) listed as vulnerable under the NSW BC Act were recorded occupying two nest boxes in the cluster of nest boxes near monitoring site R12. These nest boxes and others in the cluster are in poor condition and are in urgent need of repair or replacement. According to Travers (2022), in 2022 at least five of the 24 nest boxes were damaged or not up to standard and it was recommended to re-affix any fallen nest box or broken lid. From our inspections in February 2024, no nest boxes as mentioned by Travers had been fixed and further deterioration and falling of nest boxes has occurred.
3.3 Landform stability			
Absence of significant erosion - gullies	No erosion gullies >1m deep and 1m wide are present on any outer slopes	Gullies which fail to meet the standard should be reshaped and replanted if required	**Generally satisfied** No erosion gullies of this size were identified within the areas visited during the monitoring surveys. Small rills were observed, e.g. R15 on the steeper slope, and surrounding area.
Integrity of waterways	If still required, any constructed waterways are still in good working condition	Repair waterways if required	Not assessed as part of the annual biodiversity monitoring program.
Graded banks have been removed	To avoid overtopping, after establishment of adequate vegetation cover, graded banks will be removed	Remove when appropriate	Not assessed as part of the annual biodiversity monitoring program.

3.4 Land Use Suitability			
Suitability for nature conservation	Areas of rehabilitation and adjacent un-mined areas together possess defined conservation values and could be managed for the purposes of conserving a range of local flora and fauna species and vegetation types, including any rare fauna species recorded	Determine whether further revegetation or other management procedures may be required	**Satisfied.** Areas of rehabilitation and adjacent un-mined areas together possess conservation values and could be managed for the purposes of conserving a range of local flora and fauna species and vegetation types.
Protection of water quality	Water quality, landform design, geotechnical stability and vegetation monitoring data all suggest that sites are not likely to pose a threat to downstream water quality	Implement corrective procedures if required	Not assessed as part of the annual biodiversity monitoring program.
Long-term management	Management requirements have been defined (see Criteria 4 below). Long-term management operations (e.g. maintenance of access tracks, fire) will not be greater than those of areas prior to mining, or where extra management actions may be required, a mechanism has been put in place for addressing these	Develop long-term management plan as in Criteria 4 below	Not assessed as part of the annual biodiversity monitoring program.

9.0 Community

9.1 CCC Meetings

Two community consultation meetings were held during the reporting period. The meetings were held in March and October 2023.

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

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 (02) 6359 0600 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 no complaints received from the local community in relation to care and maintenance activities at Invincible Colliery during the reporting period. A comparison of complaints received between 2019 and 2023 is outlined in **Table 9.1**.

There were no complaints received relating to operations at Invincible Colliery since the mine was placed in care and maintenance in May 2013. Since operations recommenced in July 2023 there have been two (2) complaints. One complaint was related to water leaving site and the other to a neighbouring property fence being down.

Table 9.1 Comparison of Complaints for Invincible Colliery 2019 – 2023

Complaint Type	2019	2020	2021	2022	2023
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	0	1
Other	0	0	0	0	1
Total	0	0	0	0	**2**

10.0 Independent Audit

An Independent Environmental Audit (IEA) was conducted during 2016 in accordance with Schedule 5, Condition 5 of the Project Approval. The audit period included the care and maintenance period from May 2013 to January 2016. The mine was operated by the previous mine owner Coalpac from May 2013 to May 2015. Shoalhaven Coal (under the Manildra Group) was responsible for operations between May 2015 and January 2016 with many of the non-compliances detected by the audit being outside of Shoalhaven Coals control. In addition, a large number of the non-compliances that have occurred during Shoalhaven Coal's ownership are as a direct result of historical practices conducted by Coalpac.

An action plan was developed as an outcome of the audit findings and follow up actions have been implemented as required in consultation with DPE. 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. As such an IEA is due to be undertaken by July 2024. The results of the IEA when completed, will be reported in the subsequent Annual Review.

11.0 Incidents and Non-Compliances during the Report Period

There were no environmental incidents causing or threatening material environmental harm at Invincible Colliery during the reporting period. The Invincible Pollution Incident Response Management Plan was not activated during the reporting period with review of the PIRMP being undertaken in December 2023 (refer to the Castlereagh Coal website). Non-compliances which occurred during the reporting are discussed in in **Section 1.0**.

12.0 Activities to be Completed in the Next Reporting Period

Activities to be completed in the next reporting period (i.e. during 2024) will include:

- Undertake works required by the Project Approval and EPL, should the recommencing of mining activities be confirmed by Shoalhaven Coal.
- 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.

Implementation of the long-term management actions to address issues stemming from the Section 240 Notices ongoing consultation outcomes with the Resources Regulator.

Attend to rehabilitation activities as per **Section 8.4.**

13.0 References

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APPENDIX 1

Figures & Plans

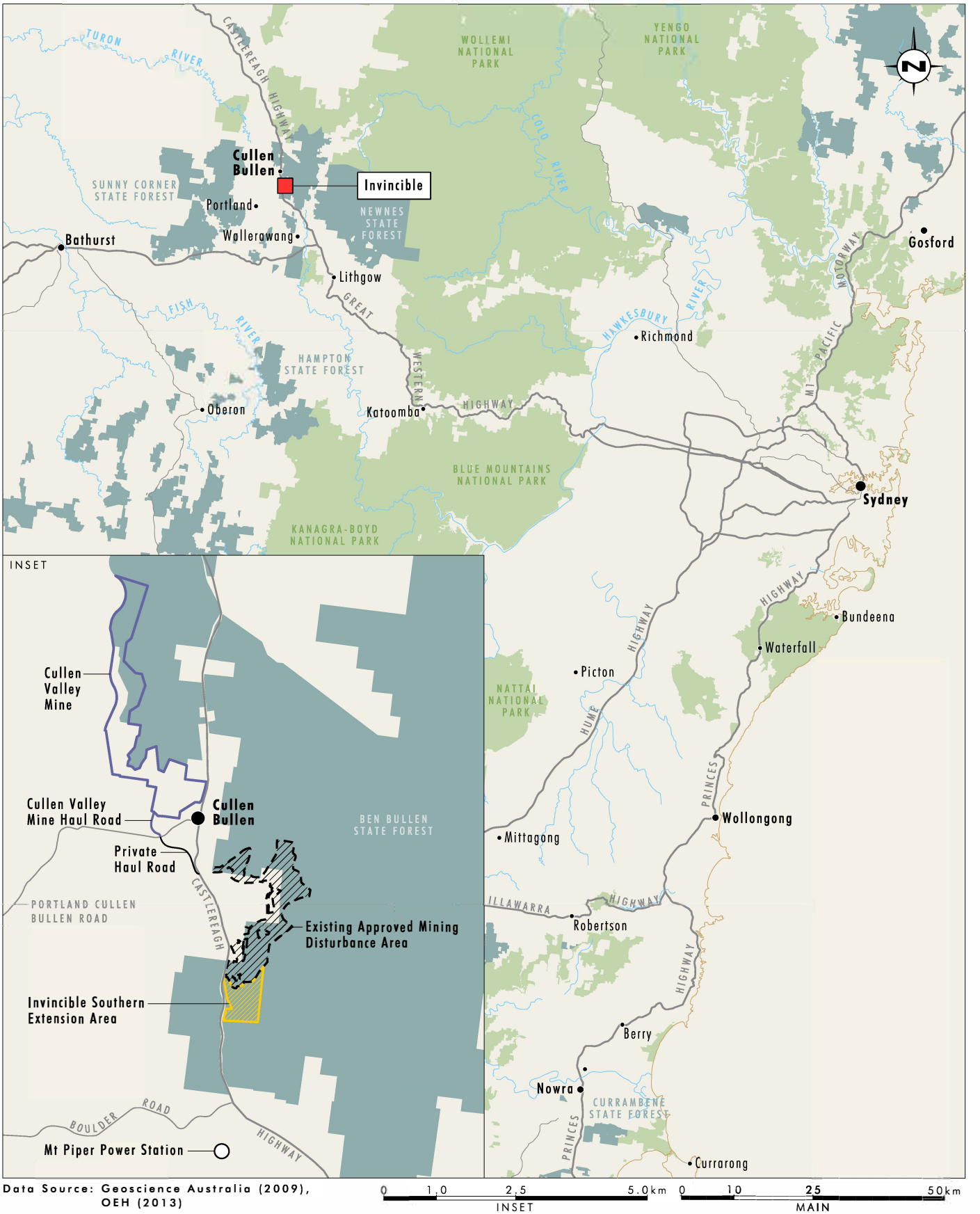

FIGURE 1

Locality Plan
Invincible Colliery

External Border size = 277mm X 390mm on A3 paper.

6312000.000 N
6310500.000 N
6309000.000 N
6307500.000 N
223500.000 E
225000.000 E
226500.000 E

ML 1638
ML 1635
ML 1434
EL7517
CCL 702
ML 1638
MINE RESTRICTION AREA
ML 170
BEN BULLEN STATE FOREST

Mining and Rehabilitation Areas 2024
- Active Mining Area
- Overburden Emplacement Area
- Infrastructure Area
- Water Management Area
- Tailings Storage Area
- Rehabiliation Area

0 750 1500
SCALE 1:15000

NOTES:
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2) THE PLAN & ASSOCIATED ELECTRONIC FILES SHALL ONLY BE USED BY THE ADDRESSED CLIENT FOR THE PURPOSE OF THE SURVEY.
3) THIS SURVEY AND PLAN IS FOR INFORMATION / REPORTING PURPOSES ONLY.
4) THE BOUNDARIES, AREAS & DIMENSIONS OF THE LAND AND MINING LEASES, AS SHOWN, ARE BASED ON ORIGINAL DATA AND HAVE NOT BEEN SUBJECT TO REDEFINITION.
5) MINING LEASE INFORMATION HAS BEEN DERIVED FROM RECROD TRACING #32A INVINCIBLE OPEN CUT SUSPENSION OF OPERATIONS
6) ROADS AND DRAINAGE LINES ARE DIGITIZED FROM AERIAL IMAGERY AND SHOULD BE CONSIDERED APPROXIMATE.
7) NORTHERN MINING DOMAINS AND APPROVAL LIMITS ADOPTED FROM PLAN SUPPLIED BY OTHERS VIA EMAIL DATED 20/03/2024.
8) SOUTHERN MINING DOMAINS VERIFIED BY CASTLEREAGH COAL MINING SUPERVISOR AT SITE MEETING DATED 22/03/2024. CEH SURVEY ACCEPTS NO RESPONSIBILTY FOR ERRORS OR OMISSIONS WITH REGARDS DEFINITION OF APPROVAL AREAS OR MINING DOMAINS, AS SHOWN ON THIS PLAN.
9) SERVICES ARE NOT SHOWN. CEH SURVEY ACCEPTS NO RESPONSIBILITY FOR SERVICES NOT SHOWN. RING "BEFORE YOUR DIG AUSTRALIA" AND CONTACT RELEVANT AUTHORITIES & THE LOCAL COUNCIL FOR OTHER SERVICE LOCATIONS.
10) BACKGROUND IMAGE FROM GOOGLE EARTH (IMAGE DATED 29/09/2023) COPYRIGHT 2024 AIRBUS.
11) THESE NOTES FORM AN INTEGRAL PART OF THE PLAN AND MUST NOT BE REMOVED FROM THE PLAN.

CLIENT: CASTLEREAGH COAL
CEH REF: 3/2076 CLIENT REF: INVINCIBLE COLLIERY
PROPERTY: INVINCIBLE COLLIERY
LOCALITY: CASTLEREAGH HIGHWAY, CULLEN BULLEN.

R.R. (@A3) - 1:15000 LEVEL DATUM: MGA ZONE 56 / GDA 94

LEGEND
- Project Approval Boundary
- Mining Lease Boundary
- Exploration Licence Boundary
- Exsiting Approved Mine Disturbance Boundary
- Mine Restriction Area
- Southern Extension Area (ML170)
- Biodiversity Offset Area
- Roads (Approximate)
- Drainage Line

CEH SURVEY
CONSULTING LAND, ENGINEERING AND MINING SURVEYORS
"Astrolabe" 1 Rutherford Lane,
LITHGOW 2790
ABN: 68 056 544 551 Office: (02) 6351 2281
Email: survey@ceh.com.au Website: www.ceh.com.au

GRID
(MGA56 / GDA 94)

DATE	12/04/2024
AMENDED	26/04/2024
SURVEYOR	NOT BY SURVEY
DRAWN	GM
CHECKED	JWS

DRAWING No:
FIGURE 2
2023 MINING
& REHABILITATION
AREAS
.MJO JOB:
INV0324 reporting boundaries - INV AR 2 2023

