2022 Annual Review

Wilpinjong Coal Mine

Table 1 Annual Review Title Block

Name of operation	Wilpinjong Coal Mine
Name of operator	Wilpinjong Coal Pty Limited
Development consent/project approval #	SSD-6764
Name of holder of development consent/project approval	Wilpinjong Coal Pty Limited
Mining lease #	ML1573, ML1779 & ML1795
Name of holder of mining lease	Wilpinjong Coal Pty Limited
Water licences #	WAL21499, WAL19045, WL19055, WL19057, WL19058, WL19426, WAL19425, WAL19430, WAL36398, WAL9476, WAL39785, WAL41548, WAL41549, WAL41550, WAL41551
Name of holder of water licence	Wilpinjong Coal Pty Limited
RMP Start Date	01 July 2022
Annual review start date	01 January 2022
Annual review end date	31 December 2022

I, Kieren Bennetts, certify that this audit report is a true and accurate record of the compliance status of the Wilpinjong Coal Mine for the period 01 January 2022 to 31 December 2022 and that I am authorised to make this statement on behalf of Wilpinjong Coal Pty Limited.

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	Kieren Bennetts
Title of authorised reporting officer	Environment & Community Manager
Signature of authorised reporting officer	
Date	31 March 2023

This 2022 Annual Review (AR) (this Report) presents a summary of regulatory compliance, environmental performance and community engagement activities for the *Reporting Period* from 1 January 2022 to 31 December 2022.

This Report provides the results and assessment of environmental performance relevant to the current development consent approval SSD-6764 for the *Reporting Period*.

This AR has been prepared to satisfy the requirements of Condition 4, Schedule 5 of Development Consent (SSD-6764) requiring the preparation of an Annual Review and conditions within Mining Lease (ML) ML1573, ML1779, ML1795 and EPBC Approval 2015/7431. The AR was developed to align with the *Annual Review Guideline (October 2015)* issued by the NSW Department of Planning and Environment (DPE).

Copies of this Report will be provided to the following stakeholders:

- NSW Department of Planning and Environment (DPE);
- NSW – Resource Regulator NSW - RR);
- NSW Environment Protection Authority (EPA);
- DPE – Division of Water (DPE – Water);
- DPE - Biodiversity, Conservation & Science (BSC);
- Mid-Western Regional Council (MWRC);
- NSW Health;
- Department of Agriculture, Water and the Environment; and
- The Mine's Community Consultative Committee (CCC).

In addition, a copy will be made publicly available on the Peabody website: www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wilpinjong-Mine/Approvals,-Plans-Reports in accordance with Condition 12(a), Schedule 5 of Development Consent (SSD-6764).

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1.0 STATEMENT OF COMPLIANCE

Table 2 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes/No*
SSD-6764	**No**
ML1573	**Yes**
ML1779	**Yes**
ML1795	**Yes**
EL6169 & EL7091	**Yes**
EPL12425	**No**
Water Licences	**Yes**
EPBC Approval 2015/7431	**Yes**

Notes:* Refer to **Table 3** and **Section 11.2** for details

Table 3 Non-Compliances

Relevant Approval	Condition	Summary of Condition Description	Compliance Status	Summary of Comment	Section in AR
SSD-6764	Con 30(d) (iii) Sch 3	Reporting trigger exceedance surface water quality	Non-compliance	Trigger exceedance requires reporting as per TARP	**Section 11.2**
	Con 30(d) (iv), Sch 3	Reporting trigger exceedance groundwater level	Non-compliance	Trigger exceedance requires reporting as per TARP	
	Con 30(d) (iv), Sch 3	Reporting trigger exceedance groundwater water quality	Non-compliance	Trigger exceedance requires reporting as per TARP	
	Con. 61, Sch 3	The Rehabilitation Strategy was not finalised	Non-compliance	Ongoing consultation in 2022. Resubmit in 2022 and approved in 06/12/2022 and completed	
EPL12425	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	HV1 did not operate due to power outage	
	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	HV5 did not operate due to power outage	
	M4.2	Requirement to monitor meteorological data	Non-compliance	Met station did not operate due to planned maintenance	
	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	TEOM 3 did not operate due to power outage	
	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	TEOM 4 did not operate due to power outage	
	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	TEOM2.5 did not operate due to power outage	
	O1.1	Employees exposed to NOx fume from a planned blast	Non-compliance	Employees exposed to NOx fume from a planned blast	
	E1.1	Water discharge limit exceeded	Non-Compliance	Water discharge limit exceeded, but below the combined total limit.	

Table 4 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)

2.0 INTRODUCTION

2.1 Mining Operations

The Wilpinjong Coal Mine (the Mine) is owned by Wilpinjong Coal Pty Limited (WCPL), a wholly owned subsidiary of Peabody Australia Pty Ltd (Peabody). The Mine is an existing open cut coal mining operation situated approximately 40 kilometres (km) north-east of Mudgee, near the Village of Wollar, within the Mid-Western Regional Local Government Area, in central New South Wales (NSW) (**Figure 1**). The mine produces thermal coal products which are transported by rail to domestic customers for use in electricity generation and to the Port of Newcastle for export. Open cut mining operations and associated mobile equipment movements are undertaken 24 hours per day, seven days per week.

WCPL and Peabody Pastoral Holdings Pty Ltd are a major landholder owning adjacent rural properties and land to the east and south-east of the mine. Land to the west of the mine is owned by adjacent mining companies, whilst the National Parks and Wildlife Service estate own significant land to the north and south-west of the Mine.

Private properties are located predominantly in and around the Wollar Village approximately 1.5 km to the east of the Mine and along Mogo Road to the north of the Mine.

The Mine originally operated under Project Approval (PA 05-0021) that was granted by the Minister for Planning under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) on 1 February 2006. On 24 April 2017, WCPL was granted Development Consent (SSD-6764) for the Wilpinjong Extension Project (WEP) that provides for the continued operation of the Mine at rates of up to 16 million tonnes per annum (Mtpa) of run-of-mine (ROM) out to 2033, and access to approximately 800 hectares (ha) of open cut extensions. Development Consent (SSD-6764) has superseded the Project Approval (Project Approval 05-0021)[1]. WCPL commended development under Development Consent SSD-6764 on the 19 September 2017.

The approximate extent of the WEP approved open cut and contained infrastructure area at Wilpinjong Coal Mine is shown on **Figure 2**. Major components include open cut pits, an elevated waste rock emplacement in Pit 2, ROM pads/coal stockpiles, water management infrastructure, CHPP, product coal stockpiles and rail and other associated infrastructure areas. Open cut mining targeting the Ulan Coal Seam and Moolarben Coal Member (within ML1573, ML1779 & ML1795) and the handling and processing of ROM coal at the CHPP is currently approved to operate 24 hours per day, seven days per week.

2.2 Mine Contact Details

Contact details for key personnel responsible for environmental management at the Mine are in **Table 5**.

Table 5 Mine Contact Details

Name	Position	Contact Details
Jacques du Toit	General Manager	Email: jdutoit@peabodyenergy.com
Kieren Bennetts	Environment & Community Manager	Email: kbennetts@peabodyenergy.com

The street, postal address and contact telephone numbers for the Mine are as follows:

Street Address
1434 Ulan-Wollar Road
WOLLAR NSW 2850

Postal Address
Locked Bag 2005
MUDGEE NSW 2850

Phone Number
Ph:(02) 6370 2500

[1] PA05-0021 was surrendered on the 28 April 2020 as required by Condition 9, Schedule 2 of SSD-6764 (Surrender of Existing Project Approval).

Figure 1 Locality Plan

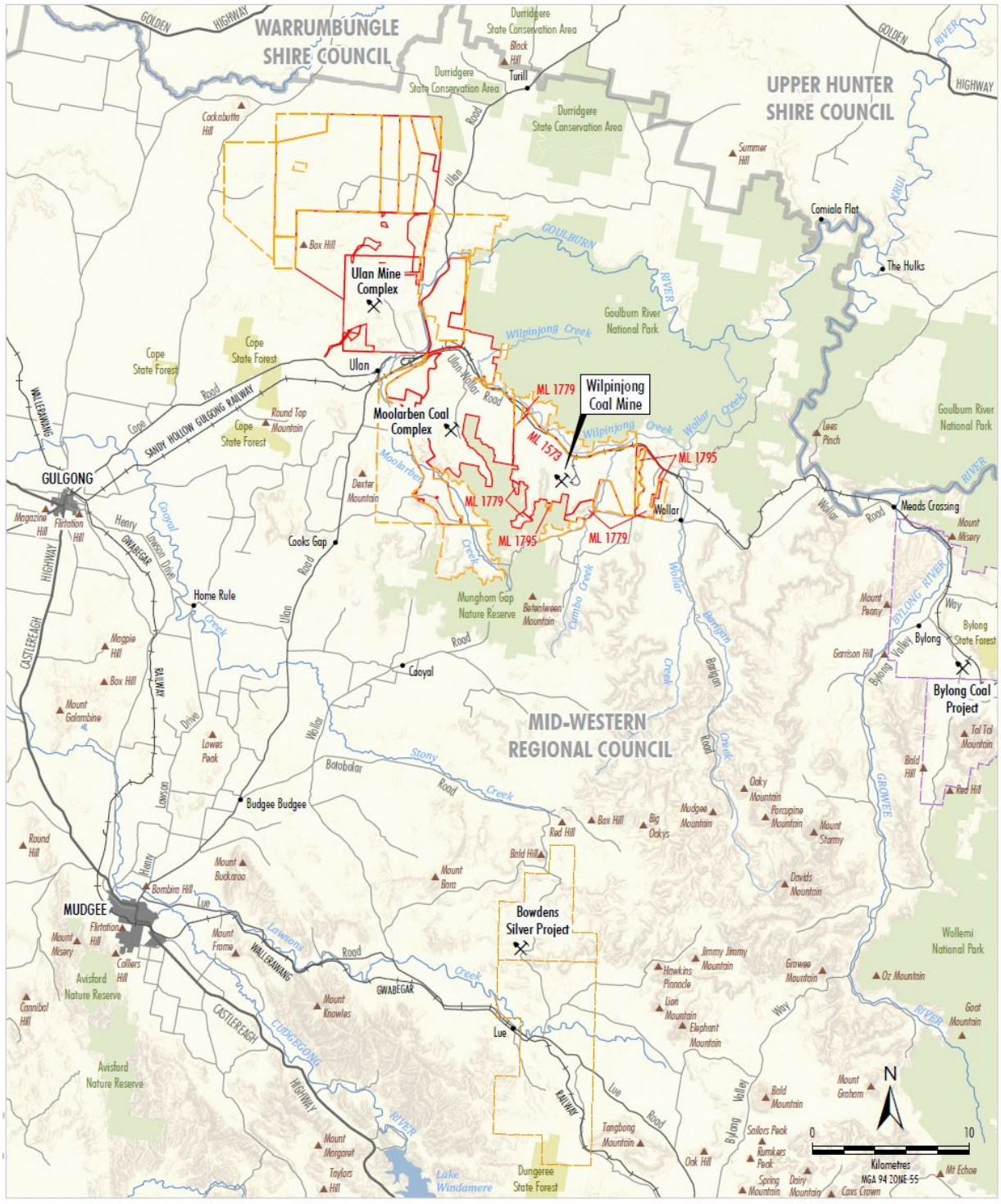
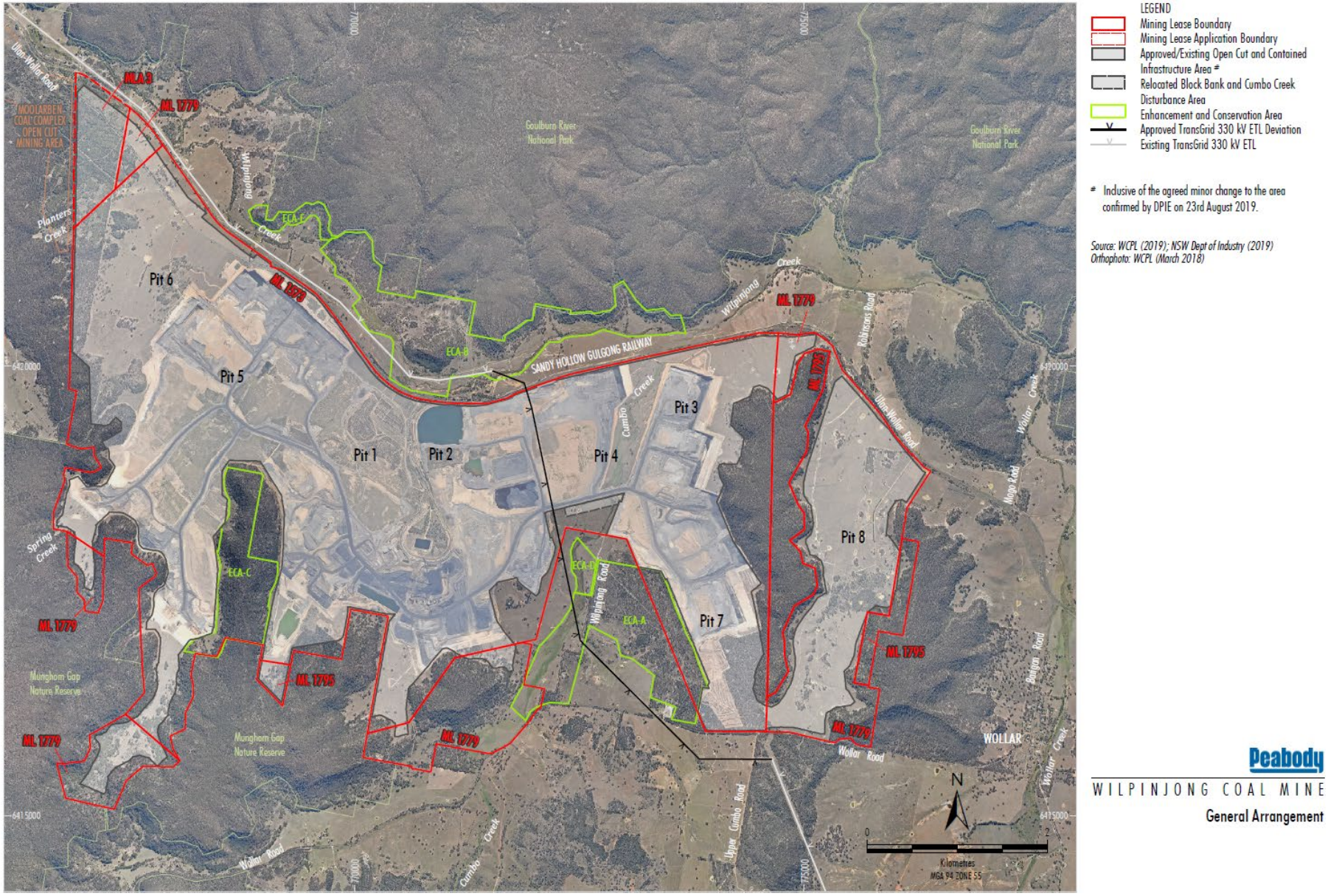


