Annual Review
Sunnyside Coal Mine

Name of operation	Sunnyside Coal Mine
Name of operator	Whitehaven Coal Mining Pty Ltd
Development consent/project approval number	PA 06_0308
Name of holder of development consent/project approval	Namoi Mining Pty Ltd
Mining lease number	ML 1624
Name of holder of mining lease	Namoi Mining Pty Ltd
Water licence number	WAL 29537
Name of holder of water licence	Namoi Mining Pty Ltd
RMP start date	2 August 2022, reported on calendar year
Annual review start date	1st January 2022
Annual review end date	31st December 2022

I, Daryl Robinson, certify that this audit report is a true and accurate record of the compliance status of Sunnyside Coal Mine for the period January 1st 2022 until December 31th 2022, and that I am authorised to make this statement on behalf of Namoi Mining Pty Ltd.

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	Daryl Robinson
Title of authorised reporting officer	Manager – Environment and Mine Rehabilitation Gunnedah Open Cut Operations
Signature of authorised reporting officer	
Date	30/03/2023

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TABLES

FIGURES

1 STATEMENT OF COMPLIANCE

The compliance status of the Sunnyside Coal Mine as at 31st December 2021 is summarised in **Table 1a.** Non-compliances that occurred during the reporting period are listed in **Table 1b**. Items from the 2022 Audit Action Plan, and their due date, are summarised in table 9

Table 1a Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
PA 06_0308 Consolidated	No
EPL 12957	Yes
ML 1624	Yes
WAL 29537	Yes

Table 1b Non-compliances

Relevant Approval	Schedule (Condition) Number	Condition Description (summary)	Compliance status	Comment	Where Addressed in Annual Review
PA 06_0308 Consolidated	3.27	Groundwater Contingency Plan	Administrative non-compliance	Water Management Plan has been submitted and approved by the Secretary.	Non-Compliances Section 10.2

Table 1c Compliance status key for Table 1B

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)

2 INTRODUCTION

This is the thirteenth Annual Review (AR), formerly Annual Environmental Management Report, produced for the Sunnyside Coal Mine (SCM), and it has been prepared in accordance with Conditions 4 and 5 of Mining Lease (ML 1624) (Mining Act 1992) and Condition 5 (Schedule 5) of PA 06_0308 (consolidated). The AR follows the format required by the NSW Government Annual Review Guideline (October 2015).

Covering the period from 1st January 2022 to 31st December 2022 (the reporting period), where relevant the AR provides information on historical aspects of the operation and longer-term trends in environmental monitoring results.

The Sunnyside Coal Mine is located within the Gunnedah Shire, approximately 15 km west of Gunnedah. The mine is owned by Namoi Mining Pty Ltd (NMPL) and operated by Whitehaven Coal Mining Pty Ltd. Both companies are wholly owned subsidiaries of Whitehaven Coal Limited (WCL).

Mining and coal transporting operations at SCM ceased in May 2013, with recommencement of mining activities on 12th September 2017. Mining operations for coal ceased in August 2019, with coal crushing and transporting activities ceasing on the 27th of October 2019. Site activities are currently limited to aftercare, maintenance, water management and rehabilitation.

2.1 Mine Contacts

The management personnel responsible for operational and environmental performance at the SCM and their relevant contact details are as follows:

- Mr Daryl Robinson, Manager - Environment and Mine Rehabilitation Gunnedah Open Cut Operations - retains responsibility for activities at the site. Contact: (02) 6740 7000.
- Mr Andrew Raal, Superintendent Closed Mines – oversees day to day environmental and rehabilitation performance across the site. Contact: (02) 6740 7009.

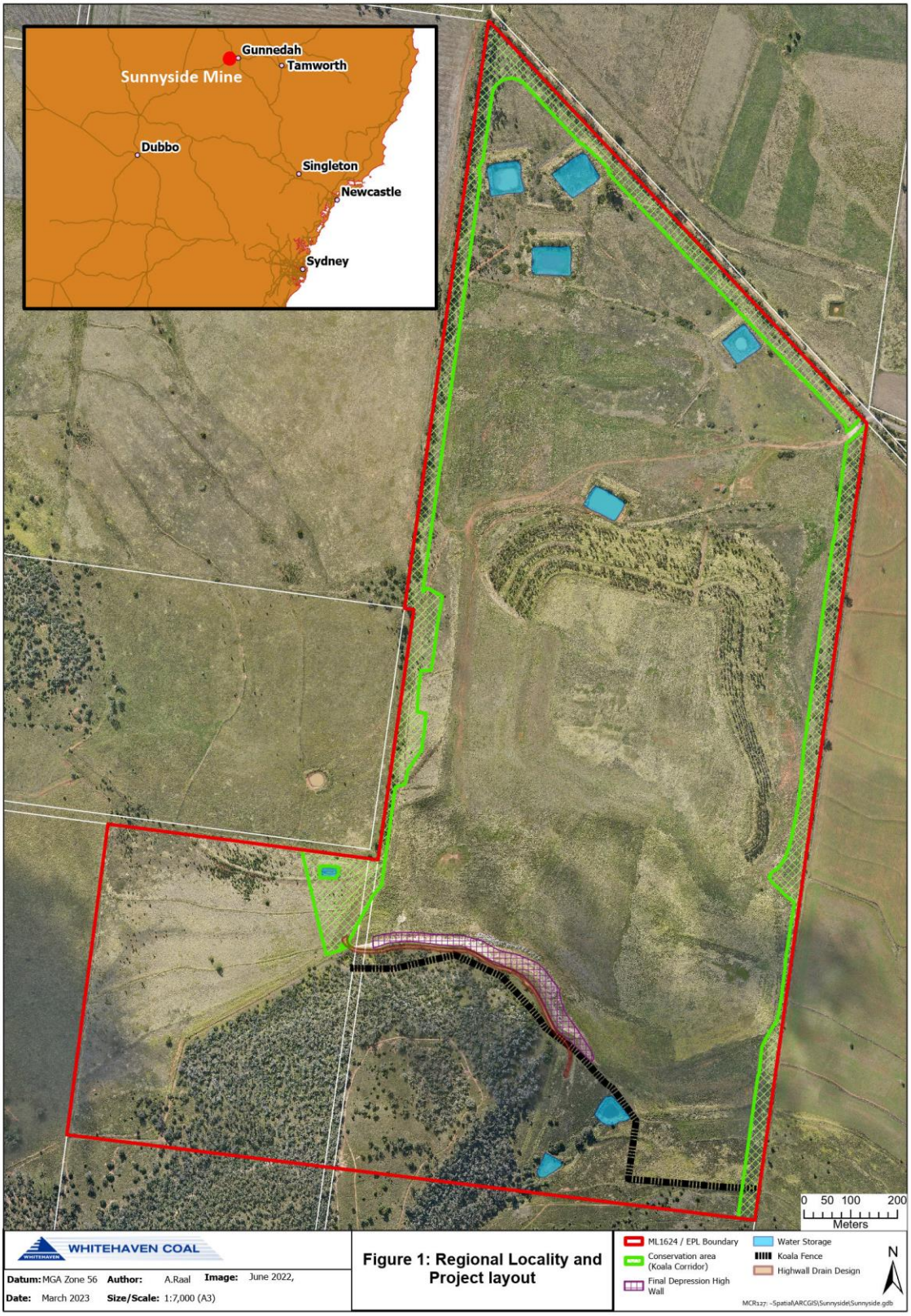

Figure 1 Locality Plan

3 APPROVALS

3.1 Tenements, Licences, and Approvals

Table 3.1 identifies the approvals in place for SCM at the end of the reporting period, the issuing / responsible Authority, dates of issue, expiry date and relevant comments.

Table 3.1 Tenements, Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Planning, Industry and Environment (DPIE)	Project Approval (PA) 06_0308	24th September 2008	Mining operations expire 5th November 2020, other conditions remain	PA modified December 2019 to update Annual Review period.
Environment Protection Authority (EPA)	Environment Protection Licence No. 12957	19th September 2017	N/A	Update to reflect recommencement of operations
Resource Regulator (NSW Resources and Geoscience (RR)	ML 1624	5th November 2008	5th November 2029	
Division of Resources and Geoscience	Mining Operations Plan (MOP)	6th November 2018	5th November 2025	Amendment A submitted (August 2020)
Department of Primary Industry - Water	WAL 29537 (90WA822534) 90BL253767 90BL253768 90BL253769 90BL254686 90BL254687 90BL254688 90BL254689 90BL254690	27th April 2009 9th Feb 2007 9th Feb 2007 9th Feb 2007 26th Mar 2008 26th Mar 2008 26th Mar 2008 26th Mar 2008 26th Mar 2008	17th January 2025 Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity Perpetuity	Licence to be transferred in 2022 Test Test Test Monitoring Monitoring Monitoring Monitoring Monitoring

4 OPERATIONS SUMMARY

4.1 Mining Operations

Mining operations during the reporting period included aftercare and maintenance of rehabilitation activities, with removal of non-fixed infrastructure. Table 4.1 presents the production summary at the end of the reporting period.

Table 4.1 Production Summary

Material	Approved Limit	Previous Reporting Period (actual)	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden	4.9 M m^3	0	0	0
ROM Coal/Ore	1 Mtpa [2]	0	0	0
Reject material	n/a	0	0	0
Saleable Product	n/a	0	0	0

[3] Environmental Assessment

[2] PA 06_0308 Consolidated

4.2 Other Operations

4.2.1 Hours of Operations

Rehabilitation activities were undertaken during the reporting period within permitted operating times, i.e. 7:00am to 10:00pm Monday to Friday and 7:00am to 6:00pm on Saturdays, and not on public holidays.

4.2.2 Infrastructure Management

All fixed infrastructure has been dismantled and removed including all bitumen from internal roads. During reporting period, remaining items removed included demountable building, heavy vehicle tyres, generator and three water tanks. Remaining infrastructure includes two above ground poly water tanks used for weed spraying and Koala fence.

4.2.3 Exploration Drilling

There was no exploration drilling undertaken during the reporting period.

4.3 Next Reporting Period

Site is in aftercare and maintenance. The site gate has been locked and the site is only accessed for inspection and ongoing maintenance. Continue monitoring of rehabilitation trials for effectiveness of seed coatings which commenced in 2021. Authorisation for the highwall drain has been granted and works will commence in 2023. Dams not a part of final landform/land use will be removed in 2023 to ensure site is in compliance with harvestable rights post closure.

5 ENVIRONMENTAL PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at SCM, together with monitoring data for the reporting period. Existing monitoring sites are given in **Figure 3.** Life of mine monitoring data is included as Appendices in this AR, where relevant, to allow for discussion on longer-term trends.

5.1 Air Quality

5.1.1 Criteria

Air quality criteria applicable to SCM are specified in PA 06_0308 (consolidated) Schedule 3, Tables 7, 8 & 9, which are summarised below.

- Acceptable mean annual increase in deposited dust – 2 g/m2/month.
- Mean annual dust deposition (all sources) – 4 g/m2/month.
- Mean annual Total Suspended Particulate (TSP) matter (all sources) concentration – 90 μg/m3.
- Mean annual PM10 particulate level – 30 μg/m3.
- 24-hour average PM10 particulate level – 50 μg/m3.

Monitoring of deposited dust is undertaken on a continuous monthly basis whilst PM_{10} levels are monitored every 6 days.

Figure 3 Monitoring Sites

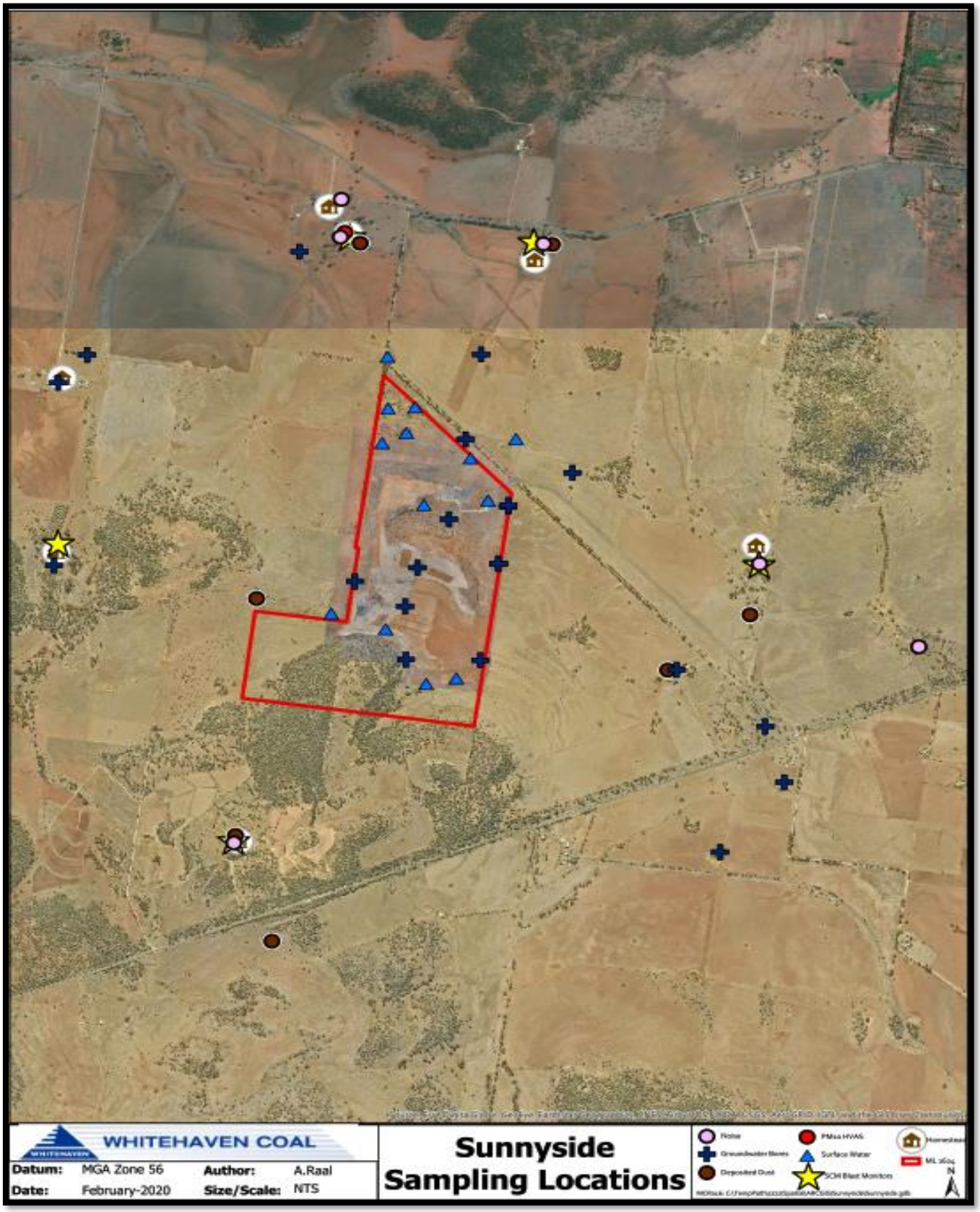

Figure 2 Monitoring Sites

5.1.2 Environmental Management Measures

Sunnyside rehabilitation has been completed for all disturbed areas, and has good vegetation cover. No permanent mobile equipment on site. Monitoring of Deposited Dust is undertaken on a monthly basis, whilst PM_{10} levels are monitored every 6 days.