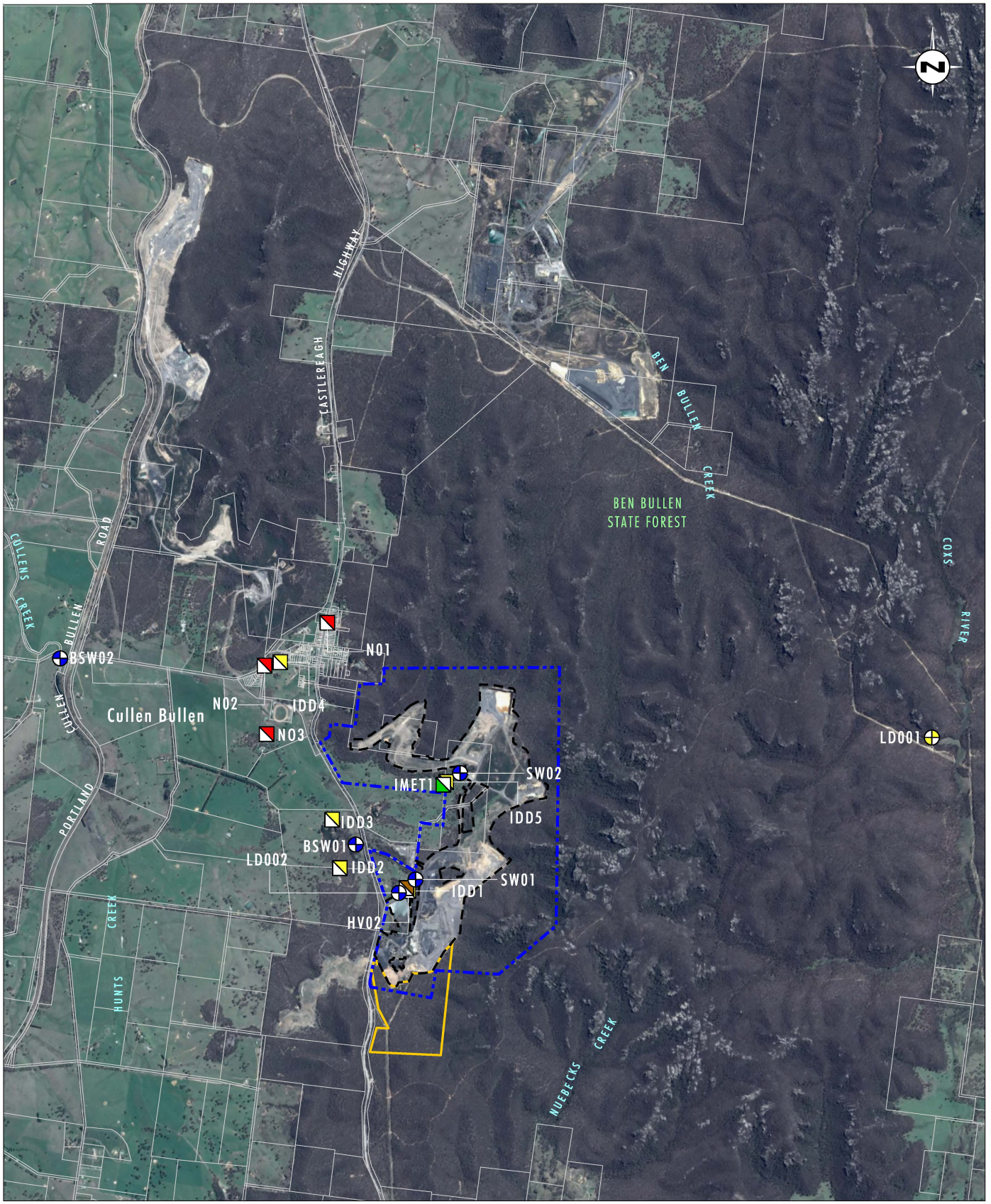

Image Source: Google Earth - CNES/Astrim (2016)

0 0.5 1.0 2.0km

1:50 000

Legend

- Existing Approved Mining Disturbance Area - Invincible
- Invincible Project Approval Boundary
- Approved Southern Extension Area
- Blast Monitoring Point
- Depositional Dust Monitoring Point
- Meteorological Station
- HVAS Monitor
- Noise Monitoring Point
- Surface Water Monitoring Point
- Groundwater Monitoring Point