Figure 2 The Approved WEP Layout and Surrounds



3.0 APPROVALS

Table 6 presents the current approvals, leases and licences that the Mine operates under.

Table 6 Mine Approvals, Leases and Licences

Relevant Authority	Instrument	Approval/Licence No.	Expiry Date
DPE	Development Consent	SSD-6764	28 years from commencement of Project Approval (i.e. 2033)
NSW-RR	Mining Lease	ML1573	February 2027
	Mining Lease	ML1779	20 December 2039
	Mining Lease	ML1795	27 September 2040
	Mining Lease Application	MLA 616	**Section 3.3**
	Exploration Licence	EL 6169	28/11/2022^
	Exploration Licence	EL 7091	03/03/2024
	Exploration Licence	EL 9399	3 May 2028 refer to **Section 3.4**
	Mine within Wilpinjong B Notification Area	ML 1573	Endorsed DSC 19 February 2013 Approved 24 January 2014
	Rehabilitation Management Plan (RMP)	Submitted 1/07/2022	**Section 3.5**
	Tailings Emplacement	Section 101 – TD1 and TD2 (approv. No. 07/1226)	February 2006 (Facility decommissioned)
	Tailings Emplacement	TD3 and TD4 (High Risk Activity Notification)	December 2011 (Facility decommissioned)
	Tailings Emplacement	TD5 (High Risk Activity Notification)	December 2013 (Facility decommissioned)
	Tailings Emplacement	TD6 (High Risk Activity Notification) 02/09/2016	NA
	Tailings Emplacement	Section 101 - Decommission TD2 (approv. No. 09/2396)	29 April 2009 (Facility decommissioned)
	Tailings Emplacement	Section 101 - Decommission TD1 (approv. No. 09/2396)	28 October 2011 (Facility decommissioned)
EPA	Environment Protection Licence (EPL)	EPL 12425	Until the licence is surrendered, suspended or revoked. The licence is subject to review every 3 years
	NSW Radiation Control Act 1990 Registration	Licence Number 5061384	02 January 2023
	Explosives Licence	*NSW Explosives Act 2003* Part 3 Licence (Licence Number XSTR200024)	24 March 2023
DCCEEW	EPBC Approval	EPBC 2015/7431	31 December 2033
DPE-Water	Water Licences	Refer to **Table 22** & **Table 23** in Section 7.1	Refer to **Table 22** & **Table 23** in Section 7.1

Note: Copies of the Development Consent (SSD-6764), EPL 2425 and ML1573, ML1779 & ML1795 are available on the Peabody Energy website (http://www.peabodyenergy.com) ^ Renewal for EL6169 submitted and pending approval

3.1 Ulan Road Strategy (Summary of Actions 2022)

The Ulan Road Strategy (the Strategy) defines the program for upgrading and maintenance of Ulan Road between Mudgee and the entrance to the underground surface facilities of Ulan Coal Complex over the next 21 years and was approved by NSW Planning and Environment on 25 May 2013. The operation of the

Strategy relies upon the Funding and Delivery of Ulan Road Upgrade and Maintenance Deed (the Deed) made between the Mines and Mid-Western Regional Council (MWRC) (Appended, clause 19 extracted). Contributions to the Strategy by the Mines in accordance with the deed are mandatory under project approval consent conditions, as modified over the past 5 years. The Strategy also provides for the completion of noise attenuation works of eighteen identified properties along Ulan Road.

It was reported for the 2020 AR reporting period, that all fifteen properties within the zone for noise mitigation measures had their respective noise mitigation measures completed. The last remaining properties to finalise noise agreements occurred in April and July 2020. One property has declined noise mitigation works and two properties are outside the zone for noise mitigation measures. Since the previous 2020 AR, it has been clarified by one property owner that they had not arranged completion of all agreed works. The outstanding mitigation measure are currently progressing, with the installation of windows.

All associated works regarding the capital upgrades for Ulan Road and Cope Road in line with the Strategy and managed by MWRC have been 100% completed, the maintenance period is ongoing in accordance with the Strategy (maintenance period ongoing for the Wilpinjong Coal Project).

3.2 Changes to Approvals

There were three variations to EPL 12425 during the Reporting Period, including:

- Licence Variation Notice 1623412 to vary licence condition to increase discharge volume from 5 megalitres per day (5ML/day) to 6.5 ML/day;
- Licence Variation Notice 1623919 to discharge from the premises, under emergency conditions, surplus rainwater captured and stored in open cut pits and associated dams. Licence condition *E1 Emergency Water Discharge* permitted the volumes of water discharged from:
    - Point 30 - 18 ML/day
    - Point 31 - 18 ML/day
    - Point 32 - 35 ML/day
- Licence Variation Notice 1625163 to extend the time of the water discharge under emergency water discharge conditions from 5pm on the 25 November 2022 to 5pm 1 January 2023 from the following locations:
    - Point 30 - 5 ML/day
    - Point 32 - 15 ML/day

Other approval related activities that occurred during 2022 included revising the Social Impact Management Plan (SIMP) to include the decision from the CCC in June 2022 not to proceed with an annual social event on the basis it would not add community value. Subsequently the SIMP was revised and resubmitted for approval in June 2022 (**Section 3.5**) to include the community responses regarding social day event and the closure of the Wollar Store with new mailboxes installed to continue the mail service.

WCPL sought an extension date of 31 March 2023 regarding the transfer of Biodiversity Offset Areas 1-5 (BOAs) to the National Parks and Wildlife Service (NPWS). DPE requested further consultation with NPWS to see if they supported the requested timeline, with NPWS responding June 2023 was more achievable.

3.3 Mining Lease Application

The WEP extended into three new Mining Lease Application (MLA) areas within both EL 6169 and EL 7091. Two MLA's including MLA510 and MLA515 have now been granted approval and converted to ML1779 and ML1795 respectively (**Figure 2**). ML1779 was approved on the 20 December 2018. ML1795 was approved on the 27 September 2019.

MLA616 is the last mining lease required to cover the approved mining area for the WEP (i.e. displayed as MLA3 on **Figure 2**). MLA616 was lodged on the 2 May 2022 and covers approximately 66.54ha in the north-

western corner of the WEP Approval Area. During the Reporting Period granting of Lease for MLA616 was pending. No mining activities will occur in ML 616 until a new ML is issued, and the RMP and WCPL's Colliery Holding Boundary is amended and approved by the NSW-RR. WCPL will also renew existing ELs and ML1573 as required during the life of the Mine.

3.4 Exploration Licence Application (ELA)

WCPL submitted ELA 5804 (Tralee) Application on the 9 May 2019 under as an operational allocation. Due to the application generating market interest ELA 5804 was refused and the area applied for was referred to the competitive allocation process. WCPL lodged an expression of interest in the competitive allocation process for the Wollar Allocation Area on the 29 July 2021. Due to no other expressions of interest being received by the NSW government the competitive allocation process was cancelled.

WCPL subsequently lodged operational application ELA 6415 on 17 December 2021. ELA 6415 was granted authority, now Exploration Licence 9399 (EL 9399) by the Minster for Regional NSW on the 19 September 2022, in accordance with the provisions of s22(1) of the *Mining Act 1992*. EL9399 covers approximately 1670ha.

3.5 Management Plans

WCPL operates an Environmental Management System to manage compliance and advance continual improvement across the Mine. During the 2022 Reporting Period all management plans were revised and updated accordingly and submitted for re-approval as required by SSD-6764 on the 30 June 2022. A summary of the status of management plans required by SSD-6764 is presented in **Table 7**.

Table 7 Status of Environmental Management Plans

Management Plan	Schedule 3 of SSD-6764	Approval Status
Noise Management Plan*	Condition 5	Version 7 approved on 08 August 2022 Version 8 approved on 23 January 2023
Blast Management Plan*	Condition 14	Version 9.1 approved on 17/12/2022
Blast Fume Management Strategy*	Condition 14	Version 6 approved on the 17/12/2022
Air Quality Management Plan*	Condition 20,	Version 8.1 approved on 17/12/2022
Water Management Plan*	Condition 30	Version 8 pending approval^
Site Water Balance*	Condition 30(d)(ii)	Version 6 pending approval^
Surface Water Management Plan*	Condition 30(d)(iii)	Version 6 pending approval 2022^
Groundwater Management Plan*	Condition 30(d)(iv)	Version 6 pending approval^
Biodiversity Management Plan	Condition 42	Version 7.1 approved on 02/09/2021
Aboriginal Cultural Heritage Management Plan*	Condition 47	Version 9 approved on 23/08/2022
Spontaneous Combustion Management Plan*	Condition 20(g)	Version 8.1 approved on 17/12/2022
Historic Heritage Management Plan*	Condition 49	Version 6 approved on 06/02/2023
Rehabilitation Management Plan*	Condition 64	Version 1 approved on 25/01/2023
Environmental Management Strategy*	Condition 1, Schedule 5	Version 9 approved 14/07/2022
Social Impact Management Plan*	Condition 63	Version 3 pending approval^

Notes: * Revised and resubmitted in June 2022. ^Pending approval at the end of the 2022 Reporting Period

During the reporting period, WCPL was in consultation with the relevant agencies and stakeholders developing and progressing, but not limited to the following;

- The Rehabilitation Strategy as required by Condition 61, Schedule 3 of the Development Consent SSD-6764:

  - Revised final landform design and supporting water resources assessment work conducted in 2021;
  - Revised landform concept and resubmission of the Rehabilitation Strategy in 2022; and
  - Condition approval of the Rehabilitation Strategy on 6 December 2022, subject to updating the groundwater model and continued consultation with MCO regarding an integrated final landform.