5.1.3 Dust Monitoring

Deposited Dust

Annual mean limit for deposited dust was below the set criteria at all monitoring locations excluding SD3 as a result of not mine related activities (agricultural activities). Notification was made to required statutory authorities. **Table 5.1.3a** below presents a summary of the depositional dust monitoring data.

Table 5.1.3a Deposited Dust Monitoring Data Summary

Site (Figure 2)	EPL ID no.	Property Name	Approval Criteria Annual mean (g/m^2/month)	Annual Mean Total Insoluble Solids (g/m^2/month)
SD1	1	Ferndale	4	3.99
SD3	2	Plainview	4	4.28
SD4		Lilydale	4	2.7
SD5	4	Ivanhoe	4	1.35
SD6	5	Illili	4	0.89
SD7	6	Innisvale	4	0.7
SD8		Woodlawn	4	0.56

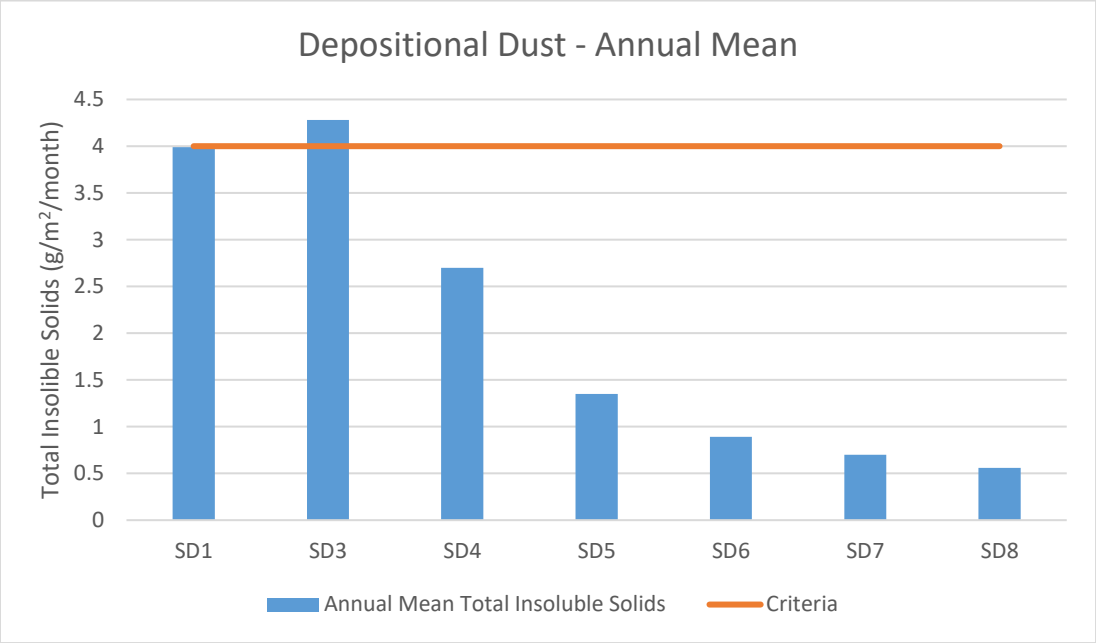

Figure 3 Annual Average Depositional Dust

HVAS/PM10 Dust

SCM has one High Volume Air Sampler (HVAS - PM_{10}) located at the property Illili (EPL ID 7), to the north-west of the mine site which takes a sample every 6 days for a 24h period. The annual mean value for 2022 was 4.09 µg/m³ within the EA annual prediction of 22.1 µg/m³. Sixty-one samples were taken with 0 events that were over the 24h, 50 µg/m³ guideline limit (**Table 5.1.3b**).

Table 5.1.3b PM10 Monitoring Summary

PM10 Summary		
Sites	Illili - Full data set	Illili - excluding extraordinary events
No. of readings	61	61
No. days above criteria	0	0
Maximum (µg/m³)	14.2	14.2
Minimum (µg/m³)	0.1	0.1
Mean (µg/m³)	4.09	4.09
Comment		

The 12-month (PM10) samples and rolling average particulate matter (PM10) for 2022 are illustrated below (**Figure 5** and **Figure 6**).

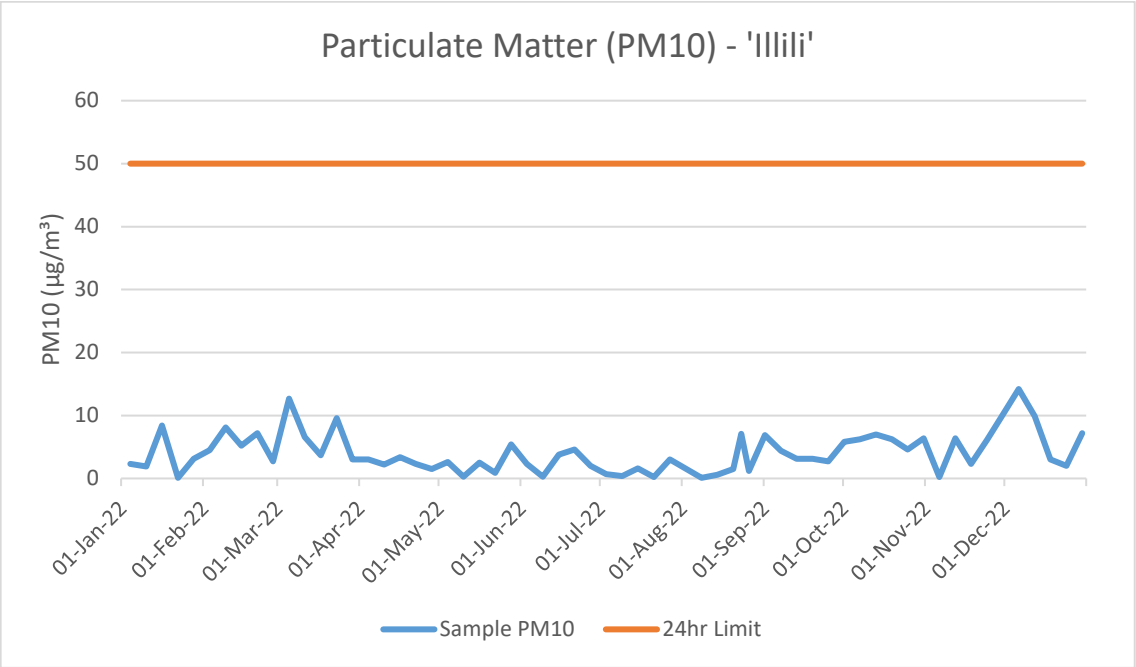

Figure 4 Illili PM10 Samples (full data set)

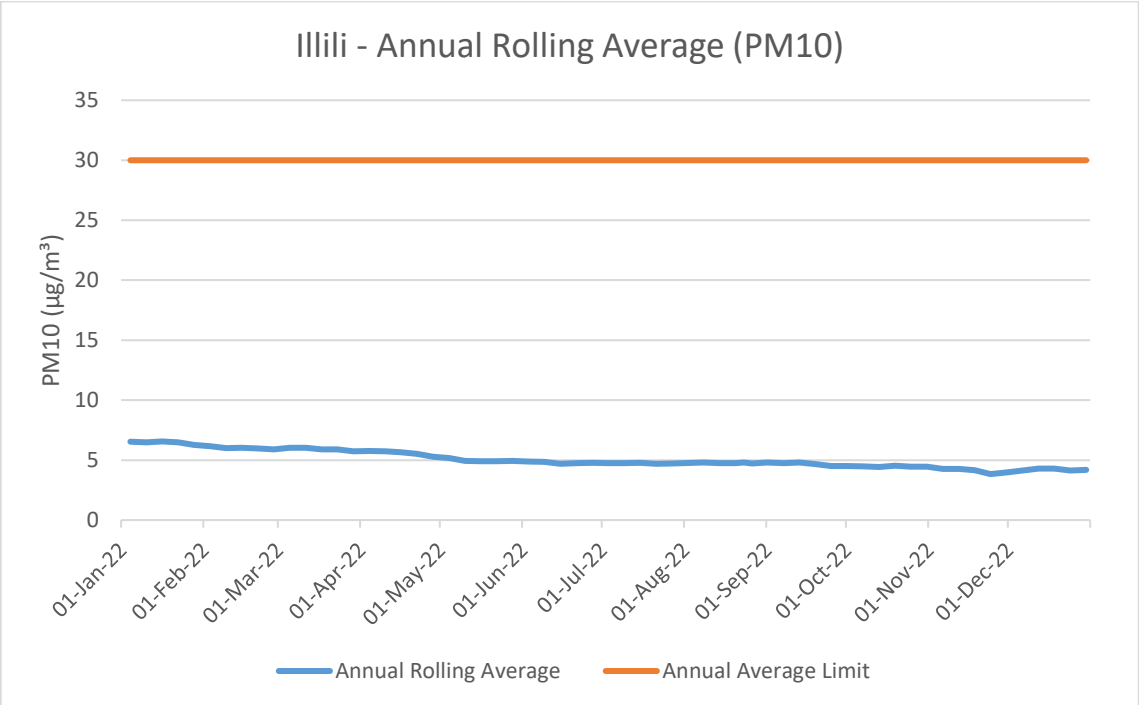

Figure 5 Illili PM10 Annual Rolling Average (full data set)

5.1.4 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

5.1.5 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period, as activities will be limited to aftercare and maintenance.

5.2 Biodiversity

5.2.1 Threatened Flora

Investigations into the occurrence of threatened flora within the Project Approval Area were undertaken as part of the Environmental Assessment by Geoff Cunningham Natural Resource Consultants Pty Ltd in 2007, following field surveys in October and December 2006. The investigation identified no significant impact on threatened flora species, endangered ecological communities, endangered flora populations or critical habitat as a consequence of the development, either because they do not exist in the area or avoidance is possible due to project design.

Investigations identified a remnant of the White Box Yellow Box Blakely's Red Gum Woodland endangered ecological community within the study area but concluded that it would not be affected in any significant manner by the mine.

A remnant of the Native Vegetation on Cracking Clay Soils of the Liverpool Plains endangered ecological community was also identified within the study area. It was noted that a small section of this community would be temporarily affected by the Coocooboonah Lane re-alignment but the community would be rehabilitated and enhanced following rehabilitation after mining ceases. It was assessed that this action, due to its temporary impact and final environmental enhancement, would not require approval under the Commonwealth EPBC Act.

Much of the area has been cleared in the past and most of this cleared area has been cultivated. The vegetation on the cleared areas has been invaded by introduced species. The establishment of the mine site did not involve clearing of native vegetation and as such no biodiversity offsets were required.

5.2.2 Threatened Fauna

Investigations into the occurrence of threatened fauna within the Project Approval Area were undertaken by Kevin Mills and Associates as part of the Environmental Assessment, following surveys conducted in September 2006. These investigations identified that the proposed development was unlikely to significantly affect any of the threatened species, fauna populations or communities listed under the Threatened Species Conservation Act 1995, or their habitats.

It was also concluded that development of the mine was not likely to have a significant impact on any matter of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act 1999*. Referral to the

Commonwealth Minister for the Environment for assessment and approval was therefore not warranted.

The area surrounding the mine site supports a viable koala population. NMPL has undertaken a number of measures to minimise the impacts on this population, including:

- Relocating the southern section of Coocooboonah Lane to avoid disturbing remnant koala habitat;
- Erecting a koala-proof fence around the active mine area;
- Minimising clearing and utilising local tree species for revegetation with an emphasis on koala feed trees. This has continued since the last reporting period with koala feed trees planted in koala corridor.