FIGURE 3

Environmental Monitoring Locations
Invincible Colliery

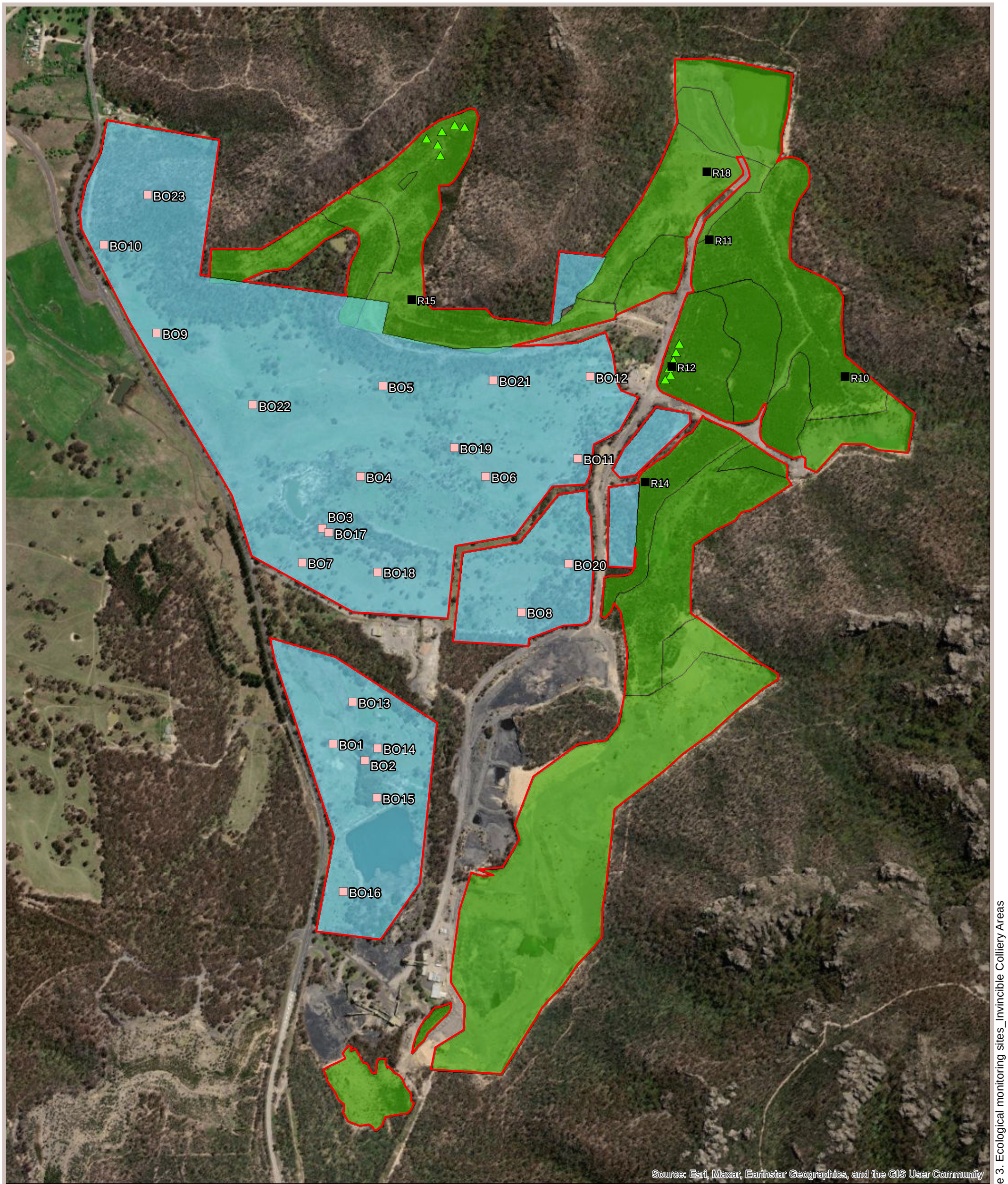

Figure 4. Ecological monitoring sites across the Invincible Colliery Areas

APPENDIX 2

Monitoring Results

Air Quality

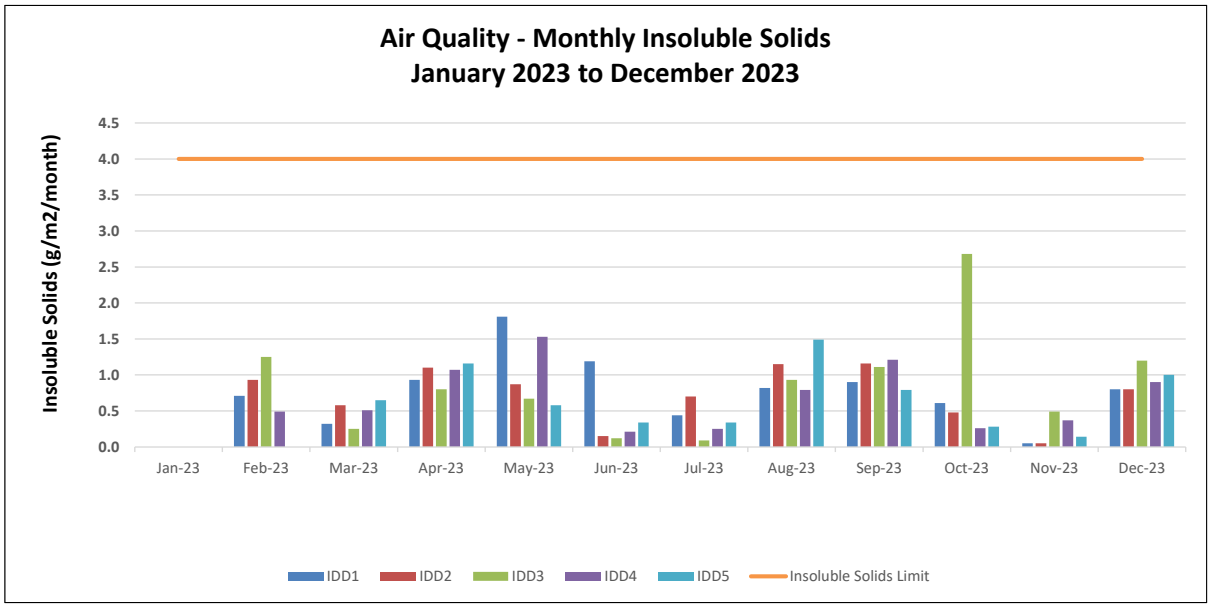

Figure 1: Depositional Dust Monitoring (Insoluble Solids) Results - 2022

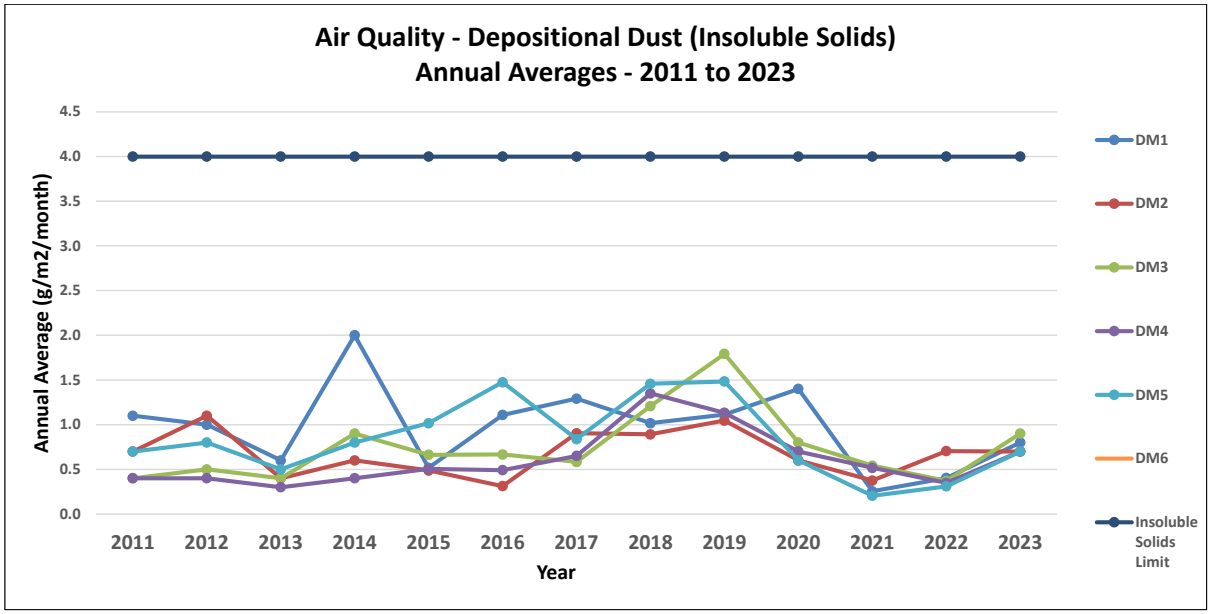

Figure 2: Depositional Dust Monitoring Historical Results

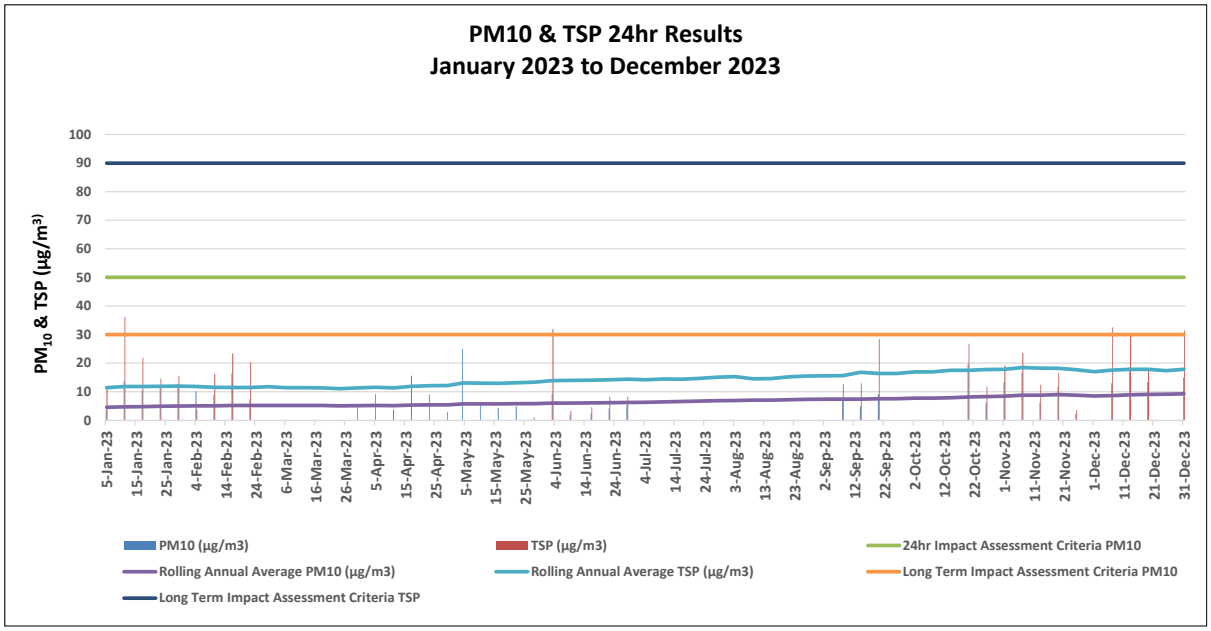

Figure 3: HVAS Monitoring Results - 2022

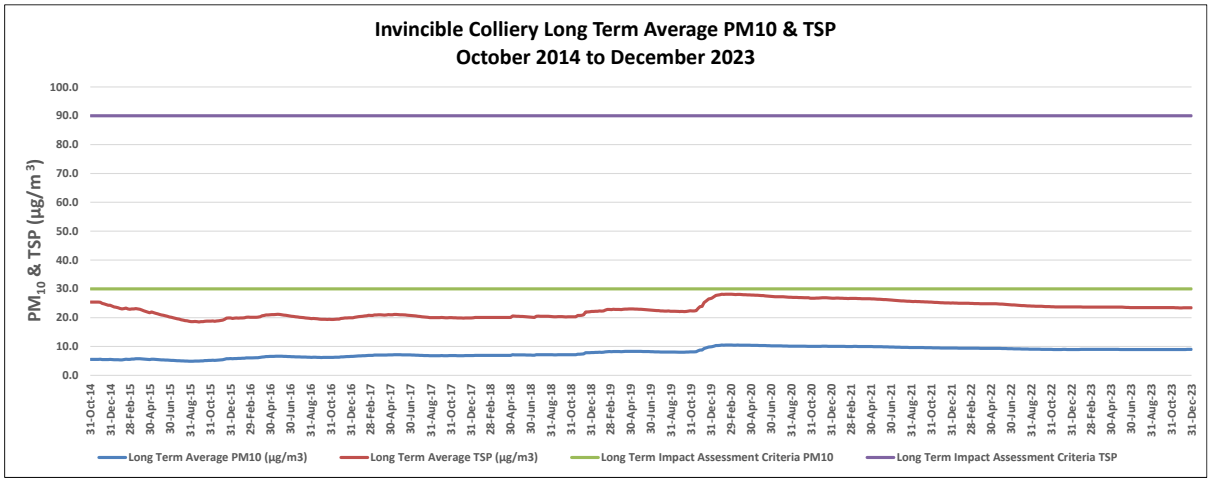

Figure 4: HVAS Monitoring Historical Results

Surface Water

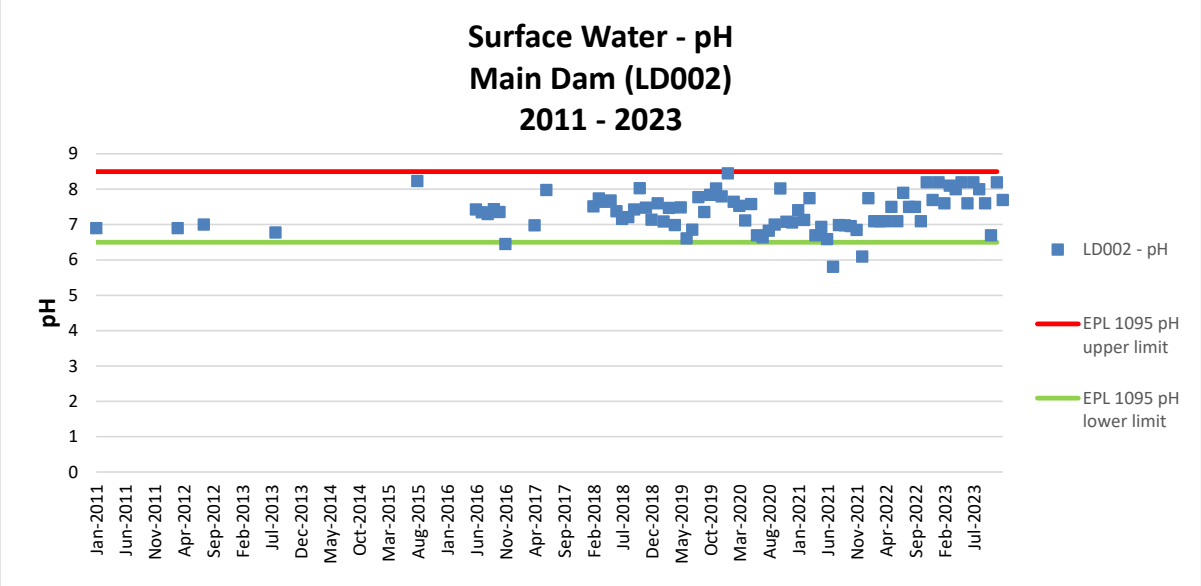

Figure 5: Surface Water (LD002-discharge) – Historical pH Results

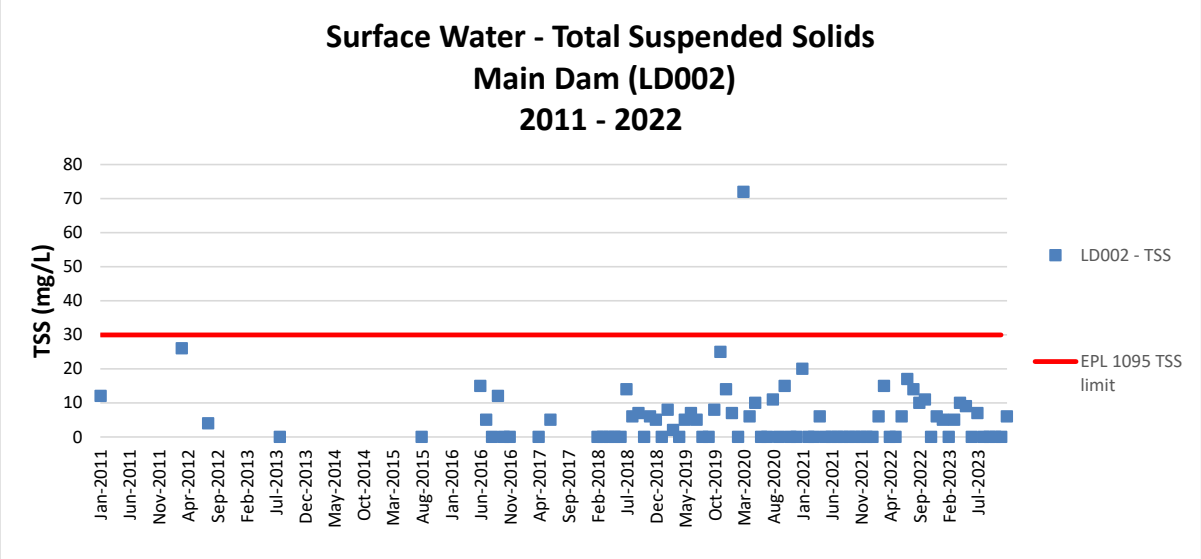

Figure 6: Surface Water (LD002-discharge) – Historical TSS Results

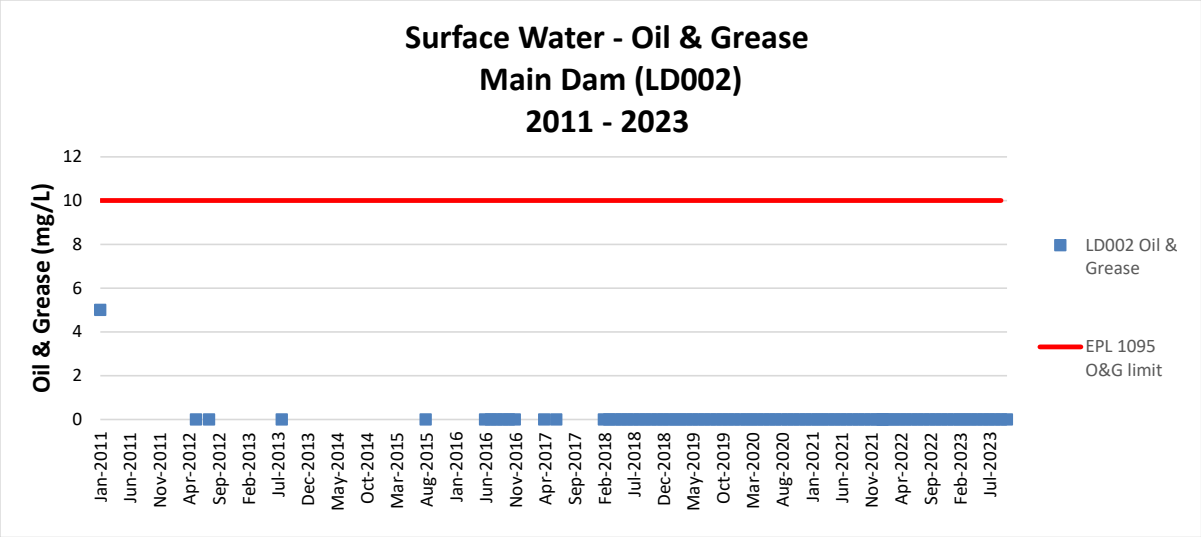

Figure 7: Surface Water (LD002-discharge) – Historical Oil and Grease Results

Table 1 – Monthly Monitoring Results Main Dam (LD002)

Main Dam (LD002)			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
4/01/2023*	8.2	5	<5
2/02/2023*	7.6	<5	<5
6/03/2023*	8.1	5	<5
5/04/2023	8.0	10	<5
17/05/2023*	8.2	9	<5
8/06/2023	7.6	<5	NR
31/07/2023*	8.2	7	<5
21/08/2023*	8.0	<5	<5
7/09/2023	7.6	<5	<5
31/10/2023*	6.7	<5	<5
20/11/2023*	8.2	<5	<5
6/12/2023*	7.7	6	<5

*LD002 only sampled when discharging *denotes sample taken from Main Dam*
NR - no result-bottle arrived broken to lab

Table 2 – Monthly Monitoring Results Environmental Dam (SW01)

Environmental Dam (SW02)			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
4/01/2023	2.9	<5	<5
2/02/2023	2.8	12	<5
6/03/2023	2.9	6	<5
5/04/2023	2.9	22	<5
17/05/2023	2.9	112	<5
8/06/2023	3.2	8	<5
31/07/2023	3.0	<5	<5
21/08/2023	2.9	8	<5
7/09/2023	3.1	NR	<5
31/10/2023	3.0	6	<5
20/11/2023	2.9	14	<5
6/12/2023	2.9	<5	<5

Table 3 – Monthly Monitoring Results Silt Dam (SW02)

Silt Dam (SW03)			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
4/01/2023	8.1	11	<5
2/02/2023	7.7	12	<5
6/03/2023	8.2	8	<5
5/04/2023	8.0	30	<5
17/05/2023	7.8	8	<5
8/06/2023	7.8	11	<5
31/07/2023	7.4	10	<5
21/08/2023	7.2	15	<5
7/09/2023	6.7	6	<5
31/10/2023	6.6	26	<5
20/11/2023	7.8	12	<5
6/12/2023	7.8	8	<5

Table 4 – Monthly Monitoring Results Cullen Creek U/S

BSW01 - Cullen Creek Upstream			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
4/01/2023	5.8	21	<5
2/02/2023	5.7	6	<5
6/03/2023	7.6	19	<5
5/04/2023	6.6	15	<5
17/05/2023	7.8	<5	<5
8/06/2023	7.7	8	<5
31/07/2023	6.7	8	<5
21/08/2023	6.5	12	<5
7/09/2023	6.5	24	NR
31/10/2023	Dry		
20/11/2023	Dry		
6/12/2023	7.4	6	<5

NR - no result-bottle arrived broken to lab

Table 5 – Monthly Monitoring Results Cullen Creek D/S

Cullen Creek Downstream			
Sampling Date	pH	TSS (mg/L)	Oil & Grease (mg/L)
4/01/2023	7.7	5	<5
2/02/2023	7.4	<5	<5
6/03/2023	7.3	<5	<5
5/04/2023	7.7	<5	<5
17/05/2023	7.6	<5	<5
8/06/2023	7.9	9	<5
31/07/2023	6.7	<5	<5
21/08/2023	6.8	<5	<5
7/09/2023	6.6	<5	<5
31/10/2023	Dry		
20/11/2023	Dry		
6/12/2023	7.4	<5	<5