- The Rehabilitation Management Plan (RMP) was prepared by WCPL in accordance with the NSW Resources Regulator (NSW RR) *Form and Way-Rehabilitation Management Plan for Large Mines* (NSW RR, July2021). The RMP was developed to satisfy the requirements of Condition 64, Schedule 3 of Development Consent (SSD-6764). The development of the RMP also satisfies the requirements of Mining Leases (ML) ML1573, ML 1779 and ML1795. The initial RMP was finalised on the 01 July 2022.

  A revision to the RMP was completed in December 2022 to align with the approved Rehabilitation Strategy. The revised RMP (Version 1) was approved by the DPE on the 25/01/2023.

  The former Mining Operations Plan (MOP) 2021-2022 prevailed for rehabilitation requirements until the expiry of the transitional period on 2 July 2022, at which point the MOP was superseded by the RMP and supported by the Annual Rehabilitation Report and Forward Program (ARRFP).

  The ARRFP was uploaded to the NSW-RR portal on the 1 July 2022. The indicative three-year mining sequence and rehabilitation sequence within the ARRFP, was based on the financial year period, which involves primarily the rehabilitation of mine waste rock emplacements as they become available within the overburden emplacement area mining domain. The ARRFP is scheduled to be updated and resubmitted by the end of March 2023 with a revised three-year mining sequence and rehabilitation sequence based on calendar year to align with existing annual reporting requirements.

The status of the above plans, strategies and performance criteria will be provided in the next AR. In accordance with Schedule 5, Condition 5 of SSD-6764, WCPL will review and if necessary revise the strategies, plans and programs required under the consent within three months of the submission of this Report to relevant government regulators.

In accordance with Schedule 5, Condition 12 of SSD-6764, relevant management plans have been made available to the public on the Peabody Energy website www.peabodyenergy.com

4.0 OPERATIONS SUMMARY

Table 8 displays the production summary for 2022 and the forecast production summary for 2023.

Table 8 Production Summary

Material	SSD-6764 Approved Limit	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden	NA	43.83Mbcm	49.48Mbcm
ROM Coal	16 Mtpa	13.28Mt	11.08Mt
Coarse Reject & Tailings (TFP)*	NA	2.932Mt	2.08Mt
Fine Tailings	NA	0	0
Product Coal	NA#	10.97Mt#	9.51Mt#

Notes: *Tailings Filter Press[2], Million tonnes per annum = (Mtpa), Million bank cubic meters = (Mbcm). # Product coal railed.

4.1 Other Operational Conditions

At the end of the 2022 Reporting Period, active open cut mining areas were located in Pit 1, Pit 5, Pit 6, Pit 7 and Pit 8 as identified in Plan 2A of the current ARRFP.

In accordance with Condition 51, Schedule 3 of SSD-6764, WCPL maintains records of the amount of coal transported from the site each year, and the number of coal haulage train movements generated by the Mine on a daily basis.

10.97Mt of product coal was transported from the Mine via rail during the 2022 Annual Reporting Period and involved an average of approximately 3.4 train movements per day, with a maximum of 7 train movements per day during 2022 (**Appendix 1**).

Train loading is available on a continuous basis, 24 hours a day and 7 days per week, with a maximum of 10 laden coal trains leaving the site per 24-hour period and an average of six train movements per day when calculated over one calendar year (Condition 7, Schedule 2 of SSD-6764).

No overburden material was supplied (or requested) to regional infrastructure projects in the vicinity of the Mine.

There were no significant construction activities in the Reporting Period, other than haul road and mining related support infrastructure construction.

A summary of exploration activities in 2022 is provided in **Appendix 2**.

4.2 Next Reporting Period

The proposed active mining areas for the 2023 Reporting Period are Pit 1, Pit 5, Pit 6, Pit 7 and Pit 8.

The mining and rehabilitation schedule are provided in Plan 2B Mining and Rehabilitation Year 2 within the Annual Rehabilitation Report & Forward Program in accordance with Part 2 of the NSW Resources Regulator *Form and Way – Annual Rehabilitation Report and Forward Program for Large Mines (2021)*, Clause 9 and 13 of Schedule 8A of *Mining Regulation 2016*.

Refer to **Appendix 8** for proposed mining and rehabilitation sequence in 2023.

Key construction activities in the next reporting period include haul road and mine support infrastructure construction in Pit 6 and Pit 8.

[2] In 2015 the Belt Press Filter (BPF) commenced at the CHPP. The BPF and associated transfer conveyor allows for co-disposal of tailings with coarse reject/overburden and improved recovery of water from tailings.

5.0 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The DPE accepted and approved the 2021 Annual Review on the 27 July 2022. DPE requested WCPL to provide a copy of the 2021 Annual Review on the Peabody Energy website www.peabodyenergy.com

There were several actions to be addressed in relation to the 2021 Annual Review. The DPE sought the following information as presented in **Table 9**.

Table 9 Actions Required from Previous Annual Review

Action required from previous 2021 Annual Review	By Who	Action taken by WCPL
Please provide the following information to the department via the Major Projects Portal by clos of business 1 August 2022: 1. the missing blast data from 2021; 2. the name of the Air Quality specialist you have engaged and when they plan to conduct a review and submit a report 3. the name of the Qualified person engaged to undertake the audit of Wilpinjong Coal inclusive of the Pit 3 pre-start area to determine compliance with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting?	DPE	As per the Department's response to Wilpinjong Coal's Annual Review received, 27 June 2022, please find below information as requested: *1. The missing blast data from 2021;* WCPL submitted the report via the Major Projects Planning Portal, 6 April 2022. *2. The name of the Air Quality specialist you have engaged and when they plan to conduct a review and submit a report;* Todoroski Air Sciences undertook the review and submitted the report to Wilpinjong Coal, 23 June 2022. The findings of the report were incorporated into Wilpinjong Coal's Air Quality Management Plan which was submitted to the DPE for approval 26 June 2022 via the Major Projects Planning Portal, following consultation with the NSW EPA as per SSD-6764 Schedule 3, Condition 20(a). AQMP Version 8.1 was approved on 17/12/2022 by the DPE. *3. The name of the Qualified person engaged to undertake the audit of Wilpinjong Coal inclusive of the Pit 3 pre-start area to determine compliance with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting:* Wilpinjong Coal engaged Phil Egan from CR Engineering to undertake the audit of Wilpinjong Coal inclusive of the Pit 3 pre-start area. The audit was undertaken on 3 December 2021. Report provided in **Appendix 9**.

6.0 ENVIRONMENTAL PERFORMANCE

Environmental management measures undertaken during the 2022 Reporting Period have been conducted as required by relevant management plans and monitoring programs developed for the Mine in accordance with SSD-6764 and EPL12425.

The 2022 Annual Review provides the results and assessment of environmental performance relevant to development consent approval SSD-6764. The locations of environmental monitoring undertaken throughout the 2022 Reporting Period are provided in **Appendix 3**.

6.1 Meteorological Monitoring

Local meteorological data for 2022 was recorded by the Mine's meteorological station and was operated in accordance with SSD-6764 and EPL 12425. The meteorological station monitors a number of parameters, including temperature, humidity, rainfall, wind speed and wind direction. The location of the meteorological station and associated tables and graphs are provided in **Appendix 3A**.

The total cumulative annual rainfall recorded for 2022 was 987.2mm, for 2021 was 942.4mm and for 2020 was 915.8mm. This represents three consecutive years of annual rainfall well above the long-term cumulative annual average rainfall (in the vicinity of the Mine) ranging from 587.7mm to 651.5mm (WEP EA).

The month with the highest total rainfall recorded was 174.4mm in October 2022. The least amount of rainfall was recorded in June with just 13mm for the month.

A maximum temperature of 33.1^{0}C (at 10m) was recorded in January and February 2022. The lowest minimum temperature was -1.8^{0}C (at 10m) recorded in July. The 2022 average minimum of 5.0^{0}C was slightly higher than the short term (i.e., year 2006 to 2015) average minimum of 3.0^{0}C. The 2022 average maximum of 26.2^{0}C was slightly lower than the short-term average maximum of 31.7^{0}C.

Wind speed recorded during the 2022 Reporting Period displayed an average monthly wind speed range between 1.6 metres per second (m/s) to 2.5m/s. The average windspeed in 2022 was comparable with 2021. A maximum wind speed of 14.3m/s was recorded in January 2022. Wind direction was generally from the South to South East during Summer and Autumn and from the West to South West in Winter.

6.2 Air, Blast & Noise Monitoring

Air Quality Monitoring

The Mine has developed and implemented an Air Quality Management Plan (AQMP - Version 8.1) (**Table 7**). Criteria for airborne particulate matter (i.e. dust) are specified in Condition 17, Schedule 3 of SSD-6764. During the 2022 Reporting Period, the Mine carried out dust monitoring in accordance with the AQMP at the locations in **Appendix 3B** and at the frequency displayed in **Table 10**.

Table 10 Summary of Air Quality Monitoring Program

Monitoring Parameter	Monitoring Locations	Frequency
Dust Deposition	DG4[4], DG5, DG8, DG11 & DG15	Monthly
	DG12[2], DG13[2] and DG14[2]	Monthly (mining < 1 km of the site)
High-Volume Air Sampling (PM10)	HV1, HV4[1] & HV5	24hrs every six-day cycle
TEOM (PM10)	TEOM 3 & TEOM 4	Continuous (24-hour average)
TEOM (PM2.5)	TEOM 5[3]	Continuous (24-hour average)*

Notes: [1] Data HV4 for management purposes only. [2] Aboriginal rock art site monitoring Sites 72, 152 and 153. [3] TEOM5 installed and operating prior to 31/12/2017. [4] DG4 revised as management monitoring in AQMP (Version 8.1) due to close proximity to mining.

The AQMP was revised in June 2022. The revised AQMP (Version 8.1) was updated to include 2021 IEA Actions which included revised triggers TARP for adverse weather conditions, updated figures, updated EPL licence requirements in Appendix 1 and air quality agreements. The revised AQMP (Version 8.1) was approved by the DPE on the 17 December 2022.

Table 12 contains the air quality monitoring results, as well as a discussion of the results for the Reporting Period. Further air quality monitoring results for 2022 Reporting Period are provided in **Appendix 3B**.

Spontaneous Combustion

The Mine has developed and implemented a Spontaneous Combustion Management Plan (Version 7.1) (SCMP) (**Table 7**) as Appendix 3 of the AQMP. As described in the SCMP there are areas of the mine prone to spontaneous combustions events. During 2022 there was a continued effort in managing those areas prone to an outbreak of spontaneous combustion.

In September 2021, WCPL carried out the Independent Environmental Audit (IEA) (**Section 10.1**) as required by Condition 10, Schedule 5 of Development Consent SSD-6764. The IEA proposed several recommendations for the SCMP to address odour complaints, including capture mitigation actions in response to spontaneous combustion issues identified during inspections, develop and implement an appropriate procedure to mitigate off-site odour impacts as they arise and review the frequency of entire site thermal surveys.

The SCMP was revised in June 2022. The revised SCMP (Version 8.1) was updated to include 2021 IEA Actions which included the recommendations from 2021 IEA to add corrective actions to inspection program, review the frequency of the aerial thermal imagery inspection program and updated Figure 3 regarding areas of risk. The revised SCMP (Version 8.1) was approved by the DPE on the 17 December 2022 as an appendix to the AQMP.There were no reportable incidents as a result of spontaneous combustion in 2022. There were two unverified odour complaints received during 2022 (**Section 9**).

Each of the odour complaints during 2022 received follow up checks by WCPL and were either unable to detect significant spontaneous combustion outbreaks with the capacity to generate offsite odours or detect odours beyond the boundary of the Mine. These checks also included a review of the wind speed and wind direction prior to receiving an odour complaint. The complainant also declined to discuss any of the odour complaints with a WCPL representative.

Spontaneous combustion propensity testing was undertaken in 2020 within Pit 6 and Pit 8. The results from the 2020 testing determined eight samples have a low propensity of spontaneous combustion (PSC) and nineteen have no PSC.

An assessment of the spontaneous combustion performance indicators as required by the SCMP is provided in **Table 11**. Refer to **Section 6.7** for ambient air monitoring program. WCPL will continue to implement the SCMP.