5.2.3 Ecological Monitoring

Introduction

A detailed annual ecological assessment of rehabilitated areas and analogue sites was undertaken by Aspect Ecology Pty Ltd during October/November 2022. Monitoring was undertaken using the Whitehaven Annual Rehabilitation Monitoring Methodology (WARMM—Aspect Ecology 2022).

Monitoring in the Woodland Domain comprised:

- two newly established analogue White Box grassy woodland sites; and
- eight repeat woodland rehabilitation structural sites:
    - six repeat monitoring plots within the rehabilitation years 2010, 2011, 2012 and 2013;
    - two repeat monitoring sites representing rehabilitation seasons 2019 and 2020/1; and

Monitoring in the Pasture Domain comprised:

- one repeat analogue site;
- seven repeat pasture rehabilitation sites;
- one repeat site monitoring established in the year 2019;
- six repeat established monitoring transects in 2020 rehabilitation; and
- two categorical point assessments at notable locations within the Pasture rehabilitation.

Woodland Domain - Groundcover

Total ground cover increased steadily over the four years of the survey, with seven of the eight sites in 2022 presenting a desirable rate i.e., value higher than the average compared with the previous three years of monitoring. In particular, a significant increase in litter was evident on the sites (SSR1994, SSR19114, SSR19124, SSR19184).

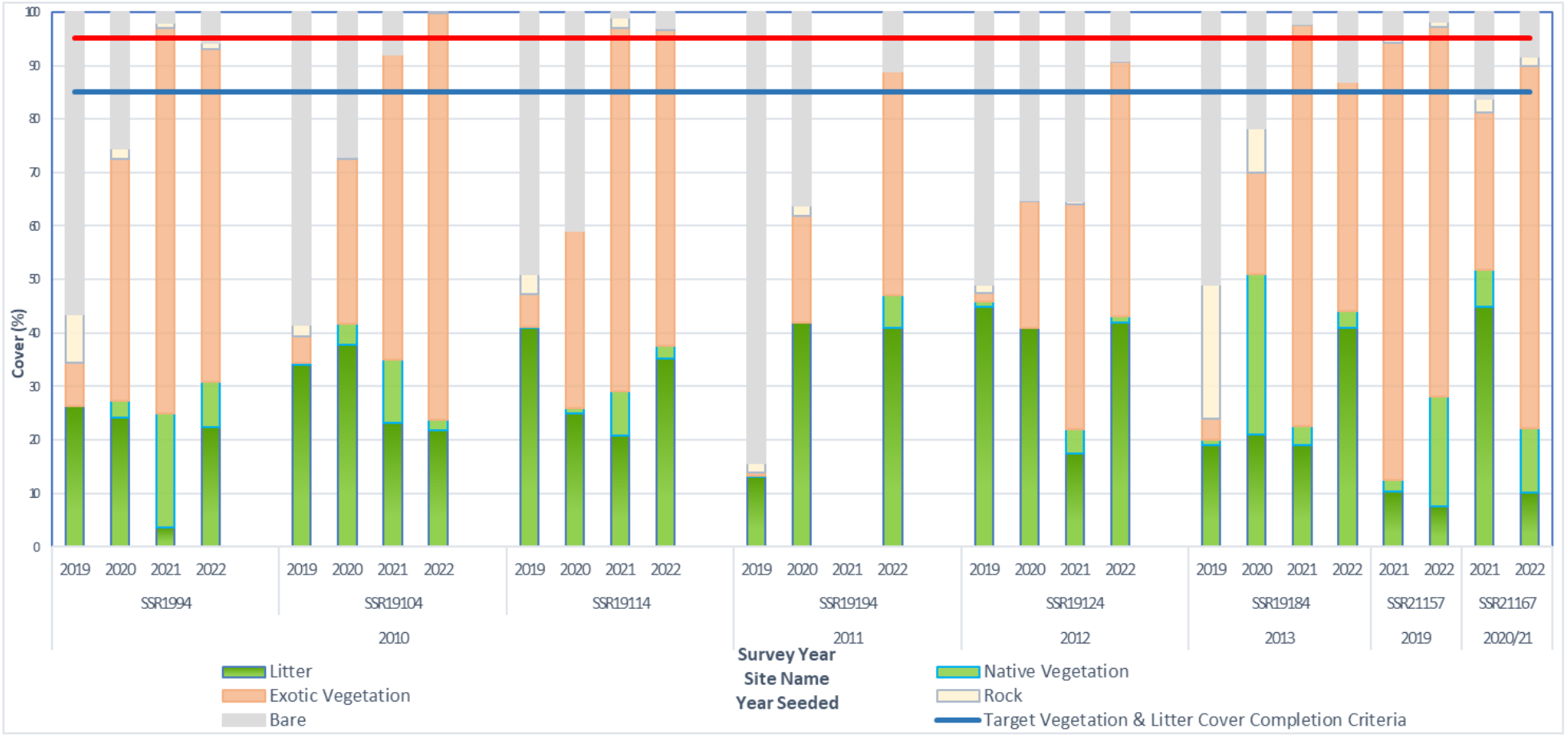

Figure 6 Average Percentage Cover of Groundcover Components within each Rehabilitation Year at Sunnyside Coal Mine, comparing 2019, 2020, 2021 and 2022 Monitoring Seasons.

Tree Density < 2m

The density of trees less than two metres is included in annual monitoring to understand seedling establishment and progress toward recruitment in the >2m tall canopy layer. Less than 2 m tall tree density was comprised mostly of seedlings planted in 2020, with a few individuals from previous planting campaigns, and further follow-up plantings in 2021. The highest seedling densities were found in SSR19104 and SSR1994. low densities of seedlings in years 2011–2013 is not of concern as these areas have high densities of established saplings.

> 2m Tall Tree Density

The greater than 2 m height class is relevant to the older Woodland rehabilitation (years seeded 2010–2013). Density of trees >2 m tall was stable between the 2019 and 2021 monitoring events. There was a slight increase in density at SSR19194.

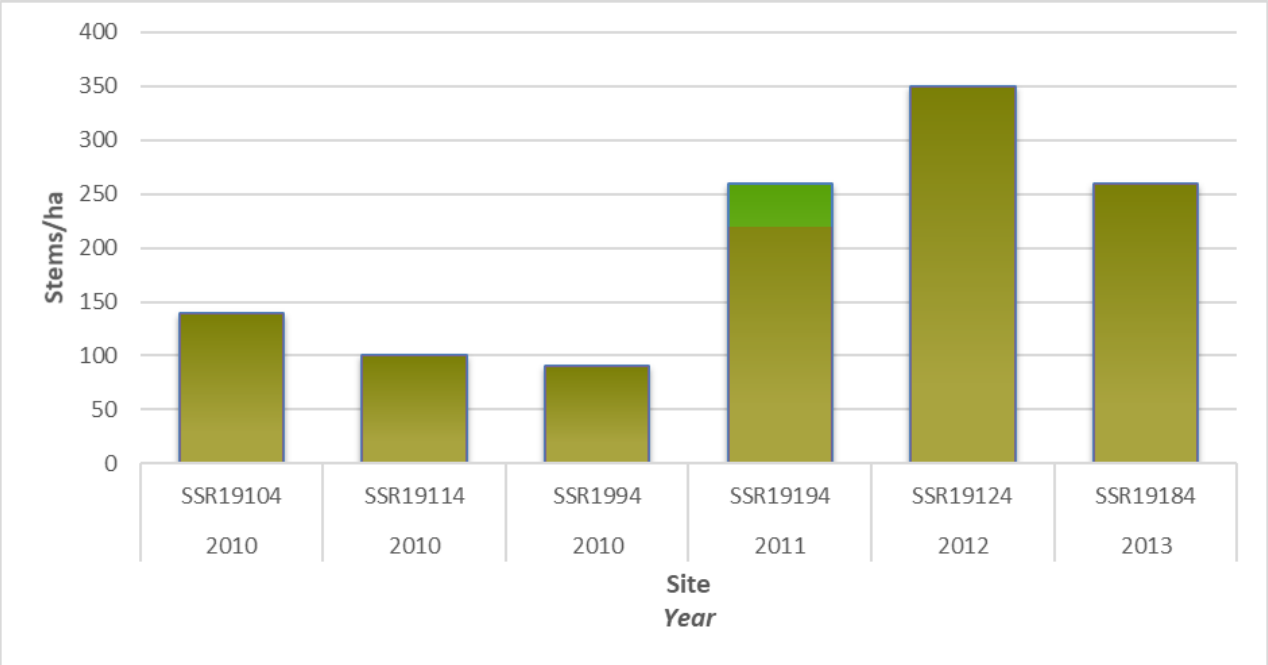

Figure 7 Density of trees greater than 2 m tall within older rehabilitation sites at Sunnyside Coal Mine, grouped by year seeded. Solid light green represents an increase 2019 and 2022 monitoring events.

Fauna

The developing tree canopy supports a variety of birds, including White-winged Choughs. The presence of many small rocks may provide habitat for reptiles. Macropod scats were almost always present within sites, and both Eastern Grey Kangaroos and Wallaroos were observed sheltering within the woodland rehabilitation areas.

Pasture Domain - Groundcover

Regarding the pasture rehabilitation sites sampled at the Sunnyside mine, it stands out that SSR2088 and SSR2078 show a stable cover starting at 93.2% during the years sampled. This is very close to the average vegetation cover reference target (97.5%). Four of the other repeat sites showed an increase in average vegetation cover; these were SSR21137, SSR21187, SSR21217 and SSR21288. These four sites have an average coverage of between 71.5% and 99.9%, which is very close to, or higher than, the minimum expected value of coverage (85%).

Species Composition

Native species were present at pasture sites. Exotic species also present in pasture domain.

Recommendations

It is recommended that:

- additional tree seedling plantings be carried out where required
- steps be taken to improve native Woodland groundcover diversity, using species recorded in the analogue sites once the necessary techniques are determined;
- grass weeds be eradicated from 2019 and 2020 Woodland rehabilitation.
- pasture rehabilitation, dominated by oats, be monitored for the establishment of perennial grasses.

5.2.4 Weeds

Contractors undertook weed inspections and treatment at Sunnyside Mine in reporting period. The main weeds treated on site were Broadleaf weeds, other weed species that were treated include Prickly lettuce, Buffel grass, Flea bane, Saffron thistle, Noogoora Burr and Johnson grass. Weed treatment was carried out using a spot spraying method.

Consultant agronomist undertook weed inspection on 28 Feb 2022. Wees of note were Fleabane, Catheads and Roly Poly.

5.2.5 Feral Animal Control

Feral animal control on the property was limited to work undertaken south of the Koala fence which consisted of uses of 1080 fox baits.

5.2.6 Koala Management

During the reporting period no koalas were spotted onsite by mine personal. AMBS Ecology & Heritage undertook night koala spotting with thermal cameras in October 2022, and utilised a thermal drone. No Koalas were found on the mining lease during the survey.

5.2.7 Performance/Management Issues

No major issues.

5.2.8 Proposed Improvements to Environmental Management

In response to the recommendations outlined in section 5.2.3, Whitehaven Coal commit to the following;

- Continue field surveys to confirm areas of rehabilitation where infill planting is required. A re-planting plan will be developed and executed as required.
- In addition to annual ecological monitoring, rehabilitation will continue to be monitored on a monthly basis and reported on within the monthly inspection checklist, to ensure rehabilitation areas are reflecting species presence and abundance of analogue sites.

Improved rainfall has led to improved grass cover and vegetation cover. A strategy to manage tropical grasses and increase the number of native grass species within Woodland areas is ongoing.

5.3 Blasting

There is no further blasting to occur on site.

5.3.1 Proposed Improvements to Environmental Management

No improvements are proposed for the next reporting period. All blasting at the mine site has ceased. Blast monitors have been decommissioned and removed.

5.4 Operational Noise

5.4.1 Criteria

Operational noise criteria for SCM are specified in PA 06_0308 and EPL 12957, as follows:

Table 5.4.1 Operational Noise Criteria

Location	Day	Evening
	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$
All privately-owned land	35	35

5.4.2 Environmental Management Measures

Control of noise generation and propagation at the mine is by a combination of general source and propagation path methods including:

- There is no longer any bulk haulage or movement of material on site. Only activities are aftercare and maintenance
- No afterhours work carried out
- No general maintenance of equipment on site

5.4.3 Noise Monitoring Results

Approval to no longer carry out attended noise monitoring was received from the EPA and the Noise management plan was amended accordingly and was approved by DPIE in September 2020. There were no noise complaints registered for the reporting period and no attended noise monitoring was required.

5.4.4 Key Environmental Performance/Management Issues

Any maintenance or aftercare activities are to be within daylight hours.

5.4.5 Proposed Improvements to Environmental Management

None. There is no permanent equipment stationed on site. Any maintenance activities will be during day hours.

5.5 Waste Management

During the reporting period there were no activities onsite requiring additional material brought to site and no additional waste produced. There is no equipment onsite requiring a maintenance monitoring. Due to no waste generated by the site during the reporting period, there is no activity to base a comment on the effectiveness of the waste management process as defined in the Sunnyside Coal Mine Waste Management Plan.