Groundwater

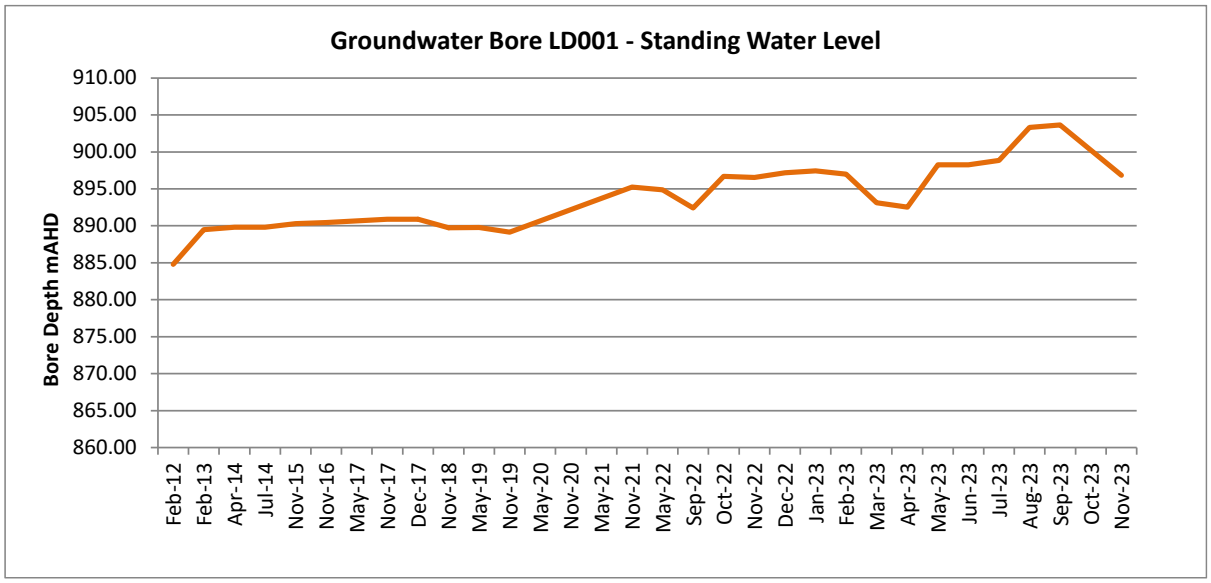

Figure 8: Groundwater Bore LD001 - Standing Water Level

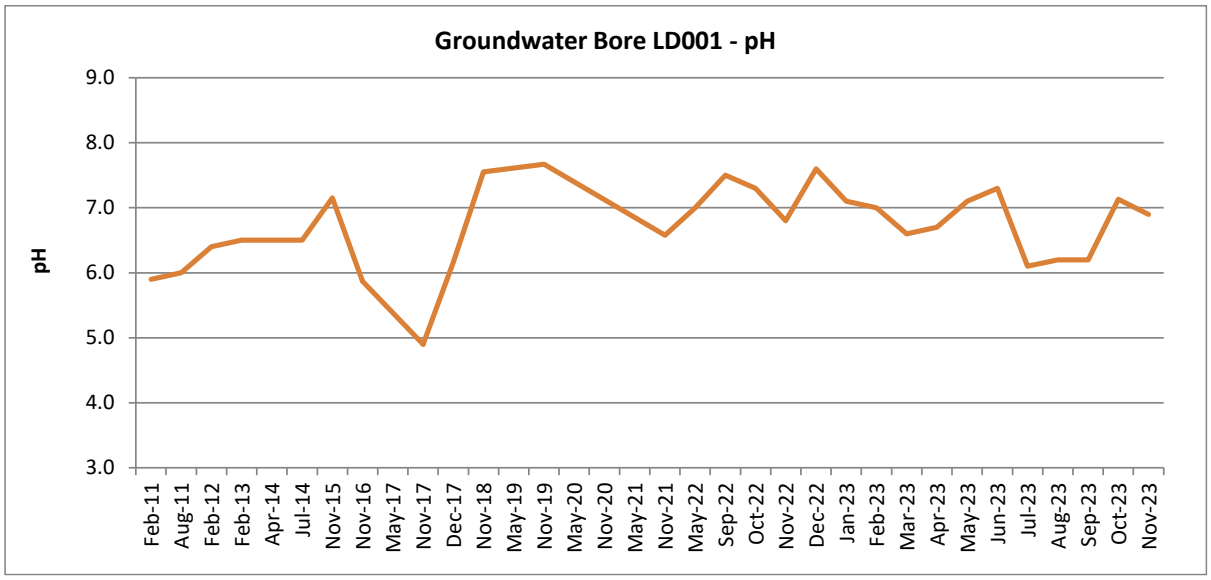

Figure 9: Groundwater Bore LD001 - pH

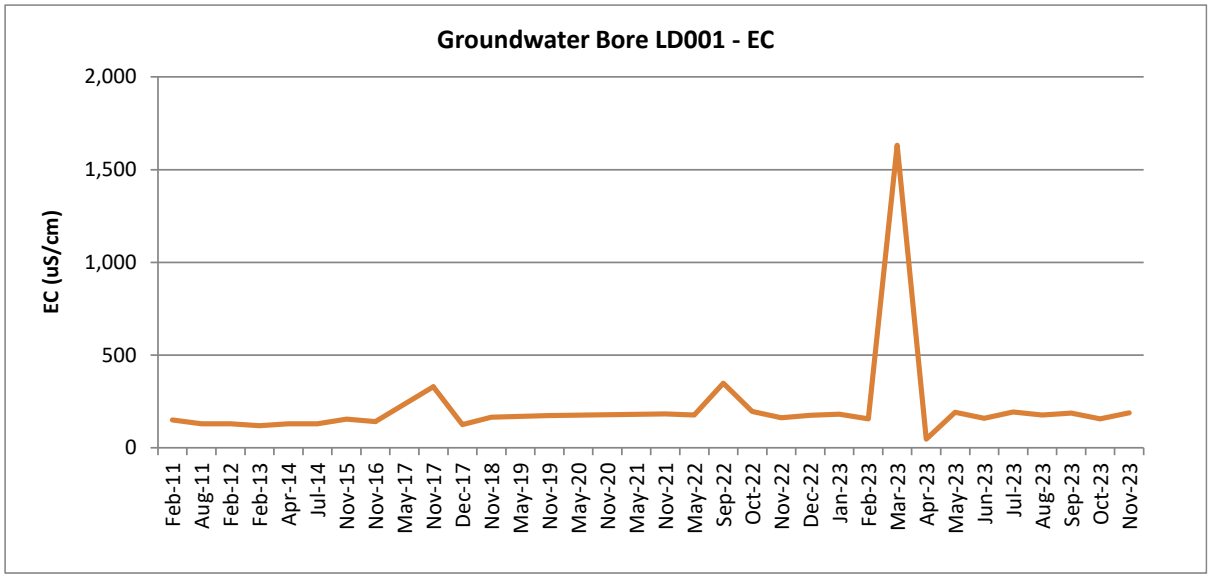

Figure 10: Groundwater Bore LD001 – Electrical Conductivity

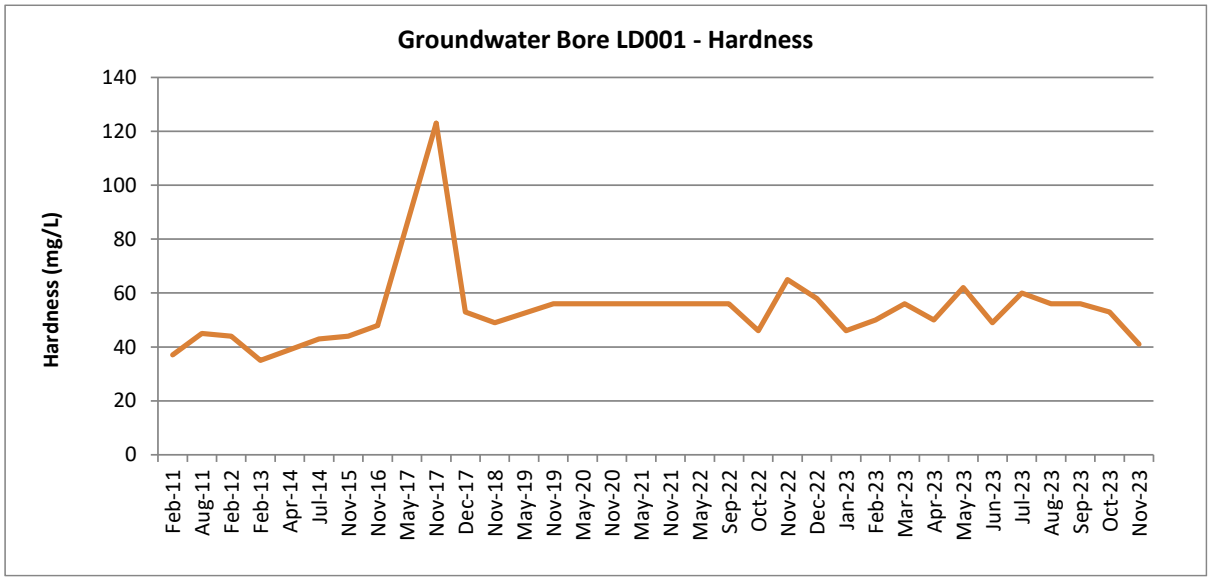

Figure 11: Groundwater Bore LD001 – Hardness

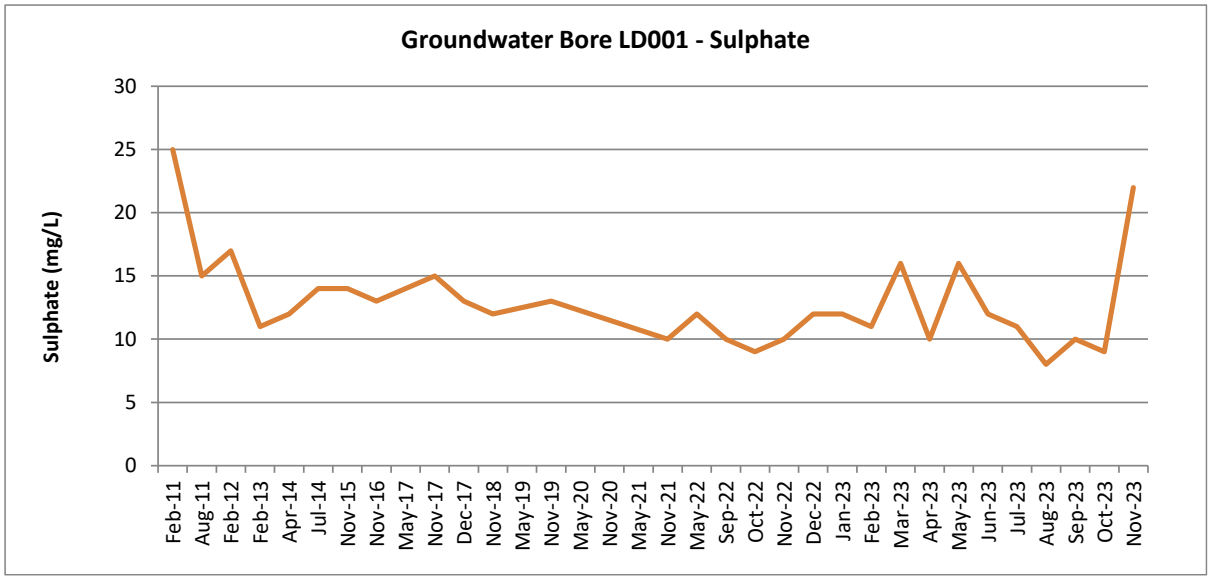

Figure 12: Groundwater Bore LD001 – Sulphate

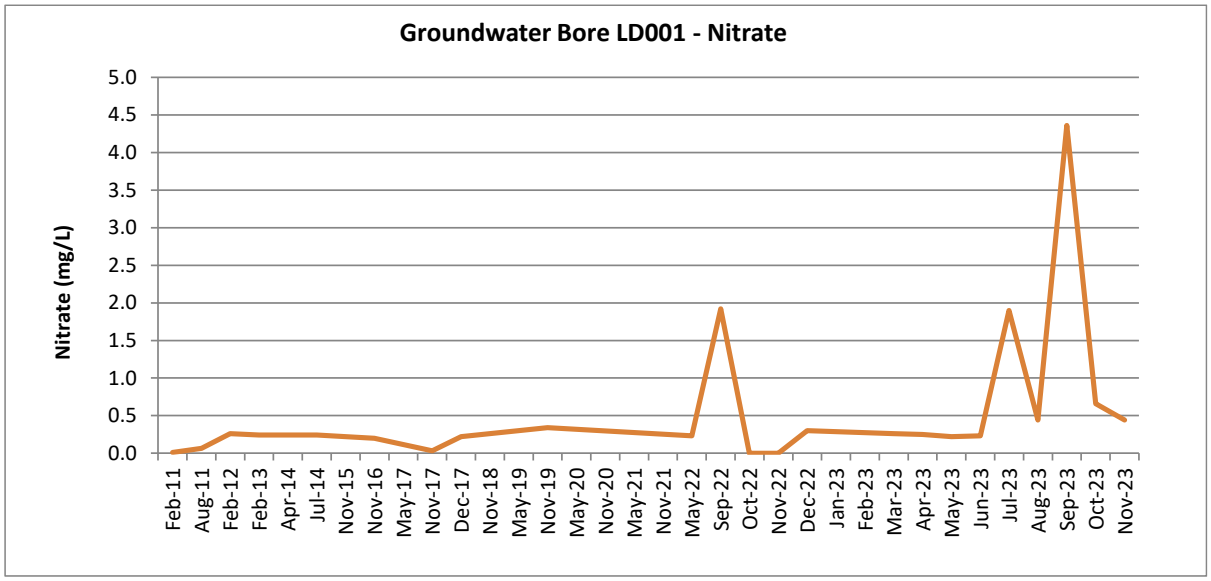

Figure 13: Groundwater Bore LD001 – Nitrate

Table 6 – Monitoring Results BH2

BH2							
Period	Sample Date	Depth to Aquifer	pH	EC	Nitrate Nitrogen	Sulphate	Total Hardness
		m	pH units	µS/cm	mg/L	mg/L	mg CaCO3/L
Feb-22	22/02/2022	30.09	***5.90***	861		391	
Mar-22	7/03/2022	32.10	**6.10**	756		408	
Apr-22	4/04/2022	30.17	5.90	964		418	
May-22	26/05/2022	29.51	6.30	929		354	
Sep-22	7/09/2022	28.60	6.30	890		332	476
Nov-22	7/11/2022		6.30	923		340	499
Mar-23	7/03/2023	47.20	6.20	915	2.59	321	487
Apr-23	5/04/2023	26.10	6.30	1013	3.67	344	483
May-23	8/05/2023	22.90	6.10	918	0.12	434	433
Jun-23	8/06/2023	34.20	6.30	895	1.56	418	442
Sep-23	11/09/2023	28.50	5.90	1017	0.05	480	464
Oct-23	31/10/2023	30.80	5.80	1050	0.33	415	448
Nov-23	24/11/2023	28.22	5.80	1014	0.13	425	483

Table 7 – Monitoring Results BHTH12

BHTH12							
Period	Sample Date	Depth to Aquifer	pH	EC	Nitrate Nitrogen	Sulphate	Total Hardness
		m	pH units	µS/cm	mg/L	mg/L	mg CaCO3/L
Feb-22	22/02/2022	31.96	***6.00***	817		309	
Mar-22	7/03/2022	32.29	**6.10**	823		294	
Apr-22	4/04/2022	31.67	6.20	997		289	
May-22	26/05/2022	31.28	6.40	906		278	
Sep-22	7/09/2022	31.10	6.50	886		255	459
Nov-22	7/11/2022		6.30	912		339	507
Mar-23	7/03/2023	48.76	6.40	906	0.91	268	498
Apr-23	5/04/2023	28.22	6.30	1022	0.31	289	498
May-23	8/05/2023	23.13	6.20	900	0.13	466	486
Jun-23	8/06/2023	32.40	6.40	101	0.52	396	511
Sep-23	11/09/2023	29.30	6.10	1048	0.11	466	498
Oct-23	31/10/2023	28.91	5.60	1014	0.19	402	472
Nov-23	24/11/2023	27.10	6.00	1031	1.08	410	518

Historical Noise Results

Historical noise monitoring results for years 2011 and 2012 are shown below. Contribution from Invincible was inaudible for all monitoring undertaken for 2013 – 2023.