Table 11 Assessment of Spontaneous Combustion Performance Indicators

Performance Indicator	2022 Target	2022 Performance
Number of verified complaints received relating to spontaneous combustion	0	0*
Number of incidents relating to spontaneous combustion	0	0
Number of times operations have been shut down as a result of complaints/incidents relating to spontaneous combustion	0	0

Notes: * Investigated odour complaint and could not determine or verify the likely cause of the odour (refer to **Section 9.0** for further details).

Table 12 Air Quality Monitoring Environmental Performance

<table>
<tr><th>Approved Criteria [D]</th><th>WEP Predictions</th><th>Performance During the Reporting Period</th><th>Trend/Key Management Implications</th><th>Implemented/proposed Management Actions</th></tr>
<tr><td colspan="5">Deposited Dust [C]</td></tr>
<tr><td>4 g/m²/month [E]

(at any residences on privately owned land)</td><td>2g/m²/month

DG4, DG5, DG8, DG11 & DG15</td><td>The 2022 annual average dust deposition results for compliance purposes were below the approved criteria of 4 g/m²/month at compliance monitoring sites:
– DG4 (Ave: 3.7 g/m²/month)
– DG5 (Ave: 0.7 g/m²/month)
– DG8 (Ave: 1.1 g/m²/month)
– DG11 (Ave: 0.7 g/m²/month)
– DG15 (Ave:0.8 g/m²/month)</td><td>The 2022 results for depositional dust indicate that deposited dust levels are below the relevant cumulative criterion of 4g/m²/month at relevant compliance monitors in 2022.

The annual average measured levels in 2022 are generally well aligned with the modelled predictions and were slightly lower than 2021, with exception to DG4.

DG4 is located on WCPL land in close proximity to the mining lease boundary and was revised in AQMP (Version 8.1) as a monitoring point for management purposes as recommended WCPL air quality specialist.

For further results refer to Appendix 3B.</td><td rowspan="2">The Mine rehabilitated approximately 47.1ha of mine waste rock emplacement areas in 2022. The Mine is scheduled to complete approximately 54.01ha of mine waste rock rehabilitation in 2023.

In 2022 there were a total of 5 complaints regarding air quality and 2 odour complaints, when compared to 14 air quality complaints and 8 odour complains in 2021. Refer to Section 6.2 and Section 9 for details.

The effectiveness of the adopted control measures as described in the AQMP, WCPL were able to achieve compliance against the Air Quality Assessment Criteria Table 17, Schedule 3 of SSD-6764.

In accordance SSD-6764 and the recommendations from the 2021 IEA, WCPL revised the AQMP within three months of the submission of the 2021 Annual Review. AQMP (Version 8.1) was approved by the DPE on the 17 December 2022.

All dust related complaints were responded to in accordance with the Complaints Management Procedure.

During the Reporting Period the following control measures were implemented in accordance with the AQMP, including response to dust alarms from TEOMs, meteorological conditions assessed prior to blasting, active haul roads and traffic areas were watered on an appropriate basis using water carts and water sprays were utilised on the ROM coal bins, and on recently stripped areas as required.</td></tr>
<tr><td colspan="4">PM₁₀ (24hr Continuous Average Concentrations & 24hr 6 Day Cycle Concentrations)</td></tr>
<tr><td>50 µg/m³ [AF]</td><td>15-20 µg/m³

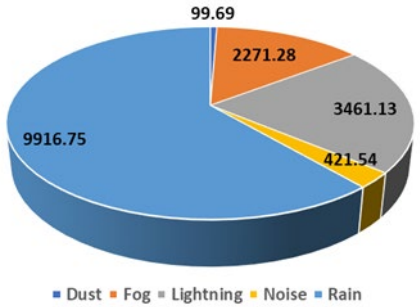
Village of Wollar</td><td>The 24-hour average PM₁₀ concentrations were below the relevant criterion of 50µg/m³ in 2022.
<table>
<tr><th rowspan="2">6 Day Cycle</th><th>HV1</th><th>HV4</th><th>HV5</th></tr>
<tr><th>µg/m³</th><th>µg/m³</th><th>µg/m³</th></tr>
<tr><td>PM₁₀ (Max)</td><td>18.9</td><td>26.20</td><td>24.8</td></tr>
<tr><td>PM₁₀ (Min)</td><td>1.0</td><td>1.30</td><td>1.6</td></tr>
</table>
<table>
<tr><th rowspan="2">Continuous</th><th>TEOM3</th><th>TEOM4</th></tr>
<tr><th>µg/m³</th><th>µg/m³</th></tr>
<tr><td>PM₁₀ (Max)</td><td>22.9</td><td>22.30</td></tr>
<tr><td>PM₁₀ (Min)</td><td>2.1</td><td>1.90</td></tr>
</table></td><td>The 24-hour average PM₁₀ concentrations were below the relevant criterion of 50µg/m3 during the Reporting Period.

The 24-hour average PM₁₀ concentrations in 2022 were generally lower than the 2021 results.

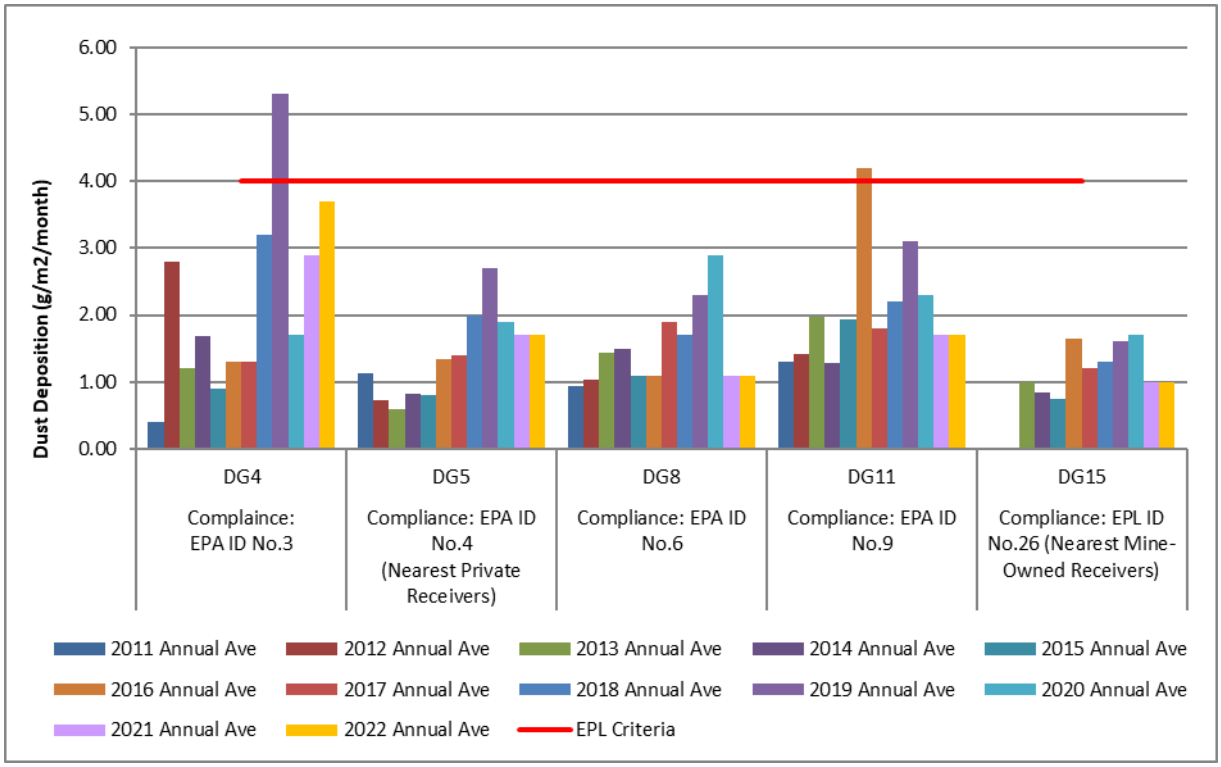
The 24-hour average PM₁₀ concentrations in 2022 are generally well aligned with the modelled predictions for HV1 located in the Village of Wollar.

HV4 is located on WCPL land in close proximity to the mining lease boundary and is a monitoring point for management purposes.

For further results refer to Appendix 3B.</td></tr>
</table>

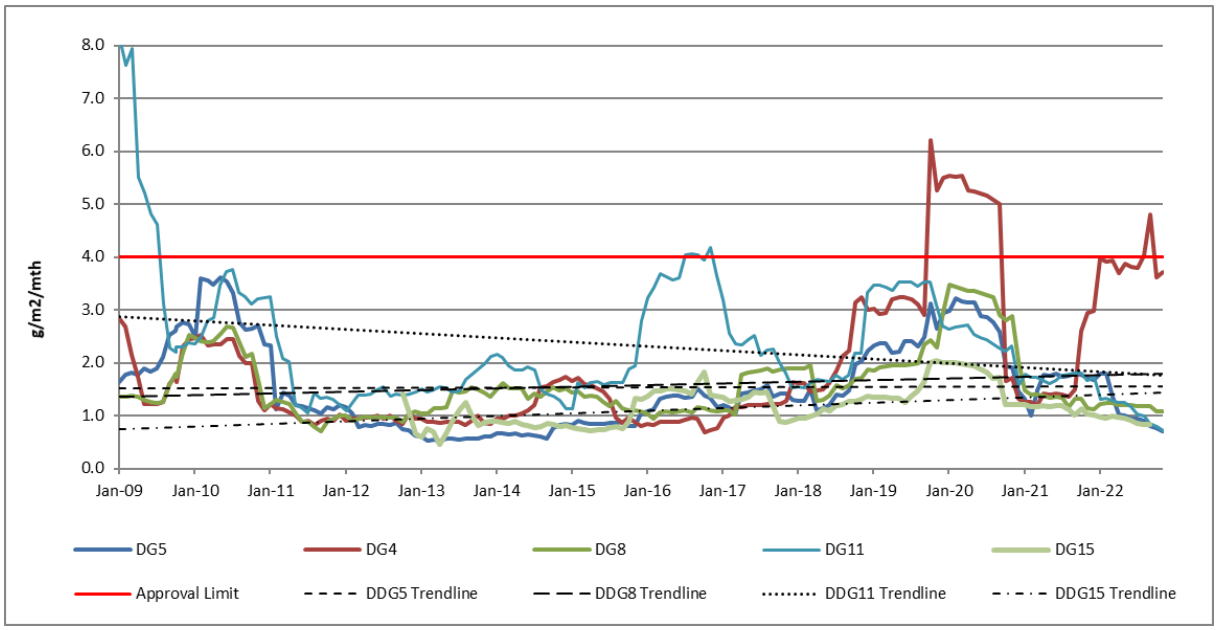
<table>
<tr><th>Approved Criteria [D]</th><th>WEP Predictions</th><th>Performance During the Reporting Period</th><th>Trend/Key Management Implications</th><th>Implemented/proposed Management Actions</th></tr>
<tr><td colspan="4">PM_{10} (Annual Average Concentrations)</td><td rowspan="3">In 2022 a total ≈99.69hrs of lost time hours associated with implementation of dust management strategies (i.e., lost time only captured for primary dig implements such as dozers, excavators and loaders) as a direct result of modifying the operations to remain compliant with relevant air quality criteria.
 