All remaining waste was removed from site in 2022, this includes;

- Removal of polypipe and demountable building for reuse at another mine site
- Heavy vehicle tyres sent to recycler

5.6 Aboriginal Heritage Management

5.6.1 Environmental Management Measures

An assessment of the cultural heritage of the mine site was conducted by Archaeological Surveys and Reports Pty Ltd (ASR). Prior to the investigation, ASR contacted the Red Chief Local Aboriginal Land Council (LALC) and Bigundi Biame

Gunnedarr Traditional People to arrange for site officers to assist in the survey. A representative from each group was present for the site survey conducted on the 12th September 2006 and the coal transport route survey on the 7th December 2006. The ASR assessment was used in the preparation of the Environmental Assessment for the mine, undertaken by R.W. Corkery & Co. Pty Ltd on behalf of Namoi Mining Pty.

Four sites were recorded during the investigation, as detailed in 7.5.2. Only one site (AGG1) was recorded within the mine site while the three isolated artefact sites were identified to the south of the mine site.

All Aboriginal Heritage sites are managed in accordance with the Sunnyside Coal Mine Aboriginal Cultural Heritage Management Plan, prepared in accordance with Schedule 3 Condition 32 of PA 06_0308 Consolidated.

5.6.2 Consultation

No soil stripping of previously undisturbed areas took place during the reporting period. No additional Aboriginal cultural heritage items were discovered during the reporting period and no consultation with Aboriginal stakeholders was conducted. Known heritage sites are listed in **Table 5.6.2**.

Table 5.6.2 Aboriginal Artefacts

Site Name	Site Type	Site Description/Comments
Sunnyside AGG1	Axe Grinding Groove	Axe grinding groove at the rim of a cliff-like scarp (beside a small water-filled natural depression in the rock). Dimensions: 28cm (L) x 6cm (W) x 2cm (D). Located approximately 150m from the southern side of the open cut area.
Sunnyside ISO1	Isolated Artefact	Flake with possible retouch to one margin located on the bank beside the upper reaches of a dry creek (on a vehicle track). Dimensions: 21 x 12 x 3mm
Sunnyside ISO2	Isolated Artefact	Proximal fragment of a flake located on the bank beside the upper reaches of a dry creek. Dimensions: 22 x 22 x 5mm.
Sunnyside OS1	Artefact Scatter	Artefact scatter of at least ten artefacts in a lozenge-shaped area of 30 x 8m, on the upper slopes down slope of a contour bank down slope of a saddle. Artefact types: flakes and flaked pieces, including a backed blade.
Source: Modified after ASR (2007) – EA SCSC Part 7		

5.6.3 Key Environmental Performance/Management Issues

The preservation conveyor belt strip was removed from the axe grinding grove that is located south of the mine pit, as blasting is no longer taking place. Inspections found no impact on the heritage site.

5.6.4 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

5.7 Natural Heritage

There are no features of natural heritage within the Project Approval area and hence, no specific management procedures are required.

5.8 Spontaneous Combustion

5.8.1 Environmental Management Measures

A carbonaceous test procedure was developed to identify and manage any carbonaceous material within 5m of the final landform. A total of 99 test pits to identify carbonaceous material with potential for spontaneous combustion were dug to at least 5m below final landform in 2020. All carbonaceous material is buried on +5m below final landform.

5.8.2 Key Environmental Performance/Management Issues

No incidence of spontaneous combustion occurred.

5.8.3 Proposed Improvements to Environmental Management

As final rehabilitation has been completed and confirmation that there is no material with a potential for spontaneous combustion within 5m of the final landform, no further management activities are required.

5.9 Bushfire Management

5.9.1 Environmental Management Measures

SCM is located within an area of cleared agricultural land.

Measures to deal with bushfires include the following;

- Hot work permit system to manage activities that could potentially cause fire.
- Whitehaven Coal have engaged a firefighting contract company LRM Fire and Rescue on a retainer bases to assist in case of any fire breakout.

5.9.2 Key Environmental Performance/Management Issues

No key environmental performance/management issues were identified during the reporting period.

5.9.3 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

5.10 Environmental Performance Summary

An environmental performance summary for SCM is presented in **Table 5.10.**

Table 5.10 Environmental Performance

Aspect	Approval Criteria / EIS Prediction	Performance during the reporting period	Trend / Key Management Implications	Implemented / proposed management actions
Air Quality	Refer Section 6.1.1	No recorded PM10 exceedances of the 24h limit of 50 µg/m³.	Nil.	Ongoing implementation of the Air Quality Management Plan.
Biodiversity	EIS prediction of no impact on known koala population.	No recorded impact on koala population. No koala deaths recorded onsite.	Nil	Additional tree planting in the koala corridors
Heritage	EIS prediction of potential blast impact on a recorded site.	No recorded impact on site.	Nil	Blasting has ceased on site
Spontaneous Combustion	EIS prediction of no material spontaneous combustion	No in-pit spontaneous combustion found during the year.	Nil	Test pitting for carbonaceous material to ensure no material with potential for SponCom within 5m of final landform has been completed.
Noise	35dB	No exceedances	Nil	Site activities limited to aftercare and maintenance.
Blasting	<115dB overpressure	No exceedances	Nil- all blasting has ceased.	Nil.

6 WATER MANAGEMENT

The SCM lies within the catchment of the Namoi River. The majority of the surface water runoff flows northwards across the mine site. It then flows into Coocooboonah Creek which flows north-west within a constructed waterway paralleling Coocooboonah Lane. From there, it flows into Rock Well Creek then into Native Cat Creek which continues to flow north-west for 6km. Runoff then flows northwards

within Collygra Creek where it flows across a floodplain area before flowing into the Namoi River some 25km north of the Mine Site. The remainder of the mine's surface water flows south into Coocooboonah Creek ultimately flowing into the Namoi River to the north.

The design of sediment dams is to prevent off site runoff of water with TSS values above guideline levels. There are no longer any exposed surface areas on site generating high sediment runoff.

Two wet weather discharge points are nominated in the current EPL 12957. These are Storage Dam 3 (EPL ID No. 9) and Storage Dam 4 (EPL ID No. 10). Two additional monitoring points are nominated on the EPL for water quality monitoring during discharge events. These are Coocooboonah Creek Upstream (CCUS – EPL ID No. 11) and Coocooboonah Creek Downstream (CCDS – EPL ID No. 12).

6.1.1 Surface Water Management

All sediment basins, storage dams and associated banks and drains have been designed and constructed in accordance with the *Managing Urban Stormwater: Soils and Construction Vol 2E Mines and Quarries* (DECC, 2008) in conjunction with the references to Volume 1 (Landcom, 2004).

6.1.2 Surface Water Monitoring Results

SCM has a requirement to undertake surface water monitoring on a quarterly basis in addition to the monitoring of any wet weather discharge event.

Summary of water quality results are given in **Table 6.1.2**, and complete surface water quality monitoring results are provided in Appendix 1. Quarterly monitoring results show that water quality within onsite storages was generally consistent with historical analysis. SD3 was dry when quarterly sampling was conducted for the reporting period. As part of rehabilitation non-essential dams were removed this included SD2, Production Bore dam and the Void was backfilled (Nov 2020) above groundwater level.

There were no wet weather discharges during the reporting period.

Table 6.1.2 Summary Surface Water Monitoring Results

Storage	No. Samples	Annual Average Oil and Grease	Annual Average Conductivity	Annual Average pH
		mg/L	µS/cm	
SD4	4	<5	398	8.1
Production Bore Dam	Dam removed			
Void	Dam removed; void is free draining			
SB4	2	<5	242	8
SD3	Dry during sampling			
SB2	4	<5	227	8.6
SD2	Dam removed			
SD1	4	<5	541	7.9
SB5	3	<5	157	7.9

6.1.3 Key Environmental Performance/Management Issues

No non-conformances or changes were made to surface water management program during the reporting period.

6.1.4 Proposed Improvements to Environmental Management

No improvements are proposed within the next reporting period.

6.1.5 Water Take

SCM groundwater licence (WAL 29537) is for 120 units from the Gunnedah - Oxley Basin. Licence is in the process of being transferred. There was no water take during the reporting period.

Water storage on site at end of reporting year was 9.22 ML from rainfall capture after record third quarter rainfall. Dams with water included SD3 (0.5ML), SD4 (1.1ML), SB4 (2.3ML), SB2 (5.3ML).

6.2 Groundwater Management

6.2.1 Environmental Performance/Management

The mine's performance with respect to groundwater performance/management, the prevention of pollution, and the assessment of impacts on groundwater availability to other surrounding users, has been assessed through groundwater level and chemistry monitoring undertaken at a series of piezometers and bores within the Project Area and adjacent properties.

6.2.2 Groundwater Monitoring

The details of groundwater monitoring throughout the reporting period are listed in **Table 6.2.2**. Complete monitoring datasets are provided in Appendix 2.

Groundwater sampling and analysis was undertaken by Acirl Pty Ltd (ALS) during the reporting period. Below are some points to note regarding monitoring locations and frequencies:

- Bore 27356 has not been monitored since June 2012. The windmill located over the bore has been dismantled and removed from site.
- Standing Water Level (SWL) data is unavailable for bores 27356, 44884, 3709.
- Werona bore pump was last used in 2019. Since then, the bore pump and generator have been removed. As of March 2021, water levels were at 19.66 mbgl.

Table 6.2.2 Groundwater Monitoring Points

Site ID (see Figure 2)	Registered Bore No. & Licence No	Property/ Location	Frequency		Purpose
			SWL*[2], EC*[3] and pH	Representative Metals and Ions	
P1*[1]	GW968386 90BL253767	"Plainview"	Quarterly	Six monthly	To determine existing status and any impacts
P2*[1]	GW968387 90BL253768	"Ferndale"	Quarterly	Six monthly	
P3	GW968388 90BL253769	"Sunnyside"	Quarterly	Six monthly	
P7	GW968392 90BL254689	"Sunnyside"	Quarterly	Six monthly	To determine existing status and any impacts
P8	GW968393 90BL254690	"Sunnyside"	Quarterly	Six monthly	
3709*[1]	N/A	"Ivanhoe"	Quarterly	Six monthly	
22497*[1]	N/A	"Coocooboonah"	Quarterly	Six monthly	
44677*[1]	N/A	"Werona"	Quarterly	Six monthly	
44884*[1]	N/A	"Lilydale"	Quarterly	Six monthly	
6249*[1]	N/A	"Lilydale"	Quarterly	Six monthly	
901460	GW901460 90BL249138	"Illili"	Quarterly	Six monthly	To determine existing status and any impacts

27356	GW027356 90BL020042	"Sunnyside"	Quarterly	Six monthly*[5]	
45061	N/A	"Coocooboonah"	Quarterly	Six monthly	
Werona Production	90BL255246	"Werona"	Quarterly	Six monthly*[5]	
*[1] Non-Company owned bore		*[2] SWL – Standing Water Level		*[3] EC = Electrical Conductivity	
*[4] Company production bore		*[5] – Not available this reporting period due to lack of access			

6.2.1 Groundwater Levels

Groundwater levels have remained stable with slight rise in sync with increased rainfall at year end. Mine void was closed and made free draining in December 2020.