Table 8 – Quarterly Noise Monitoring Results 2011

2011 Quarterly Noise Monitoring Results					
Location	**Criterion (dB)**	**Q1 ($L_{Aeq\ 15\ min}$)**	**Q2 ($L_{Aeq\ 15\ min}$)**	**Q3 ($L_{Aeq\ 15\ min}$)**	**Q4 ($L_{Aeq\ 15\ min}$)**
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

Table 9 – Quarterly Noise Monitoring Results 2012

2012 Quarterly Noise Monitoring Results					
Location	**Criterion (dB)**	**Q1 ($L_{Aeq\ 15\ min}$)**	**Q2 ($L_{Aeq\ 15\ min}$)**	**Q3 ($L_{Aeq\ 15\ min}$)**	**Q4 ($L_{Aeq\ 15\ min}$)**
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 2016 Action Plan 2023 Update

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC1 **Low**	PA-07-0127, S2, C1	The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	The AEMRs stated that there were no reportable incidents of material harm to the environment during the audit period. A site inspection and review of documentation found no significant issues, however non compliances have been identified. In the Auditors' opinion, the intent of this condition to minimise harm to the environment has been established via various environmental management plans and the engagement of Sedgman in 2015 to manage implementation of these plans during the care and maintenance period.	Implement recommendations described below.	Castlereagh Coal	All non-compliances are addressed in this Action Plan and follow up actions have been implemented as required. **2017 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2018, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2018 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2019, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2019 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2020, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2020 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2020, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2021 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2021, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2022 – Annual Review Update** Continued implementation of the audit action plan undertaken during 2022, as they relate to project Approval (07_0127) as modified on 2 February 2018 Site remained in care and maintenance as new management plans were finalised and approved toward commencement of mining the Invincible Southern Extension in 2023.	Active
NC2 **Low**	PA-07-0127, S2, C2	The Proponent shall carry out the project generally in accordance with the: a) EA; b) statement of commitments; c) the modification application 07_0127 MOD 2 and accompanying documents entitled: • 'Proposed Modification to Project Approval 07_0127 for the Invincible • Colliery Open Cut Mine, May 2009'; and • 'Addendum to the Proposed Modification to Project Approval 07_0127 for the Invincible Colliery Open Cut Mine, July 2009' d) modification application 07_0127 – MOD 3 and the accompanying Environmental Assessment prepared by Hansen Bailey and dated June2010; and e) the conditions of this approval.	This scope of the audit incorporated a review of compliance against the Project Approval, Statement of Commitments, EPL and Mine leases only. Non-compliances with the conditions of the Project Approval (S2.2e) and Statement of Commitments (S2.2b) were identified during the audit as outlined in this compliance table.	Implementation of the recommendations in this audit will assist in ensuring the project is carried out in accordance with the Project Approval and Statement of Commitments.	Castlereagh Coal	All non-compliances are addressed in this Action Plan and follow up actions being implemented as required. **2017 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2018, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2018 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2019, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2019 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2020, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2020 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2020, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2021 – Annual Review Update** Continued implementation of the audit action plan to be undertaken during 2021, as they relate to project Approval (07_0127) as modified on 2 February 2018. **2022 – Annual Review Update** Continued implementation of the audit action plan undertaken during 2022, as they relate to project Approval (07_0127) as modified on 2 February 2018 Site remained in care and maintenance as new management plans were finalised and approved toward commencement of mining the Invincible Southern Extension in 2023.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC5 **Med**	PA 07_0127, S2, C14(a)	The Proponent shall ensure that all the plant and equipment used on site is: (a) maintained in a proper and efficient condition; and	The 2015 AEMR reports that most mobile plant and equipment has been removed from the site. Remaining equipment (such as excavators and dozers used for erosion control and rehabilitation maintenance and a mobile water pump) is periodically run, where possible, with pre-start inspections conducted at each instance. Sedgman advise that light vehicles are serviced off-site as required and no records are kept on site. Maintenance/pre-start inspection records for mobile equipment were not verified. It is noted that the mobile water pump is new and has not required servicing. Stationary plant and equipment that is currently used on site during the care and maintenance period, as observed during the site inspection, includes (but is not limited to): a 75,000L diesel AST and a wastewater collection system. This system comprises a bulk waste oil tank and liquid waste storage facility that is bunded and contained by a catch drain network that leads to an oil/water separator and a 6,000L waste oil collection tank. During the site inspection, the following observations were made by the Auditor: 1. The catch drain system contained (in sections) oily sediment and debris. 2. A break in the PVC pipes that leads from the catch drains to the oil/water separator and waste oil collection tank. Should any spills within the bunded area occur, this would leak onto the soil and vegetation on the embankment. 3. The 6000L waste oil collection tank is not bunded. The wastewater collection system is designed to capture any spills from the current diesel AST refuelling area, the bunded waste oil tank and the liquid waste storage area. As such it is required to be maintained in proper and efficient working condition during the care and maintenance period.	Undertake maintenance and cleaning of the wastewater catch drain system. Conduct a maintenance inspection and integrity test of the wastewater collection system including bunding, tanks and piping. 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. Install bunding around the waste oil collection tank (if it is to remain operational). Retain maintenance and servicing records for all plant and equipment used at the site.	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update.** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update.** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update.** The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update.** The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update.** The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual Review Update.** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC6 **Med**	PA 07_0127, S3, C12	Except as may be expressly provided for by an EPL, or in accordance with section 120 of the *Protection of the Environment Operations Act 1997*, (POEO Act) the Proponent shall not discharge any mine water from the site.	The EPL permits wet weather discharge from the overflow point located at the water storage dam below the washery and labelled as Discharge Point #2 on plan titled 'Invincible Open Cut Environmental Monitoring Sites' dated 29 June 2001. A copy of the plan was not available at the time of the audit and is required to verify the location as per this figure; however the description appears to match the discharge location used. It was reported during site interviews, that dirty water storage dams are utilised during heavy rainfall events, these are the Sump Dam (SDC3-7) and Crib Hut Dam (SD-C3-6, now SD4). All water captured in these two dams is either pumped or drains into the underground workings or is reused on site when required. This is approved in the Care and Maintenance Mining Operations Plan (2013) but is not expressly provided for within the EPL. Consultation with the Department of Primary Industries - Water also indicated that the site needs to consider the Aquifer Interference Policy for all surface water movement activities.	Review the current operations against the Aquifer Interference Policy. Apply to the EPA for a modification of the Environment Protection Licence to permit discharge via the underground workings.	Coalpac	Mine water is not discharged from the site except from the licenced discharge location at the Main Dam (LD002) and only when water quality is in accordance with EPL criteria. EPA has advised that discharge of groundwater from old underground workings (LD001) was previously approved under the EPL at a rate of 2ML/day but was removed in 2012 due to concerns with groundwater quality and volumes and the potential impacts on Cox's River and Long Swamp. At that time, the pump was removed from LD001 and no discharge currently occurs from this location. While water is pumped from Sediment Dam 2 to Sediment Dam 4, which drains to the old underground workings, there is no discharge from the underground workings. **2016 – Annual Review Update** No further action required. **2017 – Annual Review Update** No further action required. **2018 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed during the 2019 report period. **2019 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2020 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2021 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2022 – Annual Review Update.** An updated water management plan (WMP) was approved in November 2022 following extensive stakeholder and agency consultation. The WMP addresses requirements associated with water storage and licencing. The Invincible Environment Protection Licence was subsequently varied in consultation with the EPA in March 2023.	Active

NC7 **Med**	PA 07_0127, S3, C13(c)(ii)	Water Management Plan (WMP) This Plan must include an erosion and sediment control plan for all surface works in the mining area that is consistent with the requirements of Managing Urban Stormwater: Soils and Construction Manual (Landcom 2004, or its latest version);	Section 8 of the WMP (2009) provides an Erosion and Sediment Control Plan. Erosion was observed on site during the site inspection and has been noted by others during recent inspections of the rehabilitation areas (Kleinfelder, 2015), indicating that review and maintenance of controls is required.	Update the Erosion and Sediment Control Plan with reference to the latest guidelines for Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries (Blue Book).	Coalpac	Erosion and sediment control rectification works are currently being conducted by Sedgman Civil Engineers. Proposed timeframe for update of the ESCP: 31 January 2017. The Stage 1 erosion control design has been completed and a new ESCP will be provided by the end of June 2017. **2016 – Annual Review Update** A review of the proposed design, including determination of whether any interim works can be undertaken will be completed by June 2017. **2017 – Annual Review Update** Management Plans will be updated during 2018 to incorporate the Southern Extension Project Area and Project Approval conditions. **2018 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed during the 2019 report period. **2019 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2020 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2021 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2022 - Annual Review Update** An updated water management plan (WMP) was approved in November 2022 following extensive stakeholder and agency consultation. The WMP addresses requirements associated with erosion and sediment control plans.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC8 Low	PA 07_0127, S3, C13(c)(iv)	This Plan must include a groundwater monitoring program with: - baseline data of groundwater levels and quality in the region, including details of any privately-owned groundwater bores which could be affected by the development; - groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts of the development; and - a program to monitor: - groundwater inflows to the open cut mining operations; & - impacts of the development on the region's aquifers, groundwater bores and surrounding watercourses	Section 10 of the WMP (2009) references a Groundwater Monitoring Program. The plan includes baseline data, groundwater impact assessment criteria and trigger levels; however it lacks a detailed monitoring program to assess groundwater inflows to the open cut mining operations or impacts of the development on the regions water resources. The 2014 and 2015 AEMRs indicate that groundwater monitoring is undertaken from up and downgradient wells, however this monitoring is not detailed in the WMP.	Update the WMP to include a groundwater monitoring program that satisfies the requirements of the Project Approval.	Coalpac	6 rounds of groundwater monitoring have previously been conducted since 2011 and a 7th round was conducted in November 2015 by RCA Environmental. The groundwater monitoring has been undertaken to provide a baseline dataset to assess the impact of mining operations on groundwater resources. The groundwater water monitoring program and results are described in RCAs *Invincible Colliery Groundwater Monitoring Report November 2015*. The WMP will be updated to include the groundwater monitoring program as part of the project approval process for future mining operations as agreed with DPE. Update of the WMP will be undertaken as part of the proposed expansion project. **2016 – Annual Review Update** No further action proposed. **2017 – Annual Review Update** Management Plans will be updated during 2018 to incorporate the Southern Extension Project Area and Project Approval conditions. **2018 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed during the 2019 report period. **2019 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2021 – Annual Review Update** A revised water management plan for the site was submitted to the EPA and DPI Water during the 2018 report period and will be completed prior to the recommencement of operations. The EPA and DPI Water are yet to provide comments on the draft management plans. **2022 – Annual Review Update** An updated water management plan (WMP) was approved in November 2022 following extensive stakeholder and agency consultation. The WMP addresses requirements associated with groundwater monitoring.	Active