</td></tr>
<tr><td>30 µg/m³ [AE]</td><td>15-20 µg/m³
(for Wollar Road & Village of Wollar)</td><td>The 2022 annual average PM_{10} concentrations for “all days” were below criterion of 30µg/m³:
<table><tr><th rowspan="2">6 Day Cycle</th><th>HV1</th><th>HV4</th><th>HV5</th></tr><tr><th>µg/m³</th><th>µg/m³</th><th>µg/m³</th></tr><tr><td>PM_{10} (Ave)</td><td>6.96</td><td>8.48</td><td>9.59</td></tr></table><table><tr><th rowspan="2">Continuous</th><th>TEOM3</th><th>TEOM4</th></tr><tr><th>µg/m³</th><th>µg/m³</th></tr><tr><td>PM_{10} (Ave)</td><td>8.6</td><td>6.9</td></tr></table></td><td>The 2022 annual average PM_{10} concentrations were below the relevant Consent criterion of 30µg/m³.
The annual average PM_{10} concentrations in 2022 are generally well aligned with the modelled predictions for TEOM 3 located in the Village of Wollar
The annual average PM_{10} levels in 2022 are lower than the levels in previous years.
This decrease is likely due to the ending of drought conditions, increased rainfall and a significant reduction in the frequency of extraordinary events.
For further results refer to Appendix 3B.</td></tr>
<tr><td colspan="4">$PM_{2.5}$ (24hr & Annual Average Concentrations)</td></tr>
<tr><td>No criteria established</td><td>3-4 µg/m³
(for Village of Wollar)</td><td>The 2022 annual average and 24hr $PM_{2.5}$ concentrations were below the relevant adopted NEPM criterion.
<table><tr><th></th><th>Annual Average</th><th>Max. 24hr</th><th>Days > NEPM</th></tr><tr><td></td><td>µg/m³</td><td>µg/m³</td><td>µg/m³</td></tr><tr><td>2022</td><td>3.59</td><td>10.1</td><td>0</td></tr></table>Adopted NPEM criteria in accordance with AQMP:
Annual Average: 8 µg/m³
24 Hour: 25 µg/m³</td><td>The annual average $PM_{2.5}$ levels in 2022 are lower than the levels in previous years.
The annual average $PM_{2.5}$ concentrations in 2022 are generally well aligned with the modelled predictions for TEOM 5 located in the Village of Wollar
This annual average decrease is likely due to the ending of drought conditions, increased rainfall and a significant reduction in the frequency of extraordinary events.
For further results refer to Appendix 3B.</td></tr>
<tr><td colspan="5">Notes: g/m²/month = grams per square metre per month. µg/m³ = micrograms per cubic metre. (A) Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources); (B) Incremental impact (i.e. incremental increase in concentrations due to the development on its own); (C) Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and (D) Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Director-General. (E) Annual Averaging Period. F) 24 Hour Averaging Period.</td></tr>
</table>

Graph 1 Compliance Annual Average Dust Deposition Results 2011 – 2022



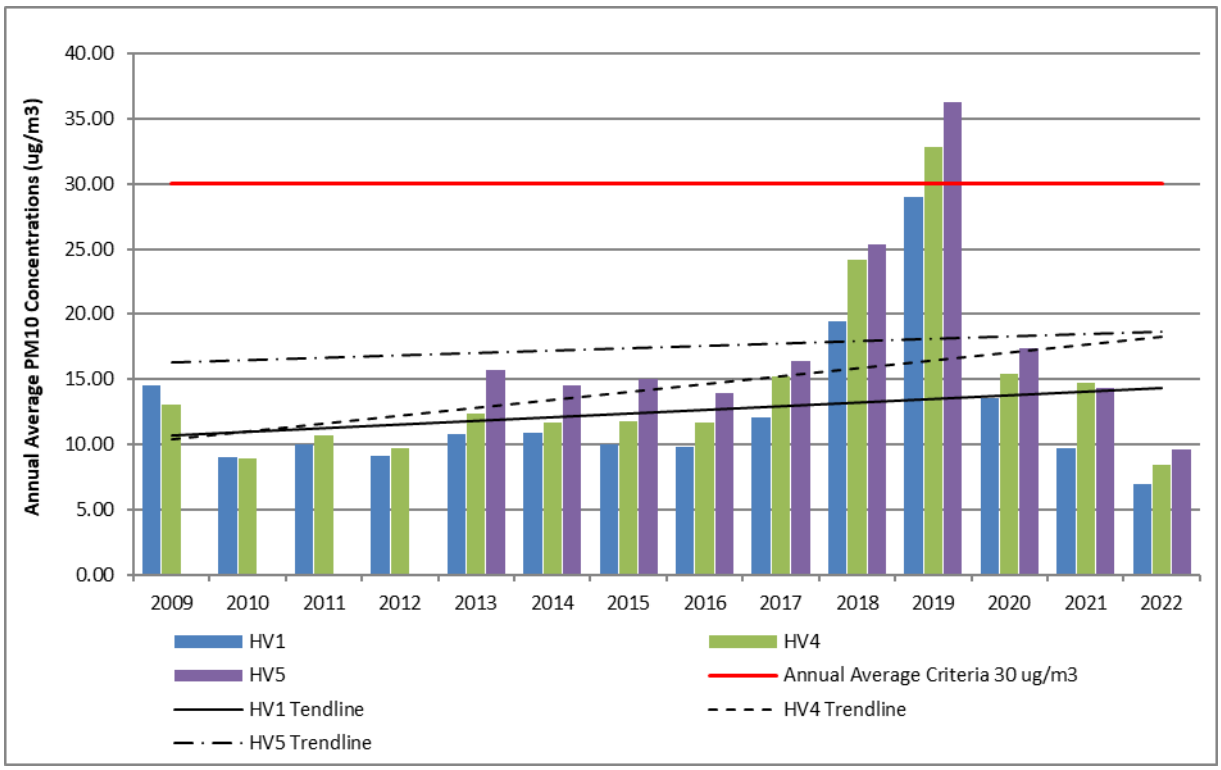
Notes: Based on the positioning of the compliance monitors at WCM, it can be assumed that the DG8 monitor is sufficiently away from mining activity and is generally represented of background levels for the area. On this basis, the potential incremental contribution from WCM can be estimated as the level recorded at the compliance monitors minus the level at DG8.

Graph 2 Compliance Dust Deposition Trends (Rolling Averages) 2009-2022



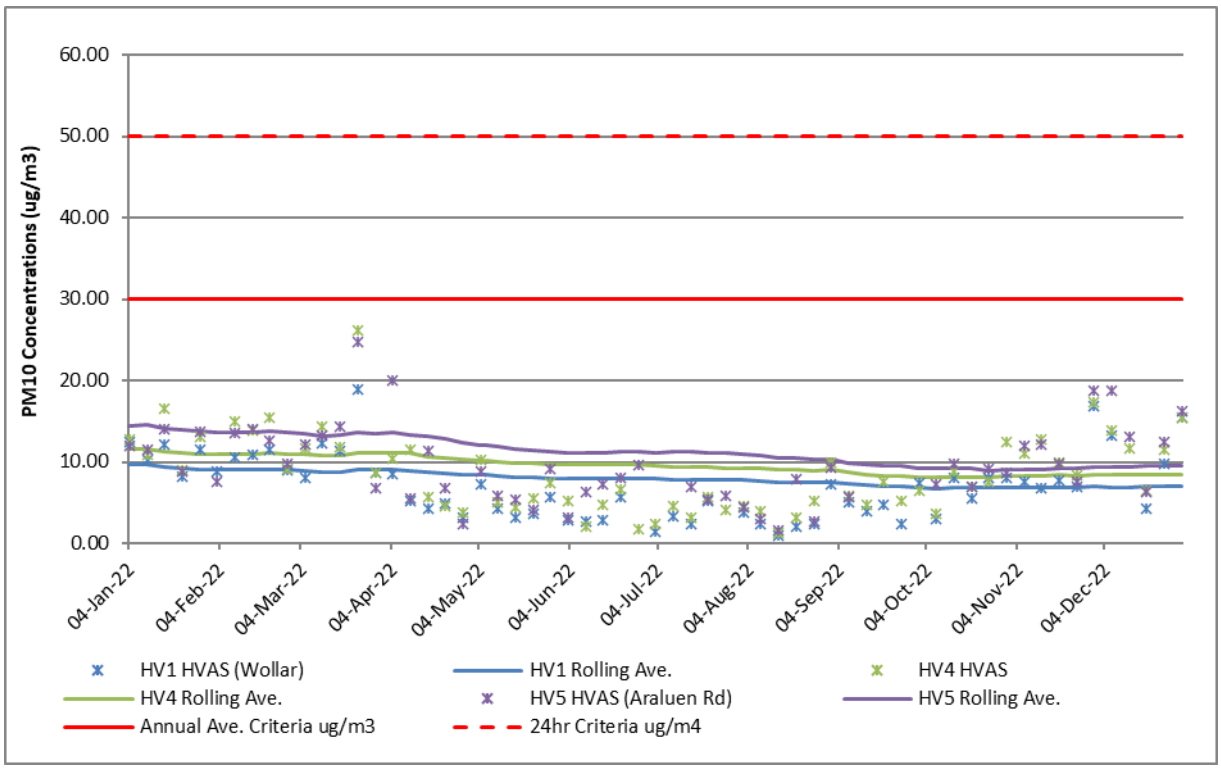
Notes: Drought conditions and extraordinary events would have impacted the background deposited dust levels in 2020. Currently, the nearest privately-owned residence to the DG4 monitor is located over 5km away and thus the DG4 monitor is no longer considered to be representative of dust levels at privately owned residences.

Graph 3 Compliance HVAS Annual Average PM_{10} Results and Trends 2009 – 2022



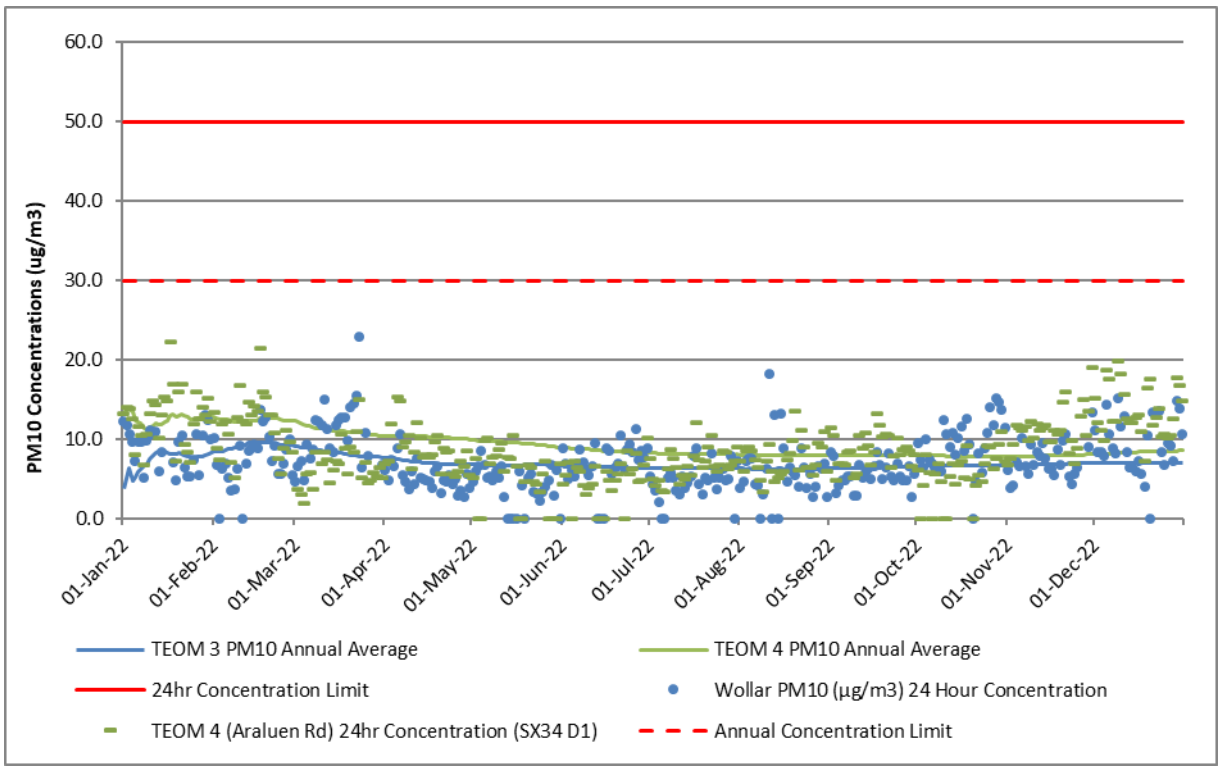
Notes: Elevated results in 2019 were caused by regional extraordinary events as described the 2019 Annual Review.