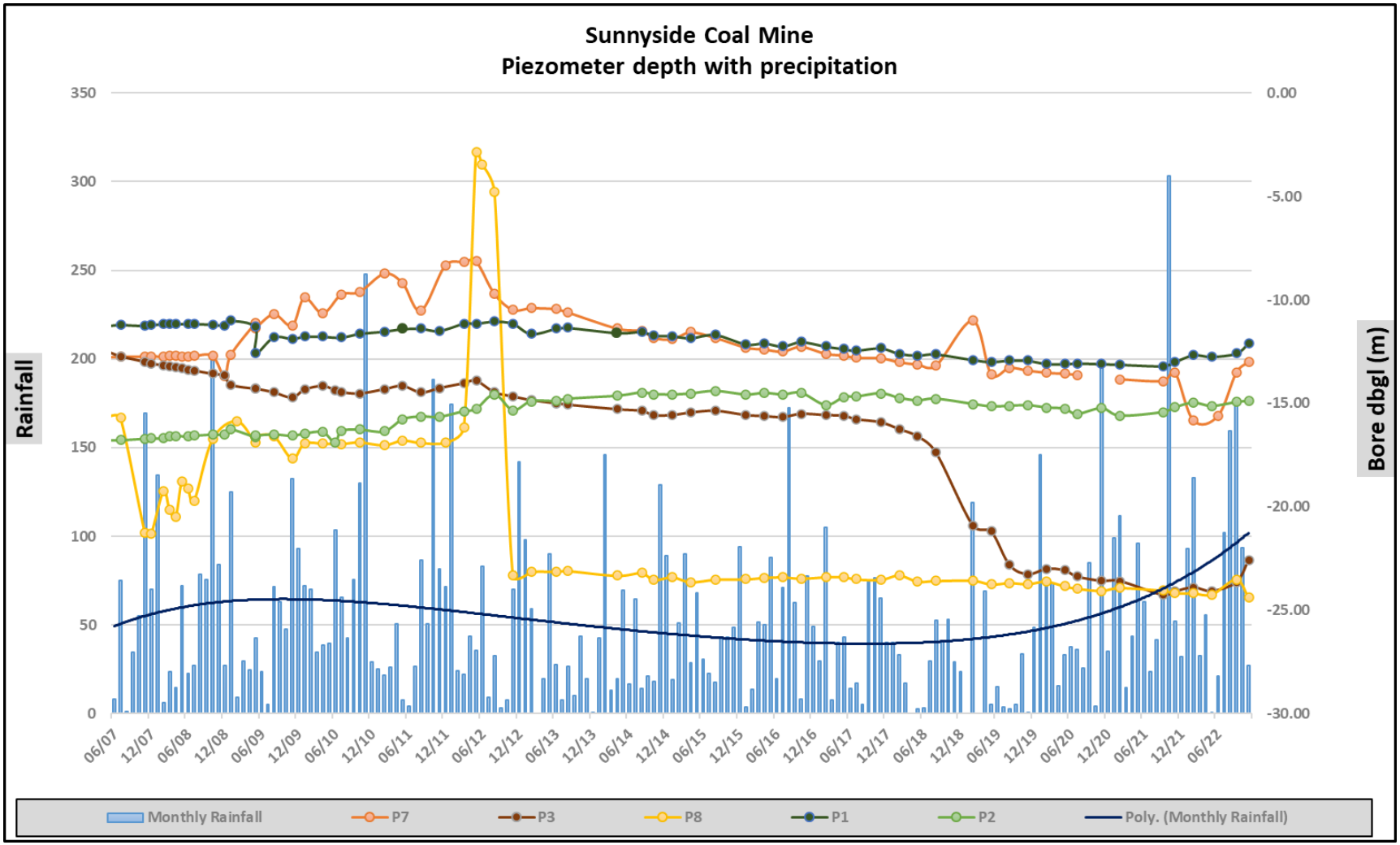

Figure 8 Monitoring piezometer water depth

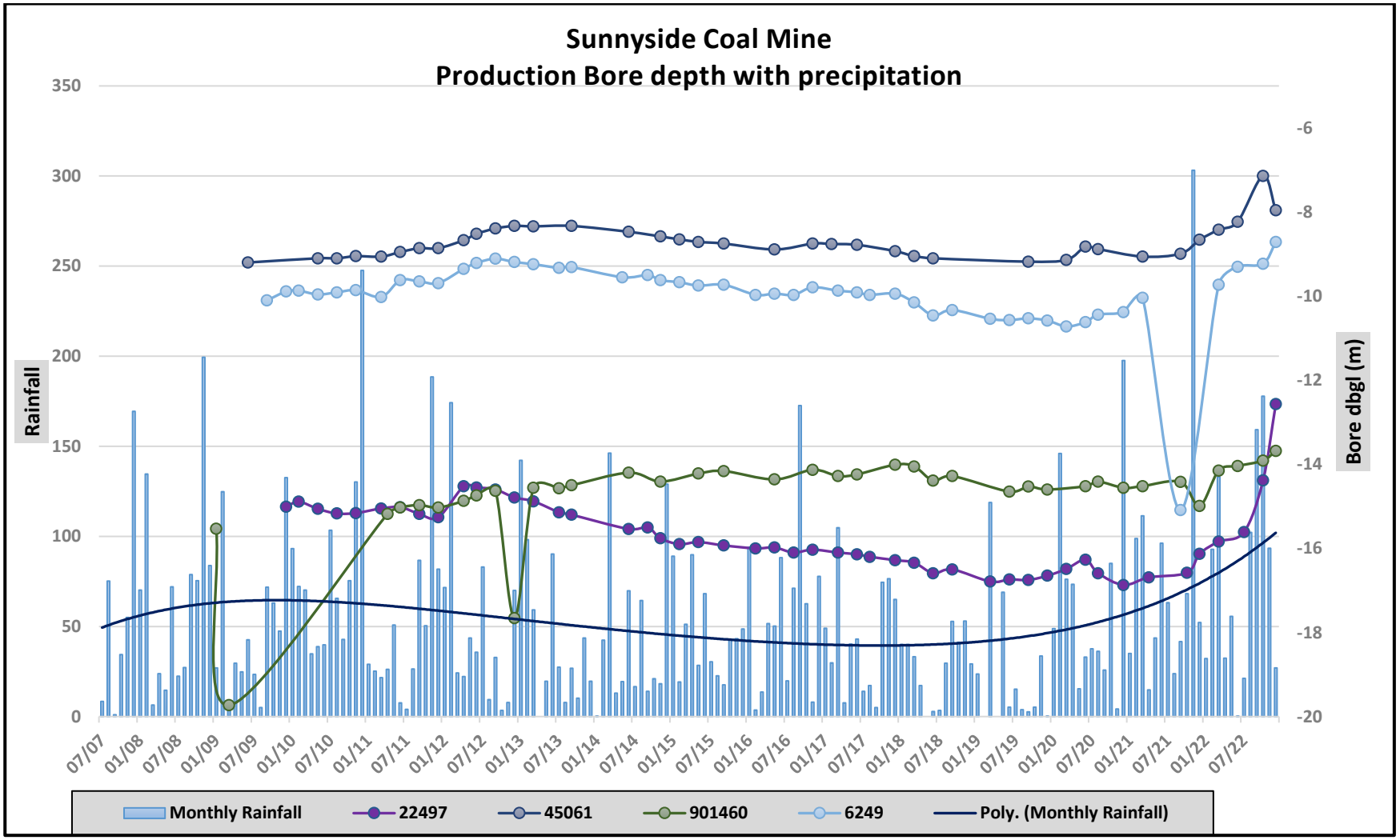

Figure 9 Production bore water depth

6.2.2 Groundwater quality

Analysis of samples taken during the reporting period has shown that groundwater quality has remained generally in line with historical data at most locations monitored. Production Bore 6249 was equipped with new pump by landowner. Production Bore's 901460, 22497, 45061 and 6249 all recorded rises of 1m, 3.5m, 0.7m, and 6.3m respectively. Water quality has been compared to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC) guidelines for stock watering (cattle). Groundwater has constant quality (very low metals, and pH between7-8) across the monitoring region except for sodium and associated conductivity which varies depending on local geology and groundwater source. Sodium levels fluctuate from 123mg/l (Piezometer P8) to 784mg/l (Piezometer P3).

6.2.3 Groundwater Management

There is no groundwater extraction and the void has been backfilled and is free draining. Groundwater from surrounding bores, as well as the mine piezometers will continue to be monitored to assess any changes in groundwater quality or level.

6.2.4 Key Environmental Performance/Management Issues

No groundwater extraction occurred during the reporting period.

6.2.5 Proposed Improvements to Environmental Management

No proposed improvements. Ongoing monitoring to monitor for any changes.

7 REHABILITATION

7.1 Rehabilitation Performance during the Reporting Period

7.1.1 Status of Mining and Rehabilitation

The status of mining and rehabilitation at the completion of the reporting period is presented in **Figure 11.** All infrastructure will be removed from site in the first half of 2022.

Outstanding rehabilitation works include:

- Two remaining exploration drill holes require sealing
- Two water dams (1.08ha) to be removed and filled after vegetation has successfully established and rehabilitation is safe and stable.
- Highwall drain to divert rainfall run-on water away from the highwall batters.
- Aftercare and maintenance of rehabilitated areas, monitoring of seed coating trial and infill planting where required.

Table 7.1.1 Rehabilitation Status

Mine Area Type [1]	Previous Reporting Period	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	2022	2023	2024
A. Total Mine Footprint	107.82	107.82	107.82
B. Total Active Disturbance	1.08	1.08	**1.08
C. Land Being Prepared for Rehabilitation	0	0	0
D. Land Under Active Rehabilitation	97.02	97.02	97.02
E. Completed Rehabilitation	0	0	0

Footprint exclude 17.6ha conservation area (Koala Corridors)

**Two dams to be filled/rehabilitated after ecosystem sustainability has been achieved

7.1.2 Post Rehabilitation Land Uses

The overall closure goal for the Sunnyside Coal Mine is to establish a stable and safe landform that is commensurate with the surrounding topography and which maximises the return to an appropriate agricultural land use comparable to the pre-mining land use, but is considerate of the fact that the landform is a backfilled mining area.

The post-mining landform will include approximately 17.6 hectares (ha) of land rehabilitated with woodland species on dump and highwall slopes to enhance biodiversity values of the area, with additional, ±17.2 ha of trees planted on areas undisturbed by mining activities along the eastern, northern and western boundaries of the property to enhance the wildlife corridors (Conservation).

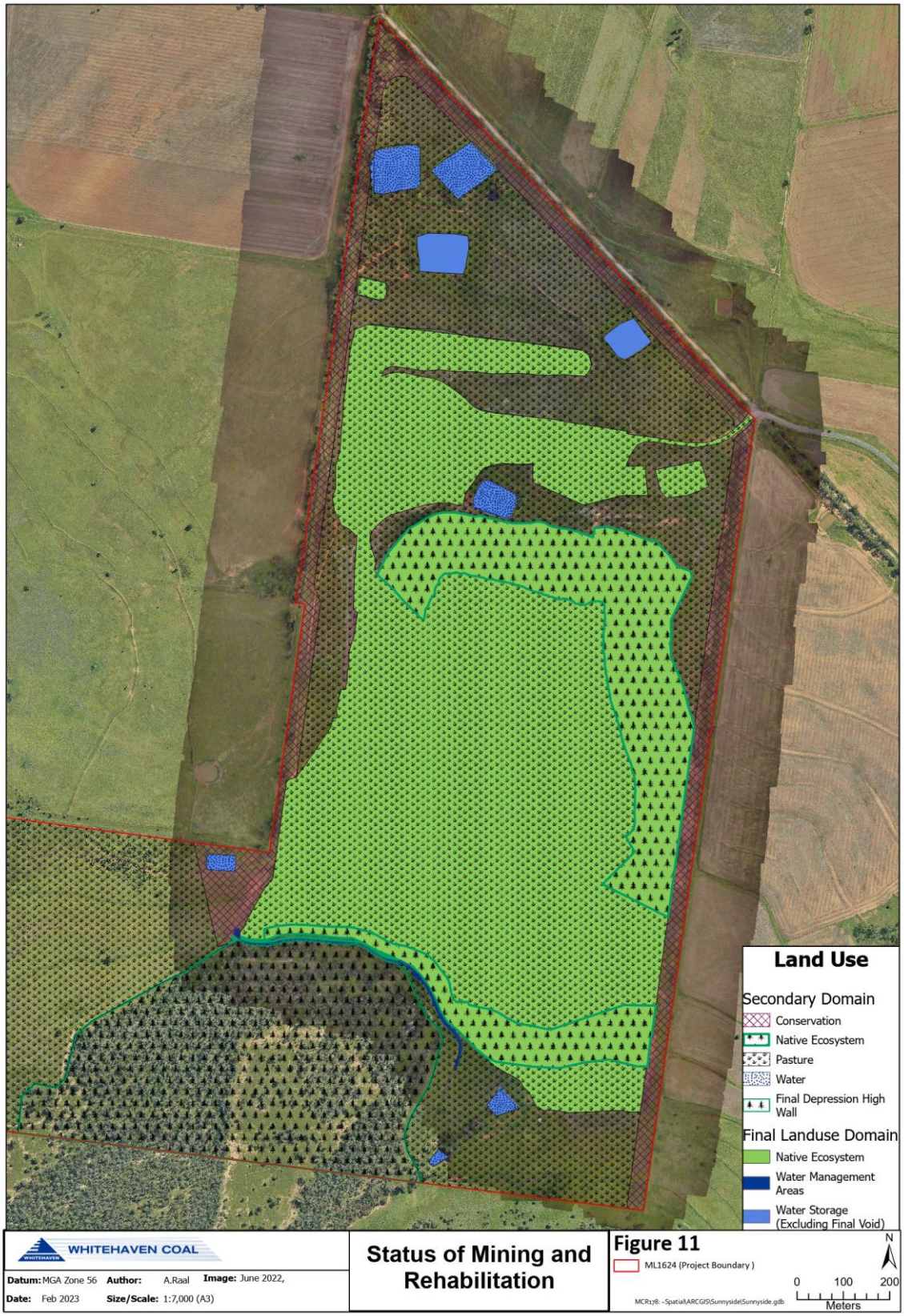

Figure 10 Status of Mining and Rehabilitation

7.1.3 Rehabilitation Undertaken

Rehabilitation to final landform and seeding was completed in 2020. Rehabilitation undertaken during the 2022 reporting period included removal of remaining waste (see section 5.5). In September 2022, 4,980 Hiko seedlings were planted on void slopes and newly established woodland area joining eastern conservation corridor and existing remnant woodland on Sunnyside Hill. Plantings consisted of White box, Kurrajong, Narrow leafed iron bark, Blakely Red Gum, Red Ash, Tumble Down Gum, Large Mock-Olive and Native Olive.

7.1.4 Rehabilitation Monitoring

Monitoring consists of;

- Monthly site inspection by site environmental officer for weeds, feral animals, visual condition of planted tube stock and for signs of erosion.
- Annual detailed ecological assessment of rehabilitated areas and analogue sites by consultant ecologists.

7.1.5 Weeds Management

Weed management is discussed in section 5.2.4.

7.1.6 Renovation or Removal of Buildings

All fixed buildings, concrete pads and bitumen road base were removed. Concrete and bitumen were taken to Gunnedah Shire Council tip. No infrastructure remaining onsite.

7.1.7 Other Rehabilitation Undertaken

No further rehabilitation was undertaken.

7.1.8 Departmental Sign-off of Rehabilitated Areas

Departmental sign-off has not been requested for any rehabilitated areas.

7.1.9 Variations in Activities against RMP

Highwall drain works will be undertaken in 2023.

7.1.10 Trials, Research Projects and Initiatives

Seed coating trial commenced in the first quarter of 2021 at the site of the rehabilitated ROM pad consisting of thirty 60mx30m trial plots that had various treatments of coated and uncoated grass seeds. Monitoring of the site is continuing.

7.1.11 Key Issues to Achieving Successful Rehabilitation

Three key issues to achieving successful rehabilitation are: -

- Establishment of vegetation species to meet Plant Community Types (PCT).