NC11 Low	PA 07_0127, S3, C32	Biodiversity Offsets Within 2 years of the date of this approval, the Proponent shall provide appropriate long term security for the biodiversity offset strategy (BOS), to the satisfaction of the Director-General. Note: The long-term security of the offset can be achieved through one, or a combination, of the following: Deed of Agreement with the Minister, rezoning the land under the Lithgow Local Environment Plan, caveats on the title under the *Conveyancing Act 1919*, etc.	Evidence of the provision of appropriate long-term security for the BOS was not provided by Sedgman or CC.	It is recommended that the leaseholder provide appropriate security for the BOS such as rezoning of Lot 112 DP877190, Lot 113 DP 877190 and Lot 1 DP180294 or the application of a protective covenant (such as a Section 88B Covenant) on title. Consult with the DPE.	Coalpac	Preparation of the BOS and establishment of a security pre-dates CC's involvement in the project and we are unable to confirm whether a security has been provided. Provision of a long-term security for the BOS will be addressed as part of the proposed expansion project. **2016 – Annual Review Update** No further works proposed as provision of a long-term security for the BOS will be addressed as part of the proposed expansion project. **2017 – Annual Review Update** The timing requirements of this condition have been revised in the current project approval (i.e. Z" Within 2 years of the recommencement of mining operations, unless the Secretary agrees otherwise, "These works will be progressed during 2018 – 2019. **2018 – Annual Review Update** The timing requirements of this condition have been revised in the current project approval (i.e. " Within 2 years of the recommencement of mining operations, unless the Secretary agrees otherwise…") These works will be progressed during the 2019 report period. **2019 – Annual Review Update** The timing requirements of this condition have been revised in the current project approval (i.e. " Within 2 years of the recommencement of mining operations, unless the Secretary agrees otherwise…") These works will be completed prior to the recommencement of operations. **2020 – Annual Review Update** The timing requirements of this condition have been revised in the current project approval (i.e. " Within 2 years of the recommencement of mining operations, unless the Secretary agrees otherwise…") These works will be completed prior to the recommencement of operations. **2021 – Annual Review Update** The timing requirements of this condition have been revised in the current project approval (i.e. " Within 2 years of the recommencement of mining operations, unless the Secretary agrees otherwise…") These works will be completed prior to the recommencement of operations. **2022 – Annual Review Update** The Invincible Colliery Biodiversity Management Plan (BMP) is undergoing further consultation with BCD prior to finalising. The BMP addresses the revised Southern Extension Biodiversity Offset Strategy and related security mechanism.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC12 Low		The Proponent shall progressively rehabilitate the site in a manner that is generally consistent with the final landform set out in the EA (shown conceptually in Figure 5 of Appendix 1) to the satisfaction of the Director-General and I&I NSW.	Progressive rehabilitation of the site has generally been consistent with the final landform set out in the EA. Although the maximum slope has been exceeded in some areas of rehab, particularly the 2012 seeded areas. This has resulted in top soil loss and erosion, in parts, and the failed establishment of native vegetation, seeded as part of rehabilitation measures (aerial seeding in particular) in the north-western portion of the site. Although there has been no new rehabilitation areas established by CC and rehabilitation performance is assessed annually, re-evaluation of the establishment of failed rehabilitation areas, particularly on steep slopes is required.	Whilst no new rehabilitation has been established during CC operations and rehabilitation performance is assessed annually, it is recommended that CC review Rehabilitation progress and performance, including the establishment of failed rehabilitation areas on steep slopes. Any recommendations from the annual review process should be reflected in future rehabilitation plans.	Castlereagh Coal	Annual biodiversity monitoring was conducted within rehabilitation areas in December 2015 and December 2016 and recommendations are being implemented by CC. Areas of failed rehabilitation and erosion in rehabilitation areas are currently being monitored and will be reseeded as required as part of the ongoing care and maintenance activities. **2016 – Annual Review Update** Annual biodiversity monitoring undertaken during 2016. Erosion and sediment control on site to be reviewed in accordance with item NC7. **2017 – Annual Review Update** Annual biodiversity monitoring undertaken during 2017 and reported in the Annual Review. Erosion and sediment control on site to be reviewed in accordance with item NC7. CC notes that a Rehabilitation Management Plan required under Schedule 3 Condition 52 requires a detailed rehabilitation schedule and performance assessment aspects. The Rehabilitation Management Plan will be submitted during 2018. **2018 – Annual Review Update** A Rehabilitation Strategy, revised Biodiversity Management Plan, and a revised Rehabilitation Management Plan were submitted to regulatory authorities in 2018 for comment. These revised plans will be submitted to DPE during 2019. Annual biodiversity and rehabilitation monitoring was also undertaken during 2018. **2019 – Annual Review Update** A Rehabilitation Strategy, revised Biodiversity Management Plan, and a revised Rehabilitation Management Plan were submitted to regulatory authorities in 2018 for comment. These revised plans will be submitted prior to the recommencement of operations. Annual biodiversity and rehabilitation monitoring was also undertaken during 2019 and is discussed in the Annual Review. **2020 – Annual Review Update** A Rehabilitation Strategy, revised Biodiversity Management Plan, and a revised Rehabilitation Management Plan were submitted to regulatory authorities in 2018 for comment. These revised plans will be submitted prior to the recommencement of operations. Annual biodiversity and rehabilitation monitoring was also undertaken during 2020 and is discussed in the Annual Review. **2021 – Annual Review Update** A Rehabilitation Strategy, revised Biodiversity Management Plan, and a revised Rehabilitation Management Plan were submitted to regulatory authorities in 2018 for comment. These revised plans will be submitted prior to the recommencement of operations. Annual biodiversity and rehabilitation monitoring was also undertaken during 2021 and is discussed in the Annual Review. **2022 – Annual Review Update** The Invincible rehabilitation strategy was approved in December 2022 following extensive stakeholder and agency consultation. The Invincible Colliery Biodiversity Management Plan (BMP) is undergoing further consultation with BCD prior to finalising. Annual Biodiversity and Rehabilitation monitoring and an Erosion and Sediment Control (Physical Landform) Assessment was undertaken at the end of the 2022 reporting period and is discussed in the Annual Review.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC13 Med	PA 07_0127, S3, C34(a)	The Proponent shall prepare and implement a detailed Landscape Management Plan for the site to the satisfaction of the Director-General and I&I NSW. This plan must: (a) be prepared in consultation with Lithgow City Council (LCC) and NOW by suitably qualified expert/s whose appointment/s have been approved by the Director-General;	A Landscape Management Plan (LMP), dated June 2009 was reviewed. Section 1.2 of the plan indicates that it was prepared in consultation with LCC and NOW as required by this condition. Records were not available to verify this condition has been met. The plan states that it was developed in consultation variously between relevant mine personnel, Global Soil Systems (GSS) and LCC and DWE. Records showing the approved appointment of GSS by the DPE were not available to verify this condition. Site inspection confirmed that the LMP was not implemented according with all criteria set out in the plan. In particular with regard to planting in the BOS, successful establishment of progressive rehabilitation areas, and the annual monitoring of each new area of rehabilitation.	Ensure the LCC and the DPI-Water is consulted during any future revisions to the WMP, and evidence of consultation is retained. Implement the LMP in terms of achieving performance criteria for rehabilitation, and following recommendations from Annual Flora, Fauna and Rehabilitation Monitoring.	Castlereagh Coal	The LMP was prepared and approved by the Director-General during Coalpac ownership of the mine and pre-dates CC's involvement in the project. Any future revisions of the management plans will be undertaken in consultation with relevant regulatory agencies (as required). Update of management plans will be undertaken as part of the proposed expansion project. The annual biodiversity monitoring conducted by Kleinfelder includes assessment against the performance criteria contained in the development stage section of the LMP Assessment Checklist (Appendix 2) including vegetation establishment and sustainability, fauna habitat and recolonization, landform stability and soil suitability. However, they do not provide a completed Assessment Checklist as contained in the LMP Appendix 2. Further annual biodiversity monitoring was conducted by Umwelt in December 2016 and included assessment against the relevant sections of the LMP Checklist. **2016 – Annual Review Update** Annual biodiversity monitoring conducted during 2016 with results included within the 2016 Annual Review (refer to **Section 8.3**). Any updates made to management plans in the future will be undertaken in accordance with relevant stakeholders as defined by statutory approvals. **2017 – Annual Review Update** This condition (i.e. S3, C34(a)) has been removed from the Project Approval. CC notes that a Rehabilitation Management Plan required under Schedule 3 Condition 52 must be prepared in consultation with DPI Water, OEH, Council and CCC. The Rehabilitation Management Plan will be submitted during 2018. **2018 – Annual Review Update** A revised Rehabilitation Management Plan was submitted to agencies for comment during 2018 and will be finalised during the 2019 Report Period. **2019 – Annual Review Update** A revised Rehabilitation Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. The status of all management plans is detailed in the Annual Review. **2020 – Annual Review Update** A revised Rehabilitation Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. The status of all management plans is detailed in the Annual Review. **2021 – Annual Review Update** A revised Rehabilitation Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. The status of all management plans is detailed in the Annual Review. **2022 – Annual Review Update** An updated water management plan (WMP) was approved in November 2022 following extensive stakeholder and agency consultation. The WMP addresses requirements associated with groundwater monitoring. The Invincible rehabilitation strategy was approved in December 2022 following extensive stakeholder and agency consultation. The Invincible Colliery Biodiversity Management Plan (BMP) is undergoing further consultation with BCD prior to finalising. The BMP replaces an independent Landscape Management Plan.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC16 Low	PA 07_0127, S3, C37	Biodiversity Offset Strategy (BOS) Implementation Bond Within 3 months of the approval of the LMP, the Proponent shall lodge a BOS implementation bond with either the I&I NSW or the DPE to ensure that the BOS is implemented in accordance with the performance and completion criteria of the LMP. The sum of the bond shall reflect the full cost of implementing the BOS and be determined by employing a suitably qualified rehabilitation expert or quantity surveyor. Notes: • If the BOS is implemented to the satisfaction of the Director-General and I&I NSW, then the bond holder will release the implementation bond. • If the BOS is not implemented to the satisfaction of the Director-General and I&I NSW, then all or part of the bond may be used to ensure the satisfactory completion of the relevant works. • The bond may be incorporated into rehabilitation bonding arrangements under the *Mining Act 1992*.	Evidence of the BOS Implementation Bond was not provided by Sedgman or CC	Evidence of the BOS Implementation Bond was not available. Consult with DPE and DRE and provide evidence of BOS Implementation Bond, or evidence of DG sign-off on the implementation of the BOS.	Coalpac	This security was required to be paid in 2009 during Coalpac ownership; however we are unable to find records of this payment. We have been advised that neither DPE nor DRE have any records of this implementation bond being paid by Coalpac. It is expected that this issue will be resolved as part of the assessment being undertaken for the Invincible Southern Expansion Project. **2016 – Annual Review Update** No further action proposed until a determination is made in regards to the IEP. **2017 – Annual Review Update** This condition (i.e. S3, C37) has been removed from the Project Approval. CC notes that a Conservation Bond must be lodged with the Department within 6 months of the approval of the Biodiversity Management Plan required under Schedule 3 Condition 35 of the Project Approval (as modified). The Biodiversity Management Plan will be submitted during 2018 – 2019 in accordance with this condition. **2018 – Annual Review Update** A revised Biodiversity Management Plan was submitted to agencies for comment during 2018 and will be finalised during the 2019 report period. Following the approval of the management plan, a Conservation Bond will be established in accordance with the requirements of the Project Approval. **2019 – Annual Review Update** A revised Biodiversity Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. Following the approval of the management plan, a Conservation Bond will be established in accordance with the requirements of the Project Approval. **2020 – Annual Review Update** A revised Biodiversity Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. Following the approval of the management plan, a Conservation Bond will be established in accordance with the requirements of the Project Approval. **2021 – Annual Review Update** A revised Biodiversity Management Plan was submitted to agencies for comment during 2018 and will be finalised prior to the recommencement of operations. Following the approval of the management plan, a Conservation Bond will be established in accordance with the requirements of the Project Approval. **2022 – Annual Review Update** The Invincible Colliery Biodiversity Management Plan (BMP) is undergoing further consultation with BCD prior to finalising. The BMP addresses the revised Southern Extension Biodiversity Offset Strategy and related security mechanism.	Active