Graph 4 Compliance HVAS (Rolling Averages) Annual Average & 24hr 6-Day Cycle PM_{10} Results 2022

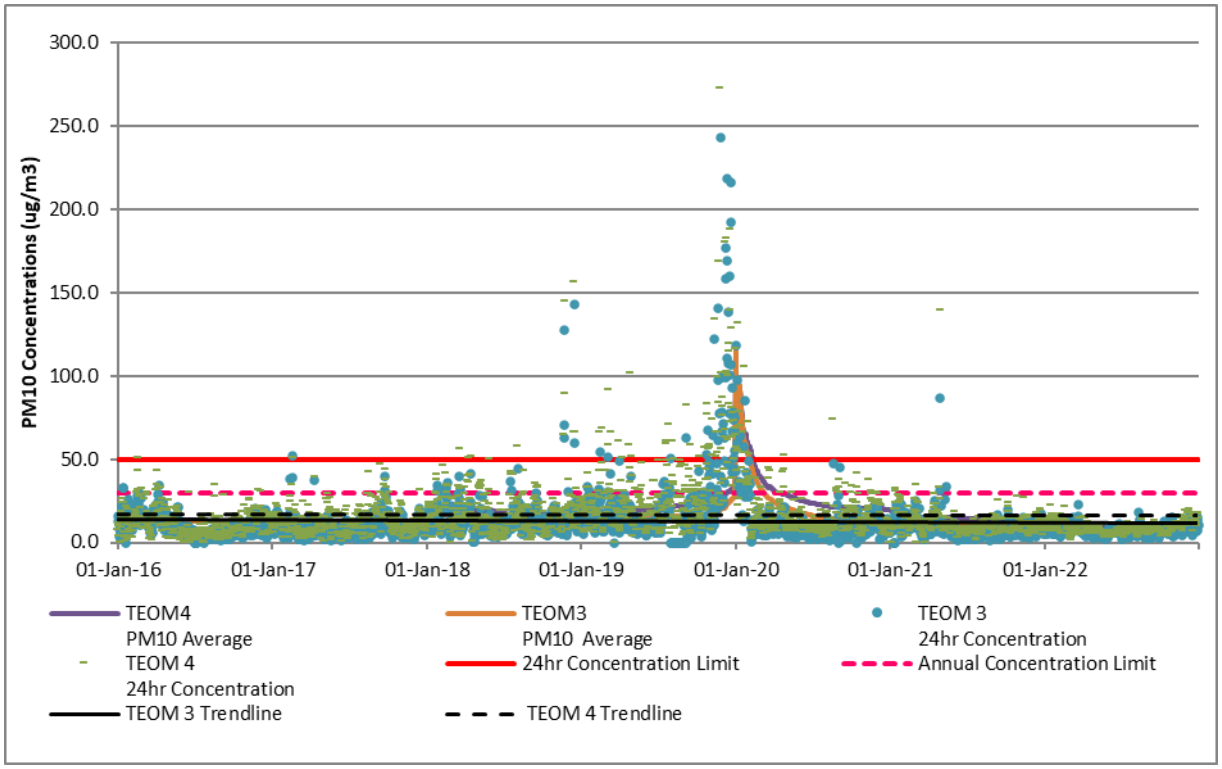


Notes: The nearest private residence to the HV4 monitor is located over 5km away from the monitor, the private residency response protocol (which includes an investigation of elevated readings at monitors representative of privately owned residences) is not triggered when elevated levels are recorded at this location as such, it may be more appropriate use to use HV4 as a management monitor rather than compliance monitor.

Graph 5 Compliance TEOM 24hr & Annual Average PM_{10} Results 2022

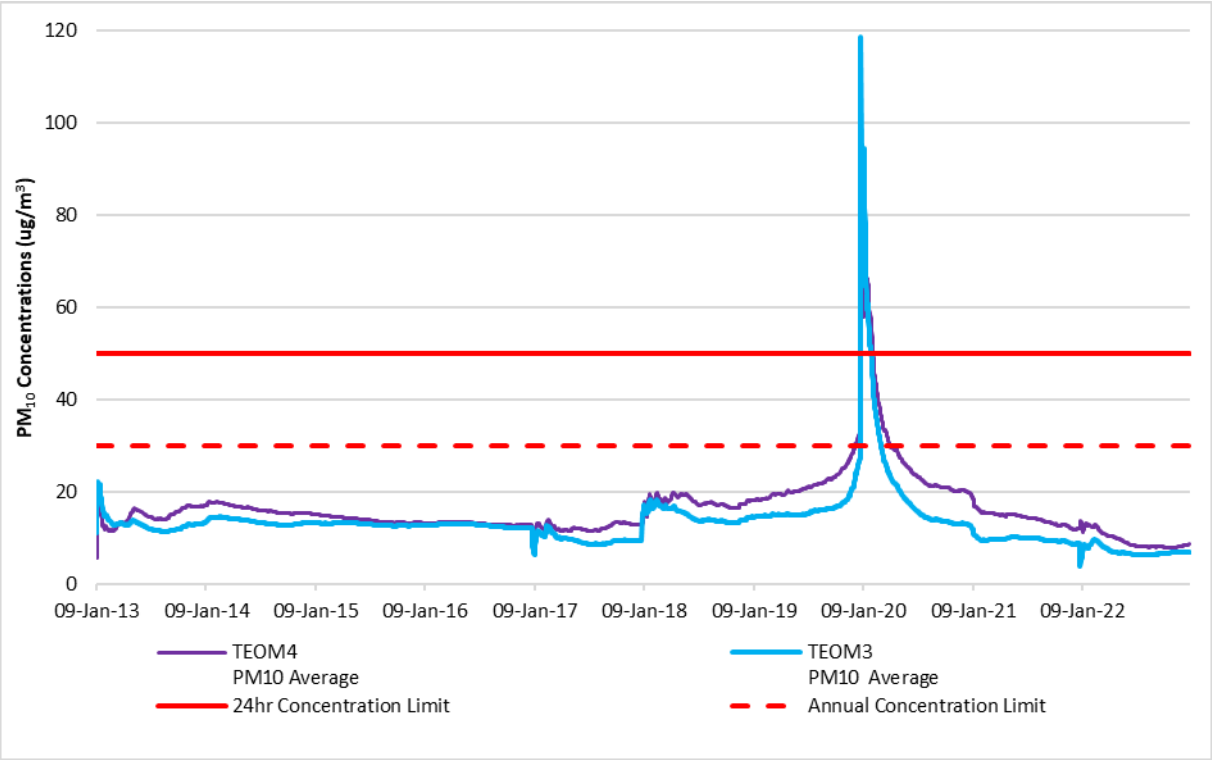


Graph 6 Compliance TEOM PM_{10} 24hr Results and Trends (Rolling Averages) 2015-2022



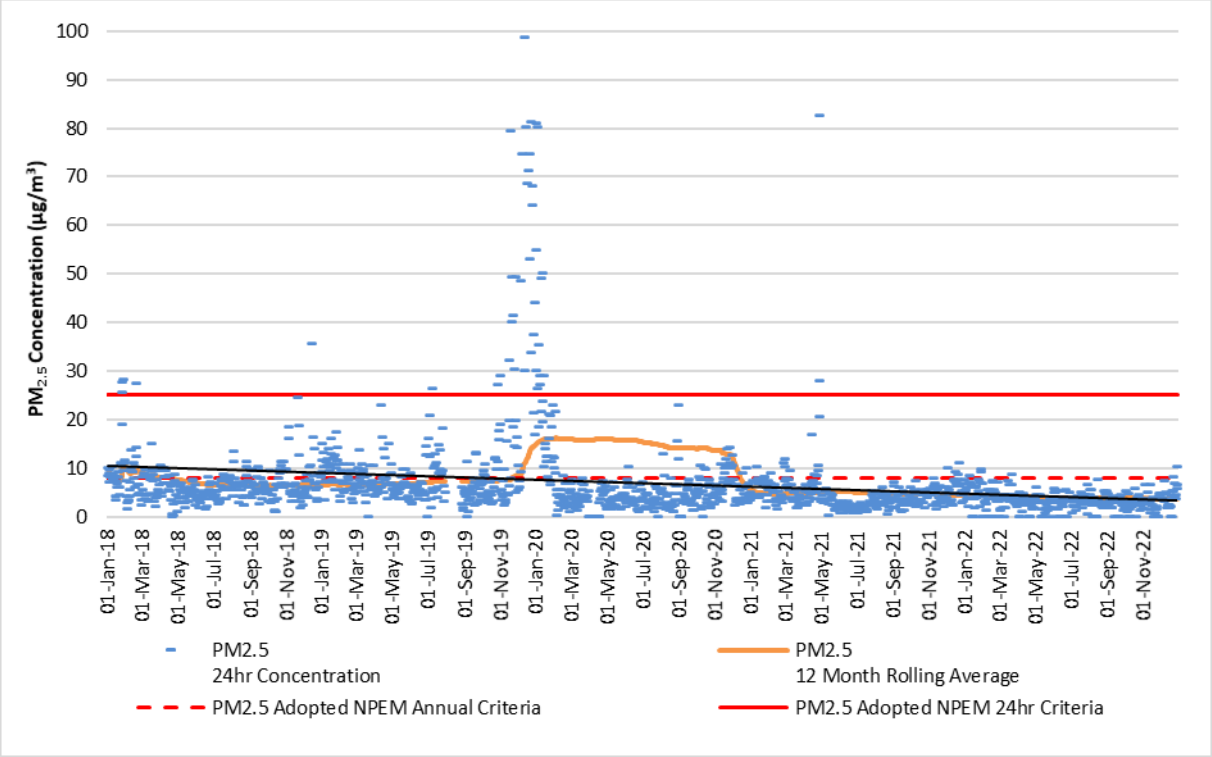
Notes: The rolling annual average levels in generally show a trend of increasing levels, with the monitors all showing a sudden increase in levels at the end of 2019 associated with the 2019/2020 NSW bushfires and a sharp drop towards the end of 2020. It is noted that in 2021 there were two days considered to be "extraordinary events" for WCM, 28/04/2021 and 29/04/2021. These days were considered extraordinary events due to smoke associated with nearby hazard reduction burns.

Graph 7 Compliance TEOM PM_{10} (Rolling Averages) 2015-2022



Notes: The rolling annual average levels in generally show a trend of increasing levels, with the monitors all showing a sudden increase in levels at the end of 2019 associated with the 2019/2020 NSW bushfires and a sharp drop towards the end of 2020.

Graph 8 Compliance TEOM $PM_{2.5}$ 24hr Results and Trends (Rolling Averages) 2018-2022



Notes: $PM_{2.5}$ levels at the end of 2019 and start of 2020 are significantly elevated compared with the rest of the data. The levels were affected by bushfire smoke across NSW during the 2019/2020 bushfire season. It is noted that in 2021 there were two days considered to be "extraordinary events" for WCM, 28/04/2021 and 29/04/2021. These days were considered extraordinary events due to smoke associated with nearby hazard reduction burns.

EIS Predictions

All privately-owned receivers were predicted to comply with the EPA's criteria for 24-hour average PM_{10}, annual average PM_{10} and annual average TSP concentrations as well as annual average dust deposition and the Ambient Air – NEPM advisory reporting standards for 24-hour and annual average $PM_{2.5}$ concentrations for the Project Years 2, 4, 8, 12 and 15 (WEP 2015). The management measures and results from the 2022 air quality monitoring program implemented by WCPL maintain the predictions made for air quality assessment in the Wilpinjong Extension Project Environmental Impact Statement 2015.

Blast Monitoring

The Mine has developed and implemented a Blast Management Plan (**Table 7**). Blasting vibration, overpressure limits, the time and frequency of blasting are specified in Conditions 7, 8 and 9, Schedule 3 of SSD-6764.

During the 2022 Reporting Period, the Mine carried out vibration and overpressure monitoring in accordance with the Blast Management Plan (BMgtP) at the required locations in **Appendix 3E** and at the frequency displayed in **Table 13**.

Table 13 Summary of the Blasting and Vibration Monitoring Program

Location	Type	Frequency
Wollar Public School	Airblast Overpressure and Ground Vibration	Every blast
Aboriginal rock art sites: 72, 152 & 153	Ground Vibration	Every blast within 1km of Aboriginal rock art sites.
Archaeological sites: WE7, WE10, WCP535, WE76[2] & WE77[2]	Ground Vibration	Every blast within 1km of Aboriginal sites
Historical Mine Adit	Ground Vibration	Every blast within Pit 8
Railway Line/ Culvert[3]	Ground Vibration	Every blast within 350m of railway culverts and 100m of railway lines
Ulan-Wollar Road	Ground Vibration	Every blast within 100m of the Ulan-Wollar Road
TransGrid Powerline Suspension Towers	Ground Vibration	Every blast within 100 of TransGrid powerline suspension towers*
Tailings Dam 3, 4, 5 or 6	Ground Vibration	Every blast within the DSC Approval area[1]

Notes: [1] During the reporting period monitoring was not required as the trigger for blast monitoring was not either within the range. [2] To date unable to relocate sites therefore monitoring of sites was not able to occur. Investigations with WCPL archaeologist could not relocate the sites in 2020. [3] Monitoring of ground vibration will be undertaken at the closet rail infrastructure when blasting is within 100 m of the railway line and/or 350 m of a railway culvert.