- Management of weeds and feral animals
- Ongoing monitoring and maintenance of drainage lines and drop structures

7.2 Actions for Next Reporting Period

- Infill planting of tree tube stock where required
- Ongoing Weed management
- Rehabilitation/sealing of two remaining exploration drill holes
- Establishing high wall drain
- Ongoing monitoring of seed coating trial
- Pasture grass control in woodland areas

8 COMMUNITY

SCM maintains a designated complaints line and, in the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded.

No complaints were received during the reporting period.

Last five years of complaints are listed in **Table 8.** Due to the low number of complaints graphing the data is not practical.

Table 8 Community Complaints

Community complaints			
Year	Number of complaints	Aspect	Comment
2022	None		
2021	None		
2020	None		
2019	None		
2018	1	Water	Metallic taste in rainwater tank
2017	None		
2016	1	Air quality	Odor and fumes from mine

Any complaints that are made are reported to the Community Consultative Committee and documented in the AR and the annual EPA Return. A complaints register is also maintained on Whitehaven's website.

Community contributions are managed in accordance with the Whitehaven Coal Donations and Sponsorship Policy. Whitehaven Coal donated $147,172.72 to local Gunnedah and Regional groups during the reporting period. Groups which received contributions included, but were not limited to the following;

Gunnedah LGA:

- Gunnedah Rural Museum
- Gunnedah Ladies Golf Club
- Gunnedah Bulldogs Rugby League
- Gunnedah District Aeromodellers
- Gunnedah District Australian Football Club
- Gunnedah Shire Council
- Black & Blue Boxing
- Gunnedah Show Society
- G S Kidd School
- Gunnedah Rugby League
- Gunnedah Pistol Club
- Gunnedah Eisteddfod Society
- Gunnedah High School
- Whitbread Memorial Fund
- Gunnedah Netball Association
- Gunnedah Netball Association
- Gunnedah Athletics Centre Incorporated
- White Cockatoos Gomeroi Roos
- Gunnedah Public School
- Gunnedah & District Historical Society Inc
- Gunnedah Meals on Wheels
- GHFC Pty Ltd
- Swimming Gunnedah Incorporated
- Gunnedah Touch Association
- Gunnedah Baptist Community Preschool
- Gunnedah Homes for the Aged
- Gunnedah Basketball Association
- Swimming Gunnedah Incorporated
- Gunnedah High School
- Black and Blue Boxing Gunnedah
- Dorothea Mackellar Poetry Awards
- Winanga-Li Aboriginal Child and Family Centre
- McLean Care Mackellar
- Gunnedah Ministers Fraternal
- Gunnedah Public School P&C Association
- St Mary's College
- Rotary Club of Gunnedah West Inc
- Week of Speed
- Curlewis Public School P&C
- Winanga-Li Aboriginal Child and Family Centre

The Rotary Club of Gunnedah

9 INDEPENDENT AUDIT

The most recent Independent Environmental Audit (IEA) occurred during the reporting period, with submission of the final report and response to Audit Recommendations submitted to the Department in October 2022. Non-compliances identified by the IEA were risk ranked by the auditor in accordance with **Figure 1**. SCM subsequently developed an Audit Action Plan for the one administrative non-compliance. The Audit Action Plan is available on the Whitehaven Coal website, there are no outstanding audit actions.

Next Independent Audit is scheduled for 2025.

10 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

10.1 Reportable Incidents

None for the reporting period

10.2 Non-compliances

There was one administrative non-compliance from the 2022 IEA audit report listed in Table 9. Finding was in relation to the Water Management Plan (WMP) not including trigger levels. Groundwater trigger levels were added to the WMP but was not submitted to the department for approval. Subsequently and as the mine has gone into closure, the WMP was updated and approve on the 17th February 2023.

Table 9 IEA audit findings

Water Management Plan			
Assessment Required	Comment	Audit Classification	Response/Action
The Groundwater Contingency Plan must: (a) provide measures to mitigate any impacts of the mine on the quality or quantity of groundwater supplies available on privately-owned land; (b) establish trigger levels, benchmarks and contingency criteria; and (c) provide for negotiated agreements with affected landowners, including compensation where mining impacts result in increased extraction costs for landowners.	A groundwater contingency plan is captured within the WMP (Section 6). Whilst the plan stipulates a trigger level for quantity, the WMP does not sufficiently "establish trigger levels, benchmarks and contingency criteria" for groundwater quality. The groundwater contingency plan should also define sources of groundwater data (if regional data is utilised to assess groundwater impacts) or define when SCM will undertake additional groundwater monitoring events to (beyond annual groundwater monitoring) determine whether the contingency plan should be enacted. The WMP was updated in February 2020 to include groundwater quality triggers, however it has not been submitted to the Department for approval and endorsement. It is noted that groundwater quality is monitored and samples are analysed against the Australia and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC) and reported in the Annual Review. No issues with groundwater quality have been identified.	ANC	Submit the Water Management Plan (updated in February 2020) for approval by the Secretary.

10.3 Regulatory Actions

No regulatory actions were issued to Sunnyside in 2022.

11 ACTIONS TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following measures will be continued, or implemented, in the next reporting period to improve the environmental or community performance of the operation: -

- Install highwall drain to divert run-on water from Sunnyside Hill around the void
- Remove sedimentation dams no-longer required
- Relinquishment of EPL licence.
- The continuation of environmental monitoring and management, as per the relevant approvals and environmental management plans;
- Review and revision of various Environmental Management Plans; and Continued community liaison and engagement with local stakeholders.

Appendix 1: Surface Water Monitoring Data

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: CCDS (Coocooboonah Downstream); Northing: 224593; Easting: 6570043

	28-Mar-22	16-Sep-22	21-Oct-22
Rec ID	**84973**	**87092**	**87755**
Lab Ref	**94839**	**96881**	**97525**
Appearance	TURBID		
Colour	BROWN		
Comments	LARGE		Downstream
EC - Field	190	112	110
Electrical Conductivity @ 25°C	169	130	94
Odour	Nil	Nil	Nil
Oil & Grease	<5	<5	<5
pH (pH Unit)	7.3	7.63	7
pH Value (pH Unit)	7.57	7.9	7.07
Temperature	18.7		16.6
Total Organic Carbon	23	14	10
Total Suspended Solids (TSS)	736	1,880	125

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2022*
Standard: *<Blank>*

Data Point: CCUS (Coocooboonah Upstream); Northing: 224421; Easting: 6570035

	28-Mar-22	16-Sep-22	21-Oct-22
Rec ID	**84974**	**87093**	**87754**
Lab Ref	**94840**	**96882**	**97524**
Colour	Brown		
Comments	EXTREMELE		Upstream-
EC - Field		120	105
Electrical Conductivity @ 25°C		126	94
Odour	Nil	Nil	Nil
Oil & Grease		<5	<5
pH (pH Unit)		7.38	7
pH Value (pH Unit)		7.43	7.02
Temperature			18.9
Total Organic Carbon		14	11
Total Suspended Solids (TSS)		60	44

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2022*
Standard: *<Blank>*

Data Point: SB2; Northing: 224854; Easting: 6568067

	10-Feb-22	04-May-22	03-Aug-22	16-Nov-22
Rec ID	**84299**	**85448**	**86436**	**88134**
Lab Ref	**94170**	**95272**	**96227**	**97900**
Antimony (total)	<0.001	<0.001	<0.001	<0.001
Appearance	Slightly turbid	Clear	Clear	SLIGHT
Arsenic-Total (mg/L)	0.003	<0.001	<0.001	<0.001
Colour	Brown	Clear	Clear	SLIGHT
EC - Field	310	290	245	185
Electrical Conductivity @ 25°C	275	255	220	159
Molybdenum (total)	0.002	0.001	0.001	<0.001
Odour	Nil	Nil	Nil	NIL
Oil & Grease	<5	<5	<5	<5
pH (pH Unit)	8.5	8.5	8.7	8.5
pH Value (pH Unit)	8.6	8.19	8.82	8.52
Selenium-Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Temperature	24.7	18.3	13	19.5
Total Organic Carbon	9	6	4	9
Total Suspended Solids (TSS)	<5	9	10	8

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: SB3; Northing: 224537.0332; Easting: 6569855.774

	03-Aug-22
Rec ID	**86435**
Lab Ref	**96226**
Comments	NA

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: SB4; Northing: 224383.713; Easting: 6569783.0221

	10-Feb-22	03-Aug-22	16-Nov-22
Rec ID	**84300**	**86434**	**88136**
Lab Ref	**94171**	**96225**	**97902**
Antimony (total)	<0.001		<0.001
Appearance	Clear		SLIGHT
Arsenic-Total (mg/L)	0.001		0.001
Colour	Clear		SLIGHT
Comments		Dry	
EC - Field	295		250
Electrical Conductivity @ 25°C	262		222
Molybdenum (total)	0.003		0.002
Odour	Nil		NIL
Oil & Grease	<5		<5
pH (pH Unit)	8.2		7.7
pH Value (pH Unit)	8.14		8
Selenium-Total (mg/L)	<0.01		<0.01
Temperature	23.2		20.5
Total Organic Carbon	10		12
Total Suspended Solids (TSS)	12		11

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: SB5; Northing: 224944.083; Easting: 6569671.7898

	10-Feb-22	04-May-22	03-Aug-22	16-Nov-22
Rec ID	**84301**	**85449**	**86433**	**88137**
Lab Ref	**94172**	**95273**	**96224**	**97903**
Antimony (total)	<0.001	<0.001		<0.001
Appearance	Slightly turbid	Turbid		TURBID
Arsenic-Total (mg/L)	<0.001	0.001		<0.001
Colour	Brown	Brown		BROWN
Comments			Dry	
EC - Field	300	165		105
Electrical Conductivity @ 25°C	251	133		86
Molybdenum (total)	0.001	<0.001		<0.001
Odour	Nil	Nil		NIL
Oil & Grease	<5	<5		<5
pH (pH Unit)	8.2	8.6		6.9
pH Value (pH Unit)	8.35	8.16		7.45
Selenium-Total (mg/L)	<0.01	<0.01		<0.01
Temperature	21.4	22.1		18.5
Total Organic Carbon	12	6		4
Total Suspended Solids (TSS)	21	31		148

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2022*
Standard: *<Blank>*

Data Point: SD1; Northing: 225055.9165; Easting: 6569362.7446

	10-Feb-22	04-May-22	03-Aug-22	16-Nov-22
Rec ID	**84298**	**85447**	**86432**	**88132**
Lab Ref	**94169**	**95271**	**96223**	**97898**
Antimony (total)	<0.001	<0.001	<0.001	<0.001
Appearance	Clear	Slight Turbid	Clear	CLEAR
Arsenic-Total (mg/L)	0.002	0.001	<0.001	<0.001
Colour	Clear	Brown	Clear	CLEAR
EC - Field	630	460	605	555
Electrical Conductivity @ 25°C	602	474	544	543
Molybdenum (total)	0.004	<0.001	0.002	0.004
Odour	Nil	Nil	Nil	NIL
Oil & Grease	<5	<5	<5	<5
pH (pH Unit)	8.2	7.7	7.8	7.8
pH Value (pH Unit)	8.26	8.15	8.29	8.25
Selenium-Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Temperature	23.1	17	12.2	19.9
Total Organic Carbon	17	9	8	10
Total Suspended Solids (TSS)	16	50	15	<5

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: SD2; Northing: 224648.2654; Easting: 6569332.6818

	03-Aug-22
Rec ID	**86431**
Lab Ref	**96222**
Comments	NA

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: SD3; Northing: 224662.6955; Easting: 6568025.5527

	10-Feb-22	04-May-22	03-Aug-22	16-Nov-22
Rec ID	**88770**	**88772**	**86430**	**88130**
Lab Ref			**96221**	**97896**
Comments	NO SAMPLE	NO SAMPLE	NO SAMPLE	NO SAMPLE

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2022*
Standard: *<Blank>*

Data Point: SD4; Northing: 224060.2377; Easting: 6568539.0248

	10-Feb-22	04-May-22	03-Aug-22	16-Nov-22
Rec ID	**84297**	**85446**	**86429**	**88131**
Lab Ref	**94168**	**95270**	**96220**	**97897**
Antimony (total)	<0.001	<0.001	<0.001	<0.001
Appearance	Slightly turbid	Slight Turbid	Slight Turbid	TURBID
Arsenic-Total (mg/L)	0.001	0.001	0.002	<0.001
Colour	Brown	Brown	Brown	BROWN
EC - Field	440	425	485	330
Electrical Conductivity @ 25°C	404	427	463	296
Molybdenum (total)	0.005	0.002	0.003	0.001
Odour	Nil	Nil	Nil	NIL
Oil & Grease	8	<5	<5	<5
pH (pH Unit)	8.3	8.2	8.2	7.6
pH Value (pH Unit)	7.99	8.14	7.7	8.16
Selenium-Total (mg/L)	<0.01	<0.01	<0.01	<0.01
Temperature	22.4	19.5	14.5	19.3
Total Organic Carbon	18	14	13	7
Total Suspended Solids (TSS)	32	62	71	45

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2022***
Standard: ***<Blank>***

Data Point: VOID (Sunnyside VOID); Northing: 224405.3582; Easting: 6568425.9888

	03-Aug-22
Rec ID	**86428**
Lab Ref	**96219**
Comments	NA

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2022***
Standard:	***<Blank>***		

Appendix 2: Groundwater Monitoring Data

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: 22497; Northing: 226528.408; Easting: 6566793.9615