NC17 Low	PA07_012 7,S3, C40 (a)	Aboriginal Heritage Management Plan (AHMP) The Proponent shall prepare and implement an AHMP for the project to the satisfaction of the Director-General. The Plan must: (a) be prepared in consultation with DECCW and the Aboriginal community;	Verifiable evidence of consultation with DECCW (now NSW OEH) or the Aboriginal Community was not reviewed as the current mine operators' access to these records is limited. The AHMP states that consultation with the Bathurst Local Aboriginal Land Council was made by phone and that they agreed with the conditions of the Project Approval and those detailed within the plan, in terms of its provisions for site material should any such material be found during the course of the project. The AHMP (June 2009) requires 'Invincible OS1' to be fenced and sign posted (Warning and Notice signs). During the site inspection, the Auditor observed: - a fence around the heritage site "Invincible OS1"; however no signage was visible. - maps showing the location of the heritage site on the noticeboard at the main office. It was reported that signage had been installed, but was not visible to the auditor during the audit.	Ensure the EPA and the Aboriginal Community is consulted during any future revisions to the AHMP, and evidence of consultation is retained. Re-erect the signs at the 'Invincible OS1' Aboriginal heritage site as outlined in the AHMP (i.e. Warning and Notice signs). Update plans in all management documents to include the location of the cultural heritage site "Invincible OS1".	Castlereagh Coal	The AHMP prepared by Coalpac states that consultation was made with the DECC and the BLALC. Contact details for BLALC are provided in Appendix 1 and correspondence from BLALC is provided in Appendix 2. Any future review of the AHMP by CC would be conducted in consultation with relevant regulatory authorities and Aboriginal parties. There are eight signs in total at the OS1 site (many of which the audit team would not have seen as they are not visible from a distance and the audit team did not go right down to the site). However many of the signs had fallen off the fence and were therefore not visible from a distance. These signs have now been reattached and all signs are visible. No further action required. **2018– Annual Review Update** An Aboriginal Cultural Heritage Management Plan (ACHMP) was submitted to Aboriginal Stakeholders during 2018 and will be updated to address stakeholder comment and be submitted to OEH for comment in 2019. **2019 – Annual Review Update** An Aboriginal Cultural Heritage Management Plan (ACHMP) was submitted to Aboriginal Stakeholders during 2018 and will be updated to address stakeholder comment and be submitted to OEH for comment and finalised prior to the recommencement of operations. **2020 – Annual Review Update** An Aboriginal Cultural Heritage Management Plan (ACHMP) was submitted to Aboriginal Stakeholders during 2018 and will be updated to address stakeholder comment and be submitted to OEH for comment and finalised prior to the recommencement of operations. **2021 – Annual Review Update** An Aboriginal Cultural Heritage Management Plan (ACHMP) was submitted to Aboriginal Stakeholders during 2018 and will be updated to address stakeholder comment and be submitted to OEH for comment and finalised prior to the recommencement of operations. **2022 – Annual Review Update** An updated Aboriginal Heritage Management Plan (ACHMP) (WMP) was approved in January 2023 following extensive stakeholder and agency consultation. The ACHMP addresses requirements outstanding actions.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC21 Admin	PA 07_0127, S5, C1(e)	Environmental Management Strategy (EMS) This strategy must (e) include environmental monitoring program for the project that includes all the monitoring requirements of this approval;	Section 12 of the EMS states that Environmental Monitoring Programs have been prepared pursuant to Schedule 3, Condition 6, 10, 13 and 30 of PA 07_0127. This relates to noise, air, water and blast monitoring only and does not include the requirement to monitor waste generation (Schedule 3, Condition 43), rehabilitation (Schedule 3, Condition 35), greenhouse and energy efficiency (Schedule 3, Condition 42), coal transport etc. Section 12 states that the included monitoring plans have been consolidated into a single document as described within Appendix 2 - However, the plans included in Appendix 2 of the EMS could not be verified as Appendix 2 is not attached to the EMS (on the CC website). An Environmental Monitoring Program (Coalpac, 2009) is provided on the CC website. This plan states that it has been developed as required by Schedule 5, Condition 1 (e), however, the date of this report (December 2009) does not indicate that it is the Appendix 2 of the EMS (November 2009).	Inclusion of the current Environmental Monitoring Program within the EMS is required to meet the conditions of the Project Approval. A full copy of the EMS should be uploaded to the website and the EMS should be updated to reference the EMP (ensuring also that the EMP is reviewed for relevancy).	Castlereagh Coal	A link to the Coalpac website is provided on the CC website for access to 'historic documents'. Appendix 2 (Environmental Monitoring Program) was not attached to the pdf of the EMS on the Coalpac website but the Environmental Monitoring Program was included separately on the website. This Environmental Monitoring Program includes programs for waste monitoring (Section 9), rehabilitation (Section 8), greenhouse gases (Section 10), and coal transport (Section 11). Appendix 2 was added to the pdf of the EMS and the complete EMS document has now been uploaded to the CC website **2016 – Annual Review Update** No further action required. **2018 – Annual Review Update** A revised Environmental Management Strategy for Invincible Colliery will be submitted to DPE during 2019. **2019 – Annual Review Update** A revised Environmental Management Strategy for Invincible Colliery will be submitted to DPI prior to the recommencement of operations. **2020 – Annual Review Update** A revised Environmental Management Strategy for Invincible Colliery will be submitted to DPI prior to the recommencement of operations. **2021 – Annual Review Update** A revised Environmental Management Strategy for Invincible Colliery will be submitted to DPI prior to the recommencement of operations. **2022 – Annual review Update** An updated Environmental Monitoring Strategy (EMS) was approved in November 2022 following extensive stakeholder and agency consultation meeting the conditions of project approval.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC27 Med	SOC, C3.4	Store waste oils and grease at the maintenance workshop for collection by a licensed waste recycling contractor (Bi-monthly)	Waste oils and grease are stored within drums in the maintenance workshop. The 2015 AEMR states that waste oils and grease from workshop areas is collected in the waste oil storage tank. The above ground waste oil tank is located in bunding near the mechanical servicing area. A number of other chemical storage containers are located within this bunded area. A catch drain is adjacent to the waste oil tank to capture any material in the unlikely event that waste oil or other chemicals are spilled. This drain leads to an oil/water separator and a 6,000L waste oil collection tank. The 2015 AEMR reports that minor servicing may be undertaken on site using this infrastructure however maintenance records or liquid waste disposal records were not sighted. During the site inspection, a number of observations were recorded as follows: 1. The catch drain system was (in sections) filled with oily sediment and debris and as the area is still in use for chemical storage, it requires cleaning and maintenance. 2. A break in the PVC pipes that leads from the catch drains to the oil/water separator and waste oil tank was observed. Should any spills within the bunded area occur, this would leak onto the soil and vegetation on the embankment. The piping needs repair and the integrity of the system requires testing. 3. The waste oil collection tank is not bunded. 4. Liquid waste/product containers stored within the workshop are not bunded.	Ensure all liquid waste containers are stored within secondary containment / in bunding. • Undertake maintenance and cleaning of the wastewater catch drain system. • Retain all records of maintenance of equipment for a period of 7 years. • Retain all records of waste disposal for a period of 7 years. • Install bunding around the waste oil collection tank (if it is to remain operational). • Repair the PVC pipe in the waste oil collection system and investigate any residual contamination. • Conduct a maintenance inspection and integrity test of the waste oil collection system tanks and piping.	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update** The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update** The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update** The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual Review Update** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC28 Med	SOC, C3.6	Store hydrocarbon contaminated water in the oil/water separator for regular removal from site by a licensed contractor (as required).	See Item 3.3 and 3.4 above. Disposal receipts for the regular removal of liquid wastes is not recorded and the infrastructure to store the liquid waste is in need of repair.	See recommendations for 3.3 and 3.4 above.	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update** The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update** The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update** The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual Review Update** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC33 Med	SOC, C8.1	Construct a fence around the site “Invincible OS1” and identify this as a culturally sensitive area at the site and on all mine plans (prior to commencement of the project).	The AHMP (June 2009) requires 'Invincible OS1' to be fenced and sign posted (Warning and Notice signs). During the site inspection, the Auditor observed: - a fence around the heritage site "Invincible OS1"; however no signage was visible. - maps showing the location of the heritage site on the noticeboard at the main office. It was reported that signage had been installed, but was not visible to the auditor during the audit. A review of monitoring and management plans indicated that the location of the heritage site is not identified on all mine plans. For example, the 2013 MOP does not include the site on plans 1, 2A, 3, 4A. The AHMP does not include the site's location on the overall mine site layout on Figure 2.	Update plans in all management documents to include the location of the cultural heritage site "Invincible OS1". Re-erect signs on the fencing at the 'Invincible OS1' Aboriginal heritage site as outlined in the Aboriginal Heritage Management Plan (i.e. Warning and Notice signs).	Castlereagh Coal	There are eight signs in total around the fencing of OS1 (most of which the audit team would not have seen as they are not visible from a distance and the audit team did not go right down to the site). However many of these signs had fallen off the fence and were not visible. These signs have now been reattached. No further action required **2018 – Annual Review Update** No further action required. Noted that a revised ACHMP will be prepared during the 2019 report period. **2019 – Annual Review Update** No further action required. Noted that a revised ACHMP will be prepared prior to the recommencement of operations. **2020 – Annual Review Update** No further action required. Noted that a revised ACHMP will be prepared prior to the recommencement of operations. **2021 – Annual Review Update** No further action required. Noted that a revised ACHMP will be prepared prior to the recommencement of operations. **2022 – Annual Review Update** An updated Aboriginal Heritage Management Plan (ACHMP) (WMP) was approved in January 2023 following extensive stakeholder and agency consultation. The ACHMP addresses requirements outstanding actions.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC43 Med	SOC, C9.17	Direct all water from wash-down areas and workshops to oil/water separators and containment systems (ongoing).	Wash down areas and workshops drain to a catch drain system that leads to an oil/water separator and a 6000L waste oil collection tank. During the site inspection, maintenance and integrity issues were identified as outlined in condition 9.18 below. These issues affect the ability of the system to contain wastewater and are required to be addressed.	Refer to actions in NC 44 below.	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual Review Update** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC44 Med	SOC, C9.18	Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and have a capacity to contain a minimum 110% of the largest storage tank capacity (ongoing).	The 2015 AEMR reports two above ground fuel storage tanks on site. One self-bunded 75,000L diesel tank is currently used to store a maximum of 35,000L fuel for pumps and light vehicles. A second tank (95,000L) was drained down and secured and is currently not in use. Waste oil is collected in the workshop area in portable drums for offsite disposal. Waste oil is also transferred to a bulk waste oil tank located in a bunded area near the vehicle servicing area. A catch drain adjacent to the waste oil tank is designed to capture any spills in this area. This drain leads to an oil/water separator and a 6,000L waste oil collection tank. During the site inspection, a number of observations were recorded as follows: 1. The catch drain system was (in sections) filled with oily sediment and debris and as the area is still in use for chemical storage, it requires cleaning and maintenance. 2. A break in the PVC pipes that leads from the catch drains to the oil/water separator and waste oil tank was observed. Should any spills within the bunded area occur, this would leak onto the soil and vegetation on the embankment. The piping needs repair and the integrity of the system requires testing. 3. The 6000L waste oil collection tank is not bunded. 4. Liquid waste containers stored within the workshop are not bunded.	*Ensure all liquid waste containers are stored within secondary containment / in bunding. *Undertake maintenance and cleaning of the wastewater catch drain system. *Retain all records of maintenance of equipment for a period of 7 years. *Retain all records of waste disposal for a period of 7 years. *Install bunding around the waste oil collection tank (if it is to remain operational). *Repair the breakage in the pipe 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. * Conduct a maintenance inspection and integrity test of the waste oil collection system tanks and piping.	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update** No further action required. The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual review Update** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC50 High	EPL, A2.1	Premises or plant to which the licence applies. The licence applies to the following premises: THE INVINCIBLE COLLIERY, CASTLEREAGH HIGHWAY, CULLEN BULLEN, NSW 2790 LOT 1 DP 180294, LOT 113 DP 877190 PART BEN BULLEN STATE FOREST. INVINCIBLE COLIERY HOLDING	Project Approval 07_0127 is for: Part Ben Bullen State Forest, Lot 1/DP 180294, Lot 113/DP 877190 and Lot 112/DP 877190. The EPL does not cover Lot 112/DP 877190, an area of land partially within Ben Bullen State Forest and partially outside the Forest. Scheduled works have been undertaken across Lot 112/DP 877190 and the area is also established as a Biodiversity Offset Area. As the areas covered by the Project Approval do not align with the areas covered by the EPL, this is assessed as a non-compliance. A map showing the extent of the land covered by the EPL, in particular, the 'Part Ben Bullen State Forest, Invincible Colliery Holding' was not sighted and is not held by the EPA. Therefore it was difficult to determine if this area of the Project approval area called 'Part Ben Bullen State Forest ', on which coal works have been undertaken, aligns with the EPL.	Review premises details specified in condition A2.1 of the EPL to ensure that it is consistent with the area covered by the Project Approval. Vary the EPL if required.	Castlereagh Coal – the Auditor notes this was carried over from the EPL transferred from Coalpac to CC	EPA has advised that omission of Lot 112 DP877190 from the EPL is likely an oversight at the time of granting the licence. Castlereagh Coal will liaise with EPA to include this lot on the premises description on the licence. It is expected that this issue will be resolved on issue of the new approval and licence for the Invincible Southern Expansion Project. **2016 – Annual Review Update** No further action proposed. **2017 – Annual Review Update** No further action required. **2018 – Annual Review Update** No further action undertaken during 2018. A review of the Invincible EPL is to be undertaken during the 2019 report period. **2019 – Annual Review Update** A review of the Invincible EPL is to be undertaken prior to the recommencement of operations with a revised boundary to be submitted to the EPA at that time. **2020 – Annual Review Update** A review of the Invincible EPL is to be undertaken prior to the recommencement of operations with a revised boundary to be submitted to the EPA at that time. **2021 – Annual Review Update** A review of the Invincible EPL is to be undertaken prior to the recommencement of operations with a revised boundary to be submitted to the EPA at that time. **2022 – Annual review Update** The Invincible Environment Protection Licence was subsequently varied in consultation with the EPA in March 2023.	Active

NC55 Med	EPL, O2.1(a)	Maintenance of plant and equipment All plant and equipment installed at the premises or used in connection with the licensed activity: a) must be maintained in a proper and efficient condition; and	The 2015 AEMR reports that most mobile plant and equipment has been removed from the site. Remaining equipment (such as excavators and dozers used for erosion control and rehabilitation maintenance and a mobile water pump) is periodically run, where possible, with pre-start inspections conducted at each instance. Sedgman advise that light vehicles are serviced off-site as required and no records are kept on site. Maintenance/pre-start inspection records for mobile equipment were not verified. it is noted that the mobile water pump is new and has not required servicing. Stationary plant and equipment that is currently used on site during the care and maintenance period, as observed during the site inspection, includes (but is not limited to): a 75,000L diesel AST and a wastewater collection system. This system comprises a bulk waste oil tank and liquid waste storage facility that is bunded and contained by a catch drain network that leads to an oil/water separator and a 6,000L waste oil collection tank. An underground fuel storage tank is also reported to be located on the site. The fuel tank has not been used during the audit period and has not been decommissioned. Maintenance/servicing/integrity inspection records for this infrastructure were not sighted. During the site inspection, a number of observations were recorded as follows: 1. The catch drain system contained (in sections) oily sediment and debris.	Undertake maintenance and cleaning of the wastewater catch drain system. Conduct a maintenance inspection and integrity test of the wastewater collection system including bunding, tanks and piping. 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. Install bunding around the waste oil collection tank (if it is to remain operational). Ensure all plant and equipment required during care and maintenance is maintained in a proper and efficient manner as per a maintenance schedule or manufacturer's instructions. Retain maintenance and servicing records for all plant and equipment used at the site. Investigate the status of UST (which has not been used for 3 years). Undertake integrity testing and report results in the AEMRs. If no longer required, decommission the UST in accordance with WorkSafe NSW and NSW EPA requirements. If	Castlereagh Coal	The following items are included in the current inspection/ maintenance program. However, there is currently no formal recording of actions for repair/maintenance: • Inspection and maintenance of the catch drain system. • Inspection and maintenance of the wastewater collection system. • Plant and equipment maintenance and servicing. A new Inspection Checklist has been prepared to allow recording of repairs/maintenance and corrective actions required and this checklist is currently being used during routine inspections conducted by the Mining Engineering Manager. The waste oil collection system is currently not in use. However, repairs to the catch drain pipework will be undertaken as required. The wastewater collection system is now assessed during routine inspections. There is no evidence of leakage/spillage or contamination in this area and the system will continue to be monitored on a regular basis. The waste oil collection system is currently not in use. If this system is proposed to be used in future, bunding will be installed prior to use. The UST tank is empty and is not currently used. However, it may be used again once operations recommence so will not be decommissioned. The tank and associated pipework will be tested prior to recommissioning. **2016 – Annual Review Update** No further action required as waste oil system is not utilised. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. **2017 – Annual Review Update** The waste oil system was not utilised during the 2017 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2018 – Annual Review Update** The waste oil system was not utilised during the 2018 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the	Active

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
			2. A break in the PVC pipes that leads from catch drains to oil/water separator and waste oil collection tank. Should any spills within bunded area occur, this would leak onto the soil and vegetation on the embankment. 3. The 6000L waste oil collection tank is not bunded. The wastewater collection system is designed to capture any spills from current diesel AST refuelling area, bunded waste oil tank and liquid waste storage area. The 2015 AEMR reports that minor servicing may be undertaken on site using this infrastructure. As such it is required to be maintained in proper and efficient working condition during the care and maintenance period. The UST should be decommissioned in accordance with WorkSafe NSW and NSW EPA requirements.	the tank is proposed to be used in the future, it is recommended that CC arrange for the tank and associated piping be tested prior to recommissioning.		system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2019 – Annual Review Update** The waste oil system was not utilised during the 2019 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2020 – Annual Review Update** The waste oil system was not utilised during the 2020 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2021 – Annual Review Update** The waste oil system was not utilised during the 2021 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining. **2022 – Annual review Update** The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.	
NC59 Low	EPL, M2.2	Requirement to monitor concentration of pollutants discharged – Air Monitoring Requirements	Dust and HVAS monitoring data was reviewed from May 2013 to December 2015. PM10 - PM10 was monitored weekly and is reported as ug/m3. The ALS 2014 monthly dust monitoring reports specified that the HVAS monitoring was carried out in conformance with AS/NZS 3850.9.6:2003. The Castlereagh Coal monthly monitoring reports provide a summary of results only and do not specify sampling methodology (not verified). Deposited Matter - Dust gauges are monitored monthly and reported as g/m2/month. Weekly estimations of particulate matter are made as outlined below. The ALS 2014 monthly dust monitoring reports specified that the dust monitoring was carried out in conformance with AS/NZS 3580.10.1:2003. The CC monthly monitoring reports provide a summary of results only and do not specify sampling methodology (not verified). Particulate Matter (TSP) - The EPL requires monitoring of particulate matter at IDD1 (EPA point 3) weekly in accordance with AS/NZS 3580:2003 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - TSP matter - High volume sampler gravimetric method. The Project Approval specifies the impact assessment criteria for (TSP) monitoring. Review of the AQMP (2009) indicates that 'a determination was made to estimate TSP from PM10 data' that is collected using the high volume air sampler (HVAS) at this location.	The EPL specifies that particulate matter (TSP) is sampled using a high volume air sampler. In practice, at IDD1 (EPA point 3), TSP is estimated from PM10 data that is collected using a high volume air sampler. This revised sampling methodology is outlined in the Air Quality Management Plan, however is in contravention to the current EPL conditions. Consult with the EPA and DPE regarding the appropriateness of the sampling method used for measurement of TSP at IDD1 (EPA point 3). Retain copies of correspondence. If the change in sampling method for TSP is accepted by the relevant agencies, document the methodology for estimation of TSP from PM10 data and ensure this is recorded within the monthly air quality monitoring reports. Monthly monitoring reports to specify sampling methods to demonstrate compliance with EPL sampling method requirements.	Castlereagh Coal – the Auditor notes that the method of TSP sampling was also undertaken by Coalpac	The methodology for calculating TSP based on historic methodology is provided in the monthly monitoring reports provided by RCA to CC. This method was likely agreed between regulatory agencies and Coalpac prior to Castlereagh Coals involvement with the project. CC has sought clarification from the EPA and DPE whether this methodology is still acceptable. DPE has advised that monitoring is currently in accordance with the project approval, as Castlereagh Coal is monitoring air quality using a high volume air sampler and dust deposition gauges. We sent a request to EPA for approval of the calculation of TSP from PM_{10} data on 1st December 2016 but have not received a reply to date. A follow up email was sent to EPA on 13th January 2017. **2016 – Annual Review Update** Consultation will be undertaken with DP&E and EPA during 2017 to resolve the calculation methodology. **2017 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP will address this issue. The AQMP will be submitted during 2018. **2018 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE during the 2019 report period. **2019 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2020 – Annual Review Update**	Active

			Correspondence from the EPA accepting this change in methodology has not been sighted and given that it remains a condition of the EPL, this variation in sampling methodology is considered a non-compliance. Monitoring reports for August 2013 and September 2013 were not available and therefore, the Auditor could not verify compliance for these dates with respect to this condition.			The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2021 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2022 – Annual Review Update** An Air Quality Management Plan (AQMP) was approved in November 2022 following extensive stakeholder and agency consultation. A standalone TSP unit has been installed at Invincible Colliery.	