The BMgtP was revised in June 2022. The revised BMgtP (Version 9.1) was updated to include a revised blast monitoring figure and public road infrastructure definitions to address potential future inconsistencies regarding vibration monitoring. The revised BMgtP (Version 9.1) was approved by the DPE on the 17 December 2022.

Table 14 Blast Monitoring Environmental Performance (Wollar School)

Approved Criteria	Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions

<table>
<tr><th>Location</th><th>Airblast overpressure (dB(Lin Peak))</th><th>Ground vibration (mm/s)</th><th>Allowable exceedance</th></tr>
<tr><td rowspan="2">Residence on privately owned land</td><td>115</td><td>5</td><td>5% of the total number of blasts over a rolling period of 12 months</td></tr>
<tr><td>120</td><td>10</td><td>0%</td></tr>
<tr><td>All public infrastructure</td><td>-</td><td>50 (or a limit determined by the structural design methodology in AS 2187.2-006, or its latest version, or other alternative limit for public infrastructure, to the satisfaction of the Secretary)</td><td>0%</td></tr>
</table>

However, these criteria do not apply if the Applicant has a written agreement with the relevant owner to exceed these criteria, and has advised the Department in writing of the terms of this agreement.

All other blast monitoring results for the reporting period complied (**Graph 9** & **Appendix 3G**) with the approved criteria of 115dB (<120dB) and 5mm/s (<10mm/s) at privately owned residences.

Wollar Public School:

- **Max:** 116.3 dBL
- **Max:** 2.44 mm/s

There was a total of 129 blasts for the 2022 reporting period.

One blast on the 24/09/2022 of 116.3dBL equated to 0.78% of the allowable 5% of all blasts to be >115dBL for the Reporting Period.

No blasts were >5mm/s limit for ground vibration and therefore no blasts were >10mm/s for 2021.

No fume events occurred during the 2022 reporting period.

All blast monitoring on privately owned land was undertaken in accordance with the Blast Management Plan in 2022.

There were 4 blasting related community complaints in 2022, the same as in 2021.

All blasting events during the Reporting Period occurred during the approved times of 9.00am to 5.00pm.

No blasting occurred on a Sunday or on a Public Holiday during the 2022 Reporting Period.

There were no more than two blasts per day (max. of 2 allowed) and an average of 2.5 blasts per week (max. of 5 per week allowed).

In accordance with Condition 13(c), Schedule 3 of PA05-0021 and Condition 12(d), Schedule 3 of SD6764, WCPL co-ordinated the timing of blasting with the adjoining Moolarben Coal Mine and Ulan Coal Mine to minimise the potential cumulative blasting impacts of the three mines.

The Blast Management Plan was reviewed in 2022 (Version 9.1).

The review included a revised blast monitoring figure and public road infrastructure definitions to address potential future inconsistencies regarding vibration monitoring.

The Blast Fume Management Strategy was reviewed in 2022 (Version 6). The review included update to Figure 1 to include sensitive receivers for workers at the RO plant, post fume event reporting requirements and updated mitigation measures.

Both the revised *Blast Management Plan* and the *Blast Fume Management Strategy* were approved on 17 December 2022 by the DPE.

Table 15 Blast Monitoring Environmental Performance (Public Infrastructure)

Approved Criteria			Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions
Location	***Ground vibration (mm/s)***	***Allowable exceedance***	Blast monitoring results for the reporting period complied with the approved criteria of 200mm/s at a Main Rail Line opposite (Pit 8): – **Max:** 11.87 mm/s – **Ave:** 0.81 mm/s Blast monitoring results for the reporting period complied with the approved criteria of 100mm/s at Ulan-Wollar Road/Main Rail Culvert opposite (Pit 8): – **Max:** 12.56 mm/s – **Ave:** 1.15 mm/s Blast monitoring results for the reporting period complied with the approved criteria of 100mm/s at Ulan-Wollar Road/Main Rail Culvert (West) opposite (Pit 6): – **Max:** 72.92 mm/s – **Ave:** 6.18 mm/s Blast monitoring results for the reporting period complied with the approved criteria of 100mm/s at Ulan-Wollar Road/Main Rail Culvert (Far West) opposite (Pit 6): – **Max:** 56.94 mm/s – **Ave:** 10.22 mm/s Blast monitoring results for the reporting period complied with the approved criteria of 100mm/s at Ulan-Wollar Road/Main Rail Culvert (East) opposite (Pit 6): – **Max:** 51.42 mm/s – **Ave: 3.68** mm/s	All blast monitoring of public infrastructure was undertaken in accordance with the Blast Management Plan. All vibration results were below the ground vibration criteria as approved by ARTC of 100mm/s as monitored at Main Rail Culverts opposite Pit 8. All vibration results were below the ground vibration criteria as approved by ARTC of 200mm/s as monitored at Main Rail Line opposite Pit 8. All other vibration results were below the ground vibration criteria as approved by MWRC of 100mm/s as monitored at a Public Road Culvert opposite Pit 6 and Pit 8. No blast monitoring was required at TD6 as all blasts during 2022 were outside the DSC Approval Area. No blast monitoring was required along the Transgrid Powerline as all blasts during 2022 were not within 100m of this infrastructure.	The Blast Management Plan was reviewed in 2022 (Version 9.1). The review included a revised blast monitoring figure and public road infrastructure definitions to address potential future inconsistencies regarding vibration monitoring. The Blast Fume Management Strategy was reviewed in 2022 (Version 6). The review included update to Figure 1 to include sensitive receivers for workers at the RO plant, post fume event reporting requirements and updated mitigation measures. Both the revised *Blast Management Plan* and the *Blast Fume Management Strategy* were approved on 17 December 2022 by the DPE.
Tailings Dam[1]	*50*	*0%*			
Railway Lines[2]	*200*	-			
Railway Culverts[3]	*100*	-			
Public Road[4]	*200*	-			
Public Road Infrastructure[5]	*100*	-			
Transgrid Powerline[6]	*50*	-			

1) Dam Safety Committee approved 2) As agreed with ARTC when blasting within 100m 3) As agreed with ARTC when blasting within 300m 4) As agreed with MWRC when blasting within 100m 5) As agreed with MWRC when blasting within 350m 6) As agreed with Transgrid when blasting within 100m of a tower.

Note: *However, these criteria do not apply if the Applicant has a written agreement with the relevant owner to exceed these criteria, and has advised the Department in writing of the terms of this agreement.*

Table 16 Blast Monitoring Environmental Performance (Heritage Sites)

<table>
<tr><th>Approved Criteria</th><th>Performance During the Reporting Period</th><th>Trend/Key Management Implications</th><th>Implemented/proposed Management Actions</th></tr>
<tr>
<td>

Location	*Ground vibration (mm/s)*	
Archaeological Sites 72, 152 and 153 within ML	*Performance Indicator*	*80[1]*
	Damage Criteria	*250[1]*
Archaeological Sites WE7, WE10 & WCP535 in the Munghorn Gap Nature Reserve	*Performance Indicator*	*80[2]*
	Damage Criteria	*250[2]*
Archaeological Sites WE76 & WE77 in the Munghorn Gap Nature Reserve	*Performance Indicator*	*80[2]*
	Damage Criteria	*250[2]*
Mine Adit	-	*80[3]*

1) *When blasting within 1 km* ***2)*** *Representative site when blasting within 1 km* ***3)*** *When blasting in Pit 8*
</td>
<td>
Blast monitoring results for the reporting period complied with the approved criteria of 80mm/s at Archaeological Sites 72, 152, 153, WE7, WE10 & WCP535:

	Rock Art (Site 152) Pit 5 South	Rock Art (Site 153) Pit 5 North	Castle Rock (Site 72)
	(mm/s)	(mm/s)	(mm/s)
Max	6.43	2.94	2.03
Min	0.01	0.02	0.01
Ave	0.51	0.52	0.31

	Rock Shelter WE7	Rock Shelter WE10	Rock Shelter WE535
	(mm/s)	(mm/s)	(mm/s)
Max	6.23	42.50	37.79
Min	0.01	0.00	0.00
Ave	0.54	2.23	2.12

Blast monitoring results for the reporting period complied with the approved criteria of 80mm/s at the Slate Gully Mine Adit:

	Slate Gully Mine Adit
	(mm/s)
Max	13.96
Min	0.00
Ave	1.07
</td>
<td>
All blast monitoring requirements of Aboriginal Heritage Sites were undertaken in accordance with the Blast Management Plan in 2022.

All blast monitoring requirements of the historical Mine Adit in Slate Gully were undertaken in accordance with the Blast Management Plan in 2022.

All vibration results were below the performance criteria of damage criteria of 80mm/s and/or 250mm/s respectively for Archaeological Sites 72, 152, 153, WE7, WE10 & WCP535 in 2022.

All vibration results were below the performance criteria of 80mm/s of the historical Mine Adit in Slate Gully in 2022.

The blast monitoring requirements were not triggered during reporting period at sites WE76 and WE77 as sites could not be relocated for monitoring since surveyed for the WEP.

Monitoring for microbats utilising the historical Mine Adit in Slate Gully continued in 2022 as required by the Biodiversity Management Plan and the Blast Management Plan.
</td>
<td>
The Blast Management Plan was reviewed in 2022 (Version 9.1).

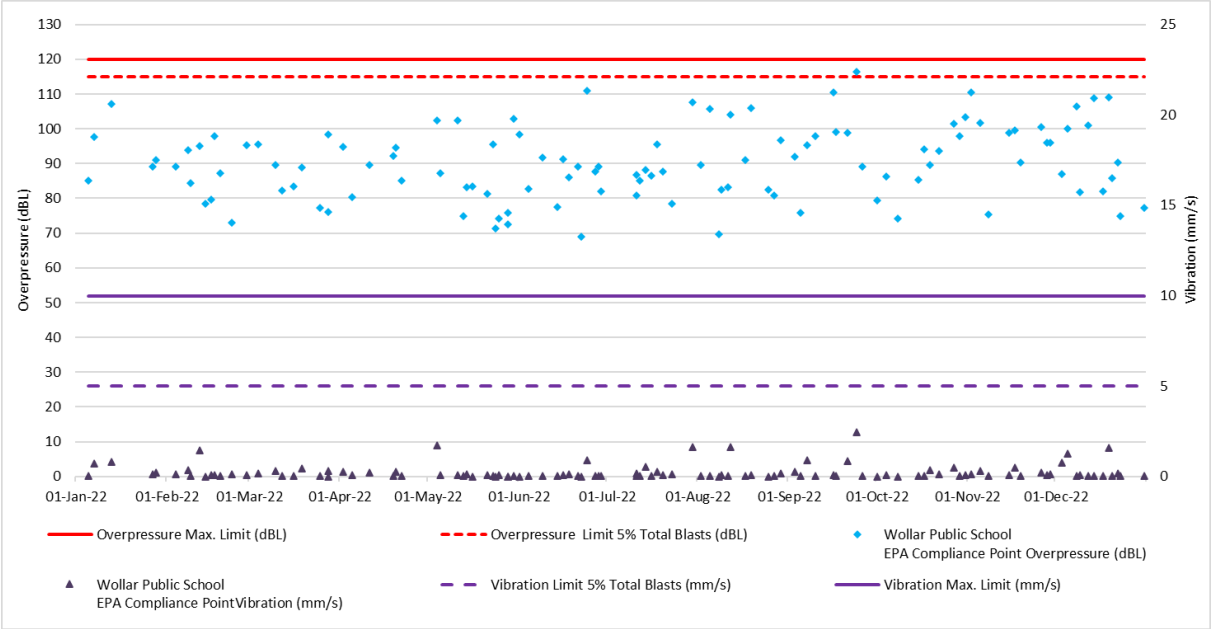
The review included a revised blast monitoring figure and public road infrastructure definitions to address potential future inconsistencies regarding vibration monitoring.

The Blast Fume Management Strategy was reviewed in 2022 (Version 6). The review included update to Figure 1 to include sensitive receivers for workers at the RO plant, post fume event reporting requirements and updated mitigation measures.