	28-Mar-22	07-Jun-22	18-Oct-22	20-Dec-22	28-Mar-23
Rec ID	**84978**	**86143**	**87701**	**88885**	**89809**
Lab Ref	**94844**	**95937**	**97476**		**99495**
Aluminium (total) (mg/L)	0.02		0.12		
Ammonia as Nitrogen (N)	12		4.92		
Appearance	Clear	Clear	CLEAR		
Arsenic-Total (mg/L)	<0.001		<0.001		
Barium (total)	0.317		0.034		
Beryllium (total)	<0.001		<0.001		
Bicarbonate Alkalinity as CaCO3	324		382		
Boron (total)	<0.05		<0.05		
Cadmium-Total (mg/L)	<0.0001		0.0002		
Calcium-Dissolved (mg/L)	14		21		
Carbonate Alkalinity as CaCO3	28		<1		
Chloride (mg/L)	210		179		
Chromium-Total (mg/L)	<0.001		<0.001		
Cobalt	<0.001		<0.001		
Colour		Clear	CLEAR	Clear	
Comments				Back	Back
Copper-Total (mg/L)	0.013		0.164		
EC - Field	1,347	1,260	1,160	1,455	
Electrical Conductivity @ 25°C	1,260		1,150		
Hydroxide Alkalinity as CaCO3	<1		<1		
Ionic Balance (%)	1.72		6.35		
Iron-Total (mg/L)	5.83		4.02		
Lead-Total (mg/L)	<0.001		0.004		
Magnesium-Dissolved (mg/L)	39		34		
Manganese (total)	0.189		0.301		
Mercury-Total (mg/L)	<0.0001		<0.0001		
Nickel-Total (mg/L)	<0.001		0.001		
Nitrate as N (mg/L)	<0.01		0.55		
Nitrite + Nitrate as N (mg/L)	0.02		0.71		

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	28-Mar-22	07-Jun-22	18-Oct-22	20-Dec-22	28-Mar-23
Rec ID	**84978**	**86143**	**87701**	**88885**	**89809**
Lab Ref	**94844**	**95937**	**97476**		**99495**
Nitrite as N (mg/L)	0.28		0.16		
Odour	Nil	Nil	NIL	Nil	
pH (pH Unit)	8.2	8.1	8.2	8.1	
pH Value (pH Unit)	8.5		8.23		
Potassium-Dissolved (mg/L)	88		77		
Purge Type	BAIL	BAIL	BAIL	Bail	
Selenium-Total (mg/L)	<0.01		<0.01		
Sodium-Dissolved (mg/L)	149		126		
Standing Water Level	15.84	15.61	14.38	12.57	
Stick up	0.2	0.2	0.2	0.2	0.2
Sulfate as SO4 - Turbidimetric-	6		7		
Temperature	22	20.1	21.5	20.6	
Total Alkalinity as CaCO3 (mg/L)	352		382		
Total Anions	13.1		12.8		
Total Cations	12.6		11.3		
Total Dissolved Solids @180°C-	635		720		
Vanadium	<0.01		<0.01		
Water Depth to Stand	16.04	15.81	14.58	12.77	
Zinc (total)	0.052		0.352		

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: 27356; Northing: 224912.785; Easting: 6569803.28

	28-Mar-22	07-Jun-22	17-Sep-22	15-Dec-22	28-Mar-23	28-Mar-23
Rec ID	**86200**	**86139**	**87875**	**88881**	**89811**	**89817**
Lab Ref		**95933**	**97644**		**99497**	**99503**
Comments	WINDMILL	WINDMILL	REMOVED	Windmill	Minesite	Minesite

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: 44677 Werona Tanks; Northing: 222328.0678; Easting: 6570216.8968

	28-Mar-22	07-Jun-22	19-Oct-22	20-Dec-22
Rec ID	**84977**	**86138**	**87728**	**88880**
Lab Ref	**94843**	**95932**	**97500**	
Aluminium (total) (mg/L)	<0.01			
Ammonia as Nitrogen (N)	0.17			
Appearance			CLEAR	
Arsenic-Total (mg/L)	<0.001			
Barium (total)	0.202			
Beryllium (total)	<0.001			
Bicarbonate Alkalinity as CaCO3	598			
Boron (total)	0.15			
Cadmium-Total (mg/L)	<0.0001			
Calcium-Dissolved (mg/L)	272			
Carbonate Alkalinity as CaCO3	<1			
Chloride (mg/L)	1,820			
Chromium-Total (mg/L)	0.007			
Cobalt	<0.001			
Colour			CLEAR	Clear
Comments		NO SAMPLE	PUMP OVER	Pump Over
Copper-Total (mg/L)	0.01			
EC - Field	6,780		4,590	4,680
Electrical Conductivity @ 25°C	7,150			
Hydroxide Alkalinity as CaCO3	<1			
Ionic Balance (%)	4.45			
Iron-Total (mg/L)	0.14			
Lead-Total (mg/L)	0.004			
Magnesium-Dissolved (mg/L)	352			
Manganese (total)	0.02			
Mercury-Total (mg/L)	<0.0001			
Nickel-Total (mg/L)	0.002			
Nitrate as N (mg/L)	2.42			
Nitrite + Nitrate as N (mg/L)	2.42			

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	28-Mar-22	07-Jun-22	19-Oct-22	20-Dec-22
Rec ID	**84977**	**86138**	**87728**	**88880**
Lab Ref	**94843**	**95932**	**97500**	
Nitrite as N (mg/L)	<0.01			
Odour			NIL	Nil
pH (pH Unit)	7.1		7.9	7.7
pH Value (pH Unit)	8.12			
Potassium-Dissolved (mg/L)	11			
Purge Type			TAP	Tank/Tap
Selenium-Total (mg/L)	<0.01			
Sodium-Dissolved (mg/L)	727			
Stick up	0			
Sulfate as SO4 - Turbidimetric-	231			
Temperature	20.6		20.1	20.7
Total Alkalinity as CaCO3 (mg/L)	598			
Total Anions	68.1			
Total Cations	74.4			
Total Dissolved Solids @180°C-	3,730			
Vanadium	<0.01			
Water Depth to Stand	0			
Zinc (total)	0.066			

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: 44884; Northing: 226251.5937; Easting: 6568123.6077

	21-Mar-22	07-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84835**	**86134**	**87699**	**88876**
Lab Ref	**94701**	**95928**	**97474**	
Aluminium (total) (mg/L)			0.02	
Ammonia as Nitrogen (N)			0.48	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)			0.001	
Barium (total)			0.396	
Beryllium (total)			<0.001	
Bicarbonate Alkalinity as CaCO3			1,030	
Boron (total)			0.08	
Cadmium-Total (mg/L)			0.0001	
Calcium-Dissolved (mg/L)			17	
Carbonate Alkalinity as CaCO3			<1	
Chloride (mg/L)			252	
Chromium-Total (mg/L)			<0.001	
Cobalt			<0.001	
Colour	Clear	Clear	CLEAR	Clear
Comments	PUMP OVER	PUMP OVER		Pump Over
Copper-Total (mg/L)			0.013	
EC - Field	2,680	2,650	1,960	2,070
Electrical Conductivity @ 25°C			2,200	
Hydroxide Alkalinity as CaCO3			<1	
Ionic Balance (%)			4.78	
Iron-Total (mg/L)			1.09	
Lead-Total (mg/L)			0.002	
Magnesium-Dissolved (mg/L)			32	
Manganese (total)			0.014	
Mercury-Total (mg/L)			<0.0001	
Nickel-Total (mg/L)			<0.001	
Nitrate as N (mg/L)			<0.01	
Nitrite + Nitrate as N (mg/L)			<0.01	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	21-Mar-22	07-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84835**	**86134**	**87699**	**88876**
Lab Ref	**94701**	**95928**	**97474**	
Nitrite as N (mg/L)			<0.01	
Odour	Nil	Nil	NIL	Nil
pH (pH Unit)	7.8	7.9	8	7.9
pH Value (pH Unit)			8.23	
Potassium-Dissolved (mg/L)			4	
Purge Type	Tap	TAP	TAP	Tap
Selenium-Total (mg/L)			<0.01	
Sodium-Dissolved (mg/L)			496	
Stick up	0.47	0.47	0.47	
Sulfate as SO4 - Turbidimetric-			<1	
Temperature	21.1	17.2	21.5	19.1
Total Alkalinity as CaCO3 (mg/L)			1,030	
Total Anions			27.7	
Total Cations			25.2	
Total Dissolved Solids @180°C-			1,440	
Vanadium			<0.01	
Zinc (total)			0.085	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: 45061 Coocooboonah; Northing: 226935.4925; Easting: 6567303.1717

	28-Mar-22	07-Jun-22	18-Oct-22	20-Dec-22	28-Mar-23
Rec ID	**84980**	**86144**	**87702**	**89600**	**89812**
Lab Ref	**94846**	**95938**	**97477**		**99498**
Comments	WINDMILL	SWL ONLY	SWL ONLY	SWL ONLY	Broken
Standing Water Level	8.42	8.23	7.14	7.96	
Stick up	0.1	0.1	0.1	0.1	0.1
Water Depth to Stand	8.52	8.33	7.24	8.06	7.91

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: 45098; Northing: 224608; Easting: 6568868

	20-Dec-22
Rec ID	**88895**
Lab Ref	
Comments	Broken
Standing Water Level	7.96
Water Depth to Stand	8.06

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: 6249; Northing: 226815.754; Easting: 6567710.997

	21-Mar-22	07-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84834**	**86133**	**87698**	**88864**
Lab Ref	**94700**	**95927**	**97473**	
Aluminium (total) (mg/L)			0.06	
Ammonia as Nitrogen (N)			2.74	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)			<0.001	
Barium (total)			0.315	
Beryllium (total)			<0.001	
Bicarbonate Alkalinity as CaCO3			519	
Boron (total)			0.06	
Cadmium-Total (mg/L)			<0.0001	
Calcium-Dissolved (mg/L)			103	
Carbonate Alkalinity as CaCO3			<1	
Chloride (mg/L)			1,270	
Chromium-Total (mg/L)			<0.001	
Cobalt			<0.001	
Colour	Clear	Clear	CLEAR	Clear
Comments				TSR
Copper-Total (mg/L)			0.017	
EC - Field	5,010	4,750	4,600	4,650
Electrical Conductivity @ 25°C			4,410	
Hydroxide Alkalinity as CaCO3			<1	
Ionic Balance (%)			2.58	
Iron-Total (mg/L)			8.48	
Lead-Total (mg/L)			<0.001	
Magnesium-Dissolved (mg/L)			187	
Manganese (total)			1.98	
Mercury-Total (mg/L)			<0.0001	
Nickel-Total (mg/L)			<0.001	
Nitrate as N (mg/L)			0.32	
Nitrite + Nitrate as N (mg/L)			0.32	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	21-Mar-22	07-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84834**	**86133**	**87698**	**88864**
Lab Ref	**94700**	**95927**	**97473**	
Nitrite as N (mg/L)			<0.01	
Odour	Nil	Nil	NIL	Nil
pH (pH Unit)	7.6	7.5	7.5	7.4
pH Value (pH Unit)			7.89	
Potassium-Dissolved (mg/L)			4	
Purge Type	BAIL	BAIL	BAIL	Bail
Selenium-Total (mg/L)			<0.01	
Sodium-Dissolved (mg/L)			552	
Standing Water Level	9.73	9.3		8.71
Stick up	0.33	0.33	0.33	0.33
Sulfate as SO4 - Turbidimetric-			39	
Temperature	21.7	18.9	20.7	20.3
Total Alkalinity as CaCO3 (mg/L)			519	
Total Anions			47	
Total Cations			44.6	
Total Dissolved Solids @180°C-			2,880	
Vanadium			<0.01	
Water Depth to Stand	10.06	9.63	9.59	9.04
Zinc (total)			0.107	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: 901460; Northing: 223859; Easting: 6571173

	21-Mar-22	07-Jun-22	07-Oct-22	15-Dec-22	29-Mar-23
Rec ID	**84839**	**86145**	**87584**	**88897**	**89815**
Lab Ref	**94705**	**95939**	**97363**		**99501**
Comments	PUMP OVER	SWL ONLY -	PUMP OVER	Pump Over	Broken
Standing Water Level	14.15	14.04		13.68	
Stick up	0.4	0.4	0.4	0.4	0.4
Water Depth to Stand	14.55	14.44	14.31	14.08	14.01

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: Ivanhoe 3709; Northing: 222301.0604; Easting: 6568883.2261

	23-Mar-22	20-Jun-22	27-Sep-22	20-Dec-22
Rec ID	**84960**	**86146**	**87583**	**88898**
Lab Ref	**94826**	**95940**	**97362**	
Comments	UNABLE TO	BROKEN	PUMP	No Sample-

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: P1; Northing: 225592; Easting: 6569560