ID	Criteria	Requirement	Audit Finding	Audit Recommendation	Responsibility (assigned by auditor)	Follow up Actions and Current Status	Status
NC60 Low	EPL, M3.1	Testing methods - concentration limits Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with: a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place. Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".	Refer to M2.2. A full assessment of the requirements under the *Protection of the Environment Operations (Clean Air) Regulation 2010* has not been undertaken.	Refer to recommendations in NC59.	Castlereagh Coal	The methodology for calculating TSP based on historic methodology is provided in the monthly monitoring reports provided by RCA to CC. This method was likely agreed between regulatory agencies and Coalpac prior to Castlereagh Coals involvement with the project. CC has sought clarification from the EPA and DPE whether this methodology is still acceptable. DPE has advised that monitoring is currently in accordance with the project approval, as CC is monitoring air quality using a high volume air sampler and dust deposition gauges. We sent a request to EPA for approval of the calculation of TSP from PM10 data on 1st December 2016 but have not received a reply to date. A follow up email was sent to EPA on 13th January 2017. **2016 – Annual Review Update** Consultation will be undertaken with DP&E and EPA during 2017 to resolve the calculation methodology. **2017 – Annual Review Update** The Project Approval (as modified) requires the preparation of an AQMP in consultation with the EPA (Schedule 3 Condition 19). The AQMP will address this issue. The AQMP will be submitted during 2018. **2018 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE during the 2019 report period. **2019 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2020 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2021 – Annual Review Update** The Project Approval (as modified) requires the preparation of an Air Quality Management Plan (AQMP) in consultation with the EPA (Schedule 3 Condition 19). The AQMP has been developed and submitted to the EPA for comment. The revised plan will be submitted to DPE prior to the recommencement of operations. **2022 – Annual Review Update** An Air Quality Management Plan (AQMP) was approved in November 2022 following extensive stakeholder and agency consultation. A standalone TSP unit has been installed at Invincible Colliery.	Active

Invincible Colliery IEA Action Plan: Improvement Opportunities

ID	Criteria	Audit Recommendation	Proposed Action	Status as at 31 December 2022
IO4	PA 07_0127, S3, C11	Engage a qualified technician to undertake an operation, maintenance and calibration check of the meteorological station and gain written confirmation that it complies with the requirements of the Approved Methods for Sampling of Air Pollutants in New South Wales guideline (in line with PA 07_0127, Schedule 3, Condition 11).	Weather stations are calibrated regularly during download of meteorological data by RCA. Weather stations services are conducted regularly by Ecotech qualified technicians. Full calibration of the stations in accordance with the Australian Standard will be undertaken prior to recommencement of mining operations.	Weather station calibration undertaken during reporting period. Completed.
IO7	PA 07_0127, S5, C1(a)	Consult with the DPE to verify whether the Environmental Management Strategy (Coalpac, November 2009) has been approved by the DPE as required by PA 07_0127 Schedule 5, Condition 1.	This document was prepared by Coalpac in 2009 and has been implemented on site. We have no evidence of approval by DPE as this pre-date Castlereagh Coal's involvement in the project. However, we will request confirmation of this from DPE.	EMS Approved.
IO10	SOC, C5.3	Ensure all equipment used on site is regularly serviced and all service records are kept on file. Conduct periodic checks of the sound power levels of equipment used on site during noise generating maintenance works to compare against the levels used in the modelling and confirm compliance with noise criteria (as required by SOC Condition 5.3).	Servicing is conducted as described in **NC55.** There is plant and equipment used as needed on site during care and maintenance, however, this plant and equipment is serviced as required. There have been no complaints of noise disturbance from Invincible Colliery during the audit period and quarterly monitoring of noise from the mine is undertaken by Global Acoustics. Once mining operations recommence, sound power levels of equipment will be checked.	The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.
IO12	SOC, C7.5	Review target noxious weed species in subsequent control programs to capture the species identified during the site inspection on 28 January 2016, including Scotch Thistle (*Onopordum acanthium*) that were not known to be targeted during recent control spraying.	Targeted and general weed spraying was undertaken in consultation with ecologists undertaking annual biodiversity monitoring. Weed species were prioritised and spraying conducted between November 2015 and May 2016. It is likely that this weed was sprayed following the site inspection. Biodiversity monitoring will be undertaken again in November/December 2016 and will identify any further species required for weed control.	No further action required. This SOC has been removed from the Project Approval, weed management activities are reported in the Annual Review. A Rehabilitation Strategy, revised Biodiversity Management Plan, and a revised Rehabilitation Management Plan were submitted to regulatory authorities in 2018 for comment. These revised plans will be submitted to DPIE prior to the recommencement of operations. Annual biodiversity and rehabilitation monitoring was also undertaken during 2022.
IO13	SOC, C7.11	Requires planting of *Eucalyptus cannonii*. The 2013 AEMR (Coalpac, 2013b) describes the planting of *E. cannonii* (Section 3.8.1) although this species does not appear on the Rehabilitation Seed Species List in Table 17 of the AEMR. It is recommended that future AEMRs provide consistency between relevant sections of the report, or supplementary information on the planting of *Eucalyptus cannonii* is documented.	Please refer to the response to **IO9**	Rehab Strategy approved and RMP completed during reporting period. BMP in consultation with BCD toward finalising.
IO14	SOC, C8.2	Conduct inspections of the Aboriginal Heritage site 'Invincible OS1' prior to any planned pumping activity in the vicinity of the site, to ensure that planned water movements do not cause flood impacts to this area in accordance with the requirements of SOC Condition 8.2. Monitor the 'Invincible OS1' site during heavy rainfall periods and implement non-intrusive measures to divert water away from this area as required to minimise flooding impacts.	There is no active pumping into this area. This area only receives runoff from rehabilitation areas located upstream. Site operational staff are not aware of any flooding impacts that have occurred in this area in the last 3 years.	ACHMP approved
IO19	SOC, C11.16	Ensure all plant and equipment required during care and maintenance is maintained in a proper and efficient manner as per a maintenance schedule or manufacturer's instructions. Retain service records for all plant and equipment installed at the premises or currently used in connection with Project.	Please refer to the response to **NC55**	No further action required. This SOC has been removed from the Project Approval. The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.
IO21	EPL, A3.1	Obtain a copy of the EPL application and review current works and activities to determine compliance with EPL condition A3.1. Establish and maintain a compliance register and include the requirements of the EPL application to enable compliance tracking.	CC does not have access to the original licence application as this was submitted by Coalpac. However, we will request this information from the EPA.	The scheduled activities listed on the licence are "Coal Works" and "Mining for Coal" and are consistent with that previously undertaken at the mine.

ID	Criteria	Audit Recommendation	Proposed Action	Status as at 31 December 2021
IO22	EPL, P1.3	Update the maps within relevant Environmental Management plans (including the Water Management Plan to clearly identify the location of the wet weather discharge monitoring point (EPA identification 2).	Please refer to the response to **NC45**	WMP approved.
IO34	LMP S7.1.1	Annual flora and fauna and rehabilitation monitoring has not recorded the following parameters during the audit period: Species Diversity (the presence of at least four overstorey and four understorey species in 20m x 10m plot per 10ha); Stem densities. Minimum total tree/shrub densities for sown areas are: (i) Year 2 - 3,000 stems/ha (ii) Year 5 - 2,000 stems/ha (iii) Year 7 - 600 stems/ha. This is not reported in the AEMRS. There are no fixed monitoring plots within rehabilitation post 2011. It is recommended that a review of rehabilitation performance against the stated criteria in the LMP is undertaken.	Please refer to the response to **NC49**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy and RMP completed, BMP in consultation with BCD.
IO35	LMP S7.2(e)	The LMP (Section 7.2) requires areas not vegetated with established/remnant native trees and shrubs to be deep ripped in preparation for planting or seeding. No evidence that deep ripping has occurred within the BOA grassland areas during the site inspection. It is recommended that the need for this requirement be reviewed in the next monitoring session, and reported within the AEMR. Undertake deep ripping, if deemed appropriate.	The need for this requirement will be reviewed in consultation with consultants engaged to undertake future biodiversity monitoring. All works undertaken in rehabilitation and biodiversity offsets areas will be reported in the AEMR.	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy and RMP completed, BMP in consultation with BCD.
IO36	LMP S7.2(f)	The LMP (Section 7.2) requires seeds to be sown in areas not designated for tubestock planting. No seeding was reported in the AEMRs. It is recommended that the need for this requirement be reviewed following the next monitoring session, and reported within the AEMR. Undertake seeding in appropriate areas, as recommended.	Please refer to the response to **IO35**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO37	LMP S7.2(g)	The LMP (Section 7.2) requires tubestock planting in areas which contain already established native grasses. No tubestock planting was reported in the AEMR. It is recommended that the need for this requirement be reviewed following the next monitoring session, and reported within the AEMR. Undertake planting in appropriate areas, as recommended.	Please refer to the response to **IO35**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO38	LMP S7.2(h)	The LMP (Section 7.2) requires the addition of fertiliser during the sowing and tubestock planting process. No fertiliser application in BOA was reported in the AEMR. It is recommended that the need for this requirement be reviewed following the next monitoring session, and reported within the AEMR. Undertake in appropriate areas, as recommended.	Please refer to the response to **IO35**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO39	LMP S8.1(b)	The LMP (Section 8.1) requires regular walk-through site assessment (minimum once a year). Walk-through site assessments have been conducted as part of the annual monitoring; however it is unclear if all areas of rehabilitation have been inspected annually. This should be clarified/updated as part of future monitoring.	Please refer to the response to **NC49**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO40	LMP S8.1(c)	The LMP (Section 8.1) requires formal long-term monitoring using fixed monitoring plots. These have been established in older rehabilitation areas (centred within and around the 2008 block). However, monitoring plots are absent from 2012 and part of 2011 rehabilitation areas. It is recommended that fixed monitoring plots are established within all blocks of rehabilitation, including the 2012 rehabilitation areas. Monitoring should occur from the next season.	Please refer to the response to **NC49**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.

ID	Criteria	Audit Recommendation	Proposed Action	Status as at 31 December 2020
IO41	Ecology	Specific ecological adaptive management recommendations have been made by Kleinfelder (2015), as part of the Annual Flora, Fauna and Rehabilitation Monitoring report, and these are supported by observations and recommendations resulting from the site inspection by Cumberland Ecology. The rehabilitation program should be updated as per the findings of the Cumberland Ecology assessment and the recommendations of annual monitoring.	Please refer to the response to **NC49** The need for this requirement will be reviewed in consultation with ecological consultants engaged to undertake future biodiversity monitoring.	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO42	Ecology	Additional statistical data analysis could be performed to gain a greater understanding of the changes in species composition over time in the BOA, and this would strengthen the monitoring reports.	Please refer to the response to **NC49** The need for this requirement will be reviewed in consultation with ecological consultants engaged to undertake future biodiversity monitoring.	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO43	Ecology	2012 rehabilitation was in very poor condition. Exotic species were found to dominate the understorey with native eucalypt and acacia species germination found to be limited. No tubestock planting was observed in this area. It is therefore recommended that slope stabilisation, seeding, and subsequent tubestock planting (after the slope is stabilised) be undertaken in this area of rehabilitation.	Please refer to the response to **NC49**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO44	Ecology	The key area for continuing improvement of flora, fauna and rehabilitation management is the remedial action within failed and poor quality rehabilitation areas, particularly the 2012 blocks.	Please refer to the response to **NC49**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO45	Ecology	Low condition grasslands were not observed to be regenerating and adaptive management should be reviewed.	Please refer to the response to **NC49.** The need for this requirement will be reviewed in consultation with ecological consultants engaged to undertake future biodiversity monitoring.	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO46	Ecology	Actions such as deep-ripping have not been employed at the edges of the moderate quality woodland and native dominated grasslands, which would be likely to improve natural regeneration. Bush regeneration techniques to promote natural regeneration, and then supplementing with tubestock planting and seeding, as part of an adaptive and ongoing approach would be suitable, and should be reviewed in the final MOP and supporting management plans.	Please refer to the response to **IO35**, **IO36** and **IO37**	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO47	Ecology	A low intensity ecological burn within the BOA has been recommended in each monitoring report. This recommendation has not been followed; and is supported by the findings of the Cumberland Ecology site inspection. Controlled ecological burn are very useful for promoting natural regeneration, and are suitable for all the vegetation types present in the BOA and should be considered.	Please refer to the response to **NC49** The need for this requirement will be reviewed in consultation with ecological consultants engaged to undertake future biodiversity monitoring.	Annual biodiversity monitoring conducted during 2022 with results included within the 2022 Annual Review. Rehab Strategy approved and RMP completed. BMP in consultation with BCD toward finalising.
IO50		The UST and its management or maintenance is not recorded in any documents relevant to the audit period. It is recommended that the UST be included within the Care and Maintenance MOP and regular maintenance by carried out and reported in the AEMRs. It the tank is no longer required, it should be decommissioned in accordance with WorkCover and NSW EPA requirements.	Please refer to the response to **NC55** If any works are undertaken on the UST, these will be documented in the MOP and reported in the AEMR.	The waste oil system was not utilised during the 2022 report period. A risk assessment regarding the utilisation of the system will be undertaken prior to the system being recommissioned. The waste oil collection system will be reinstated prior to recommencing mining.