	28-Mar-22	20-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84976**	**86136**	**87700**	**88878**
Lab Ref	**94842**	**95930**	**97475**	
Aluminium (total) (mg/L)	0.07		0.47	
Ammonia as Nitrogen (N)	0.14		<0.01	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)	<0.001		0.002	
Barium (total)	0.211		0.215	
Beryllium (total)	<0.001		<0.001	
Bicarbonate Alkalinity as CaCO3	897		923	
Boron (total)	0.11		0.11	
Cadmium-Total (mg/L)	0.0001		<0.0001	
Calcium-Dissolved (mg/L)	148		148	
Carbonate Alkalinity as CaCO3	<1		<1	
Chloride (mg/L)	899		970	
Chromium-Total (mg/L)	<0.001		0.001	
Cobalt	<0.001		<0.001	
Colour	Clear	CLear	CLEAR	Clear
Comments				Plainview
Copper-Total (mg/L)	0.003		0.007	
EC - Field	4,170	4,180	4,150	4,190
Electrical Conductivity @ 25°C	4,080		3,940	
Hydroxide Alkalinity as CaCO3	<1		<1	
Ionic Balance (%)	0.46		4.61	
Iron-Total (mg/L)	0.12		1.39	
Lead-Total (mg/L)	0.001		0.002	
Magnesium-Dissolved (mg/L)	258		244	
Manganese (total)	0.324		0.076	
Mercury-Total (mg/L)	<0.0001		<0.0001	
Nickel-Total (mg/L)	0.001		0.003	
Nitrate as N (mg/L)	0.15		0.64	
Nitrite + Nitrate as N (mg/L)	0.15		0.64	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	28-Mar-22	20-Jun-22	18-Oct-22	15-Dec-22
Rec ID	**84976**	**86136**	**87700**	**88878**
Lab Ref	**94842**	**95930**	**97475**	
Nitrite as N (mg/L)	<0.01		<0.01	
Odour	Nil	Nil	NIL	Nil
pH (pH Unit)	7.4	7.4	7.4	7.6
pH Value (pH Unit)	8.18		8.01	
Potassium-Dissolved (mg/L)	7		7	
Purge Type	Bail	BAIL	BAIL	Bail
Selenium-Total (mg/L)	<0.01		<0.01	
Sodium-Dissolved (mg/L)	387		367	
Standing Water Level	12.66	12.74	12.58	12.09
Stick up	0.96	0.96	0.96	0.96
Sulfate as SO4 - Turbidimetric-	93		97	
Temperature	21.7	21.1	23.1	21.3
Total Alkalinity as CaCO3 (mg/L)	897		923	
Total Anions	45.2		47.8	
Total Cations	45.6		43.6	
Total Dissolved Solids @180°C-	2,570		2,730	
Vanadium	<0.01		0.02	
Water Depth to Stand	13.62	13.7	13.54	13.05
Zinc (total)	0.063		0.208	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: P2; Northing: 225012; Easting: 6570423

	28-Mar-22	20-Jun-22	19-Oct-22	15-Dec-22
Rec ID	**84975**	**86135**	**87727**	**88877**
Lab Ref	**94841**	**95929**	**97499**	
Aluminium (total) (mg/L)	1.3		0.04	
Ammonia as Nitrogen (N)	69.2			
Ammonium as N			0.88	
Appearance	Slightly turbid	Slight Turbid	Slight Turbid	
Arsenic-Total (mg/L)	0.001		0.001	
Barium (total)	0.072		0.272	
Beryllium (total)	<0.001		0.001	
Bicarbonate Alkalinity as CaCO3	861			
Boron (total)	0.09		0.08	
Cadmium-Total (mg/L)	<0.0001		<0.0001	
Calcium-Dissolved (mg/L)	146		116	
Carbonate Alkalinity as CaCO3	<1		<1	
Chloride (mg/L)	817		883	
Chromium-Total (mg/L)	0.003		<0.001	
Cobalt	0.003		0.001	
Colour	Brown	Brown	Brown	Clear
Comments				Femdale
Copper-Total (mg/L)	0.015		0.012	
EC - Field	1,400	4,150	4,080	3,840
Electrical Conductivity @ 25°C	766		3,840	
Hydroxide Alkalinity as CaCO3	<1		<1	
Ionic Balance (%)	3.33			
Iron-Total (mg/L)	1.91		2.46	
Lead-Total (mg/L)	0.009		<0.001	
Magnesium-Dissolved (mg/L)	234		196	
Manganese (total)	0.167		0.685	
Mercury-Total (mg/L)	<0.0001		<0.0001	
Nickel-Total (mg/L)	0.005		0.001	
Nitrate as N (mg/L)	1.7			

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	28-Mar-22	20-Jun-22	19-Oct-22	15-Dec-22
Rec ID	**84975**	**86135**	**87727**	**88877**
Lab Ref	**94841**	**95929**	**97499**	
Nitrite + Nitrate as N (mg/L)	0.7			
Nitrite as N (mg/L)	<0.01			
Odour	Sulfur	Sulfur	Nil	Nil
pH (pH Unit)	7.2	7.3	7.4	7.3
pH Value (pH Unit)	8.05		8.06	
Potassium-Dissolved (mg/L)	21		7	
Purge Type	Bail	BAIL		Bail
Selenium-Total (mg/L)	<0.01		<0.01	
Sodium-Dissolved (mg/L)	346		445	
Standing Water Level	14.97	15.13	14.94	14.88
Stick up	0.82	0.82	0.82	0.82
Sulfate as SO4 - Turbidimetric-	84			
Temperature	22.5	20.9	21.6	21.3
Total Alkalinity as CaCO3 (mg/L)	861		743	
Total Anions	45		41.1	
Total Cations	42.1		41.4	
Total Dissolved Solids @180°C-	440		2,480	
Vanadium	<0.01		0.01	
Water Depth to Stand	15.79	15.95	15.76	15.7
Zinc (total)	0.09		0.136	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: P3; Northing: 224211; Easting: 6568768

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84838**	**86142**	**87670**	**88884**
Lab Ref	**94704**	**95936**	**97447**	
Aluminium (total) (mg/L)			0.02	
Ammonia as Nitrogen (N)			<0.01	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)			0.001	
Barium (total)			0.09	
Beryllium (total)			<0.001	
Bicarbonate Alkalinity as CaCO3			653	
Boron (total)			0.23	
Cadmium-Total (mg/L)			<0.0001	
Calcium-Dissolved (mg/L)			261	
Carbonate Alkalinity as CaCO3			<1	
Chloride (mg/L)			2,150	
Chromium-Total (mg/L)			<0.001	
Cobalt			0.009	
Colour		Clear	CLEAR	Clear
Comments			OVERGROW	Mine
Copper-Total (mg/L)			0.002	
EC - Field	7,060	7,190	7,100	6,620
Electrical Conductivity @ 25°C			7,190	
Hydroxide Alkalinity as CaCO3			<1	
Ionic Balance (%)			1.22	
Iron-Total (mg/L)			0.6	
Lead-Total (mg/L)			0.001	
Magnesium-Dissolved (mg/L)			424	
Manganese (total)			0.462	
Mercury-Total (mg/L)			0.0001	
Nickel-Total (mg/L)			0.003	
Nitrate as N (mg/L)			1.5	
Nitrite + Nitrate as N (mg/L)			1.54	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84838**	**86142**	**87670**	**88884**
Lab Ref	**94704**	**95936**	**97447**	
Nitrite as N (mg/L)			0.04	
Odour	Nil	Nil	NIL	Nil
pH (pH Unit)	6.9	6.8	6.9	6.8
pH Value (pH Unit)			7.62	
Potassium-Dissolved (mg/L)			28	
Purge Type	BAIL	BAIL	BAIL	Bail
Selenium-Total (mg/L)			<0.01	
Sodium-Dissolved (mg/L)			654	
Standing Water Level	23.89	24.07		22.57
Stick up	0.44	0.44	0.44	0.44
Sulfate as SO4 - Turbidimetric-			254	
Temperature	21.9	21	21.8	21
Total Alkalinity as CaCO3 (mg/L)			653	
Total Anions			79	
Total Cations			77.1	
Total Dissolved Solids @180°C-			4,310	
Vanadium			<0.01	
Water Depth to Stand	24.33	24.51	24.08	23.01
Zinc (total)			0.023	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: P7; Northing: 225185.172; Easting: 6569323.237

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84837**	**86141**	**87671**	**88883**
Lab Ref	**94703**	**95935**	**97448**	
Aluminium (total) (mg/L)			0.02	
Ammonia as Nitrogen (N)			<0.01	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)			<0.001	
Barium (total)			0.07	
Beryllium (total)			<0.001	
Bicarbonate Alkalinity as CaCO3			720	
Boron (total)			0.19	
Cadmium-Total (mg/L)			<0.0001	
Calcium-Dissolved (mg/L)			150	
Carbonate Alkalinity as CaCO3			<1	
Chloride (mg/L)			1,520	
Chromium-Total (mg/L)			0.001	
Cobalt			<0.001	
Colour	Clear	Clear	CLEAR	Clear
Comments				Mine
Copper-Total (mg/L)			0.004	
EC - Field	5,700	5,740	5,850	6,080
Electrical Conductivity @ 25°C			6,030	
Hydroxide Alkalinity as CaCO3			<1	
Ionic Balance (%)			1.1	
Iron-Total (mg/L)			0.06	
Lead-Total (mg/L)			<0.001	
Magnesium-Dissolved (mg/L)			274	
Manganese (total)			0.006	
Mercury-Total (mg/L)			<0.0001	
Nickel-Total (mg/L)			0.002	
Nitrate as N (mg/L)			5.75	
Nitrite + Nitrate as N (mg/L)			5.75	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84837**	**86141**	**87671**	**88883**
Lab Ref	**94703**	**95935**	**97448**	
Nitrite as N (mg/L)			<0.01	
Odour	Nil	Nil	NIL	Nil
pH (pH Unit)	7.1	7.2	7	7.1
pH Value (pH Unit)			7.86	
Potassium-Dissolved (mg/L)			20	
Purge Type	BAIL	BAIL	BAIL	Bail
Selenium-Total (mg/L)			<0.01	
Sodium-Dissolved (mg/L)			741	
Standing Water Level	13.6	13.61		12.99
Stick up	0.45	0.45	0.45	0.45
Sulfate as SO4 - Turbidimetric-			199	
Temperature	21.8	20.7	21.5	21.6
Total Alkalinity as CaCO3 (mg/L)			720	
Total Anions			61.4	
Total Cations			62.8	
Total Dissolved Solids @180°C-			3,500	
Vanadium			<0.01	
Water Depth to Stand	14.05	14.06	13.95	13.44
Zinc (total)			0.041	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: *Sunnyside*
From Date: *01-Jan-2022* **To Date:** *31-Dec-2023*
Standard: *<Blank>*

Data Point: P8; Northing: 225122.483; Easting: 6568894.834

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84836**	**86140**	**87672**	**88882**
Lab Ref	**94702**	**95934**	**97449**	
Aluminium (total) (mg/L)			0.04	
Ammonia as Nitrogen (N)			4.73	
Appearance	Clear	Clear	CLEAR	
Arsenic-Total (mg/L)			<0.001	
Barium (total)			0.138	
Beryllium (total)			<0.001	
Bicarbonate Alkalinity as CaCO3			290	
Boron (total)			<0.05	
Cadmium-Total (mg/L)			<0.0001	
Calcium-Dissolved (mg/L)			92	
Carbonate Alkalinity as CaCO3			<1	
Chloride (mg/L)			307	
Chromium-Total (mg/L)			<0.001	
Cobalt			<0.001	
Colour	Clear	Clear	CLEAR	Clear
Copper-Total (mg/L)			0.002	
EC - Field	1,450	1,480	1,510	1,540
Electrical Conductivity @ 25°C			1,530	
Hydroxide Alkalinity as CaCO3			<1	
Ionic Balance (%)			1.13	
Iron-Total (mg/L)			0.23	
Lead-Total (mg/L)			<0.001	
Magnesium-Dissolved (mg/L)			67	
Manganese (total)			1.66	
Mercury-Total (mg/L)			<0.0001	
Nickel-Total (mg/L)			0.002	
Nitrate as N (mg/L)			0.19	
Nitrite + Nitrate as N (mg/L)			0.19	
Nitrite as N (mg/L)			<0.01	

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

	21-Mar-22	20-Jun-22	17-Oct-22	15-Dec-22
Rec ID	**84836**	**86140**	**87672**	**88882**
Lab Ref	**94702**	**95934**	**97449**	
Odour	Slight Sulfur	Nil	YES	Nil
pH (pH Unit)	7.1	7.2	7.1	7
pH Value (pH Unit)			7.57	
Potassium-Dissolved (mg/L)			12	
Purge Type	BAIL	BAIL	BAIL	Bail
Selenium-Total (mg/L)			<0.01	
Sodium-Dissolved (mg/L)			129	
Standing Water Level	24.18	24.23		24.39
Stick up	0.75	0.75	0.75	0.75
Sulfate as SO4 - Turbidimetric-			93	
Temperature	21.6	21.3	21.2	21.9
Total Alkalinity as CaCO3 (mg/L)			290	
Total Anions			16.4	
Total Cations			16	
Total Dissolved Solids @180°C-			928	
Vanadium			<0.01	
Water Depth to Stand	24.93	24.98	24.69	25.14
Zinc (total)			0.014	

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		

WHITEHAVEN COAL

Area/Site: ***Sunnyside***
From Date: ***01-Jan-2022*** **To Date:** ***31-Dec-2023***
Standard: ***<Blank>***

Data Point: Werona Production; Northing: 222511; Easting: 6570420

	28-Mar-22	07-Jun-22	19-Oct-22	20-Dec-22	29-Mar-23
Rec ID	**84979**	**86137**	**87874**	**88879**	**89818**
Lab Ref	**94845**	**95931**	**97643**		**99504**
Comments	NO SAMPLE	PUMP OVER	PUMP OVER	No Sample-	New Solar
Stick up		0.67	0.67		0.67

Outliers: 0

Field Name	Result	Outlier Comment

WHITEHAVEN COAL

Area/Site:	***Sunnyside***		
From Date:	***01-Jan-2022***	**To Date:**	***31-Dec-2023***
Standard:	***<Blank>***		