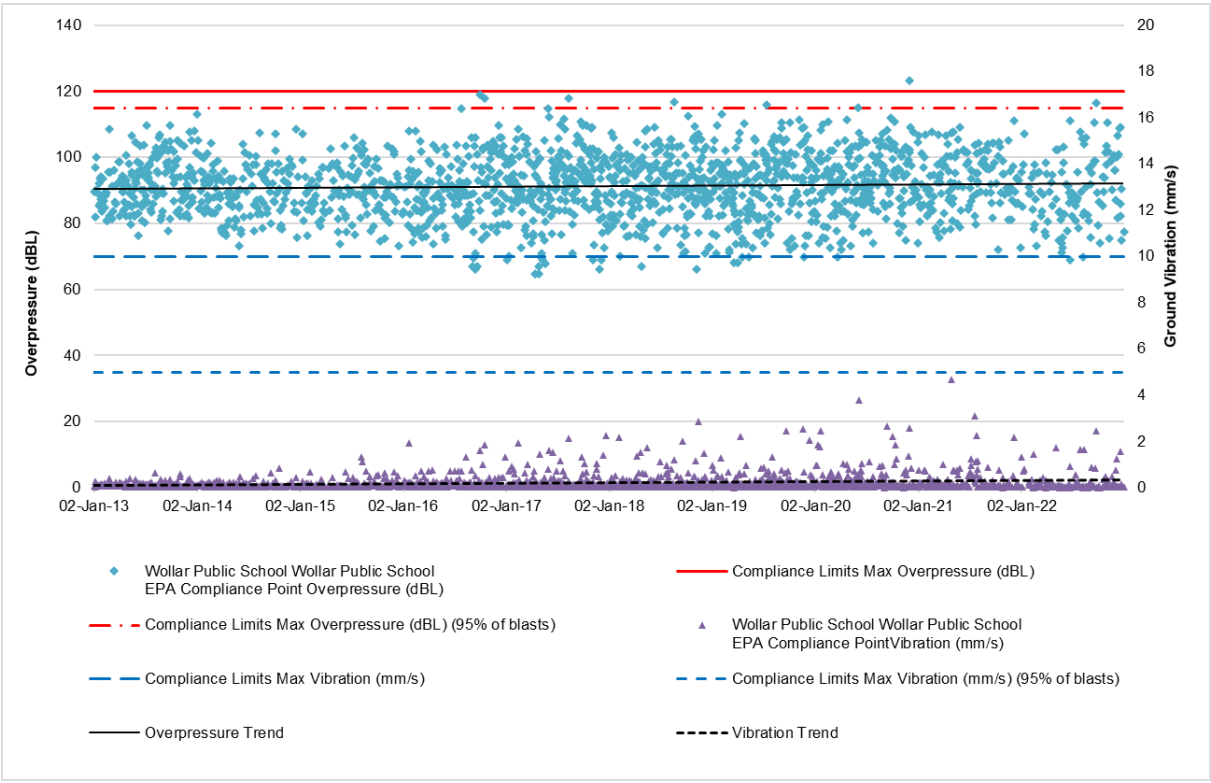
Both the revised *Blast Management Plan* and the *Blast Fume Management Strategy* were approved on 17 December 2022 by the DPE.

In accordance with the Blast Management Plan the control strategies were implemented at the Mine in order to minimise the potential for exceedances of the relevant blasting criteria applicable to Heritage Sites and on this basis will continue to implement the Blast Management Plan and review blasting performance in next Reporting Period.
</td>
</tr>
</table>

Graph 9 Blasting Monitoring Results for 2022 (Wollar School)



Graph 10 Blasting Monitoring Trends 2013 to 2022 (Wollar School)



EIS Predictions

The blasting assessment indicates that no exceedances of relevant airblast or vibration criteria would occur at any privately-owned receivers, community facilities or historical heritage sites in the Village of Wollar for the typical maximum blast MIC proposed for the Project (up to approximately 3,900 kilograms [kg]). Through the continued management of blast MICs, there would be no exceedances of vibration damage criteria at any Aboriginal rock shelter sites with art in the vicinity of the Wilpinjong Coal Mine (WEP 2015). The management measures and results from the 2022 blast monitoring program implemented by WCPL maintain the predictions made for the blasting assessment in the Wilpinjong Extension Project Environmental Impact Statement 2015.

Noise Monitoring

The Mine has developed and implemented a Noise Management Plan (NMP) (**Table 7**). During the 2022 Reporting Period a combination of both attended and unattended noise monitoring programs were undertaken to assess the performance of the Mine against the Noise Criteria (**Table 17**).

Attended noise monitoring is used for determining compliance against the Noise Criteria whilst unattended or real-time monitoring is primarily utilised as a proactive noise control system; providing noise alerts when predetermined noise levels are triggered so mining operations can be modified to lower the noise impacts on receptors. A summary of noise monitoring results is provided in **Table 18**.

Further noise monitoring results for 2022 Reporting Period, including figures with noise monitoring locations are provided in **Appendix 3F.**

Table 17 Summary Noise Monitoring Program

Location	Monitoring Site	Parameter	Frequency
St Laurence O'Toole Church^	N6	Attended Noise	Monthly
Tichular	N14	Attended Noise	Monthly
Wollar Village	N15	Attended Noise	Monthly
Araluen Rd*	N16	Attended Noise	Monthly
Mogo Rd	N17	Attended Noise	Monthly
Mogo Rd	N19	Attended Noise	Monthly
Ringwood Rd	N20	Attended Noise	Monthly
WCPL Rail Loop	-	Meteorology & Inversion	Continuous
Wollar Village	-	Real-Time Noise - Fixed	Continuous
Mogo Rd	-	Real-Time Noise - Fixed	Continuous
Ringwood Rd	-	Real-Time Noise - Fixed	Continuous
Tichular	-	Real-Time Noise - Mobile	Continuous

Notes: ^ Owned by WCPL.

The NMP was revised in June 2022. The revised NMP (Version 7) was updated to included EPL conditions regarding meteorological station operation and update to mine amenity agreements and investigate Opportunities for Improvement (OFI) from 2021 IEA regarding wind shields on real time noise monitoring units. The revised NMP (Version 7) was approved by the DPE on the 8 August 2022.

The NMP was revised again in November 2022. The revised NMP (Version 8) was updated to include updates to property ownership in Wollar Village and mine amenity agreements in Section 4.1 and Section 4.1.1 of the NMP. The revised NMP (Version 8) was approved by the DPE on the 23 January 2023.

EIS Comparison

When comparable, measured noise levels were lower than predicted noise levels under corresponding meteorological conditions at all locations during all measurements, with three exceptions (EMM 2023):

- During the April 2022 measurement at N15, the measured site only LAeq was 5 dB higher than predicted under calm conditions. The measured site only LAeq was 12 dB lower than the relevant criterion during this measurement.
- During the May 2022 measurement at N20, the measured site only LAeq was 13 dB higher than predicted under calm conditions. The measured site only LAeq was 13 dB lower than the relevant criterion during this measurement.
- During the June 2022 measurement at N15, the measured site only LAeq was 3 dB higher than predicted under strong inversion conditions. The measured site only LAeq was 1 dB higher than the relevant criterion during this measurement.

Table 18 Noise Monitoring Environmental Performance

Approved Criteria	Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions

Approved Criteria

Property ID & Location[1]	Day[2]	Evening[3]	Night[4]	
	LAeq (15 minute)	LAeq (15 minute)	LAeq (15 minute)	LA1 (1 minute)
102	36	36	38	45
Wollar Village – Residential[5]	36	37	37	45
All other privately owned land	35	35	35	45
901 – Wollar School	35 (internal) 45 (external) When in use			-
150A – St Luke's Anglican Church[6] 900 – St Laurence O'Toole Catholic Church[6]	40 (internal) When in use			-

Notes: ***1)*** *To interpret the locations refer to* ***Table 18*** *and* ***Appendix 3F****.*

2) *Day is defined as the period from 7 am to 6 pm Monday to Saturday and 8 am to 6 pm Sunday and Public Holidays.*

3) *Evening is defined as the period 6 pm to 10 pm.*

4) *Night is defined as the period from 10 pm to 7 am Monday to Saturday and 10 pm to 8 am Sunday and Public Holidays.*

5) *Wollar Village EPL intrusive noise limits are currently day 36dBA, evening 35dBA and night 35dBA.*

6) *Both Properties 150A and 900 are owned by WCPL. Both buildings have been deconsecrated and are no longer places of worship.*

Performance During the Reporting Period

Attended noise monitoring during 2022 was undertaken monthly as required by the NMP at N6, N14, N14, N17, N19 and N20 (**Table 17**) during the night periods of 27/28 January, 10/11 February, 2/3 March, 28/29 April, 16/17 May, 15/16 June, 28/29 July, 25/26 August, 19/20 September, 11/12 October, 15/16 November and 6/7 December.

During 2022 attended noise monitoring, noise levels from WCP complied with relevant noise limits at all monitoring locations, with a single exception. There was one exceedance of WCP impact assessment LAeq noise criteria at N15 in June 2022. A follow up measurement was conducted directly afterwards and WCP levels were compliant with relevant criteria. (EMM 2023) (**Appendix 3F**).

Low frequency assessments were carried out in accordance with the EPA 'Noise Policy for Industry' (NPfI). Low frequency modification factors were implemented when applicable and did not result in any exceedances of WCP noise limits (**Appendix 3F**).

There was a decrease of noise complaints in 2022. A total of 47 noise complaints were recorded in 2022, as opposed to 58 complaints in 2021.

As discussed in **Section 9.0**, all noise complaints were responded to as required by WCPL.

Trend/Key Management Implications

Due to flooded areas in October, November and December, sites N17 and N19 were not accessible due to a road closure related to flooding. There were no suitable alternate locations to represent N17 and N19 that were accessible, so no monitoring occurred for these locations.

Long Term Trends

Site only LAeq noise levels were low (either IA, NM, or less than 30 dB) for a large majority of measurements at all monitoring locations (EMM 2023).

At N14, N19, and N20, site only LAeq noise levels were inaudible or less than 30 dB during all attended noise monitoring measurements (EMM 2023).

At N6, N15, and N17, site only LAeq noise levels were occasionally above 30 dB and long-term noise trend lines indicate site only LAeq noise levels have increased slightly during attended noise monitoring (EMM 2023).

Validation reports of real time noise monitoring are now conducted monthly and are provided in **Appendix 3F**.

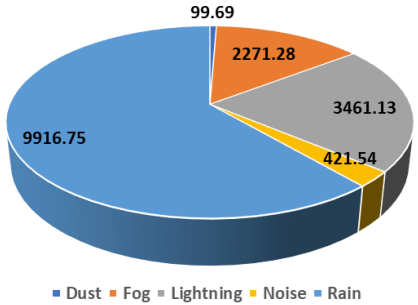
Implemented/proposed Management Actions

The Noise Management Plan was reviewed in June 2022 and November 2022 (Versions 7 and 8).

In accordance with Condition 5, Schedule 5 of SD-6764, WCPL will review, and if necessary, revise the Noise Management Plan within three months of the submission of this Annual Review.

Continue to implement the Noise Management Plan (NMP) in accordance Condition 5, Schedule 3 of SSD-6764.

In 2022 a total ≈421.54hrs of lost time hours associated with implementation of noise management strategies (i.e., lost time only captured for primary dig implements such as dozers, excavators and loaders) as a direct result of modifying the operations to remain compliant with relevant noise criteria.



6.3 Heritage

The Mine has developed and implemented an Aboriginal Cultural Heritage Management Plan (ACHMP) (**Table 7**). Four Cultural Heritage meetings were undertaken in 2022 (inclusive of RAPCC) in March, June, September and December. Key heritage and environmental issues that were raised during consultation included summary of mining operations, exploration, review of Aboriginal Cultural Heritage Management Plan (ACHMP), management of Aboriginal heritage including rock shelters and salvage works program.

The ACHMP was reviewed in June 2022 (Version 9) with minor amendments including updating table of known sites and figures accordingly. The ACHMP (Version 9) was approved by the DPE on the 23 August 2022.

During the 2022 Reporting Period, a number of archaeological surveys, due diligence surveys, surface salvage works and other programs and investigations were carried out, including but not limited to:

- Surface clearance for clean water diversions (Pit 8 Slate Gully North);
  - No lithic items found
- Surface clearance for timber habitat (Pit 8 Slate Gully South);
  - One lithic item found
- Due diligence heritage surveys for exploration program for EL9399

WCPL are required to assess and report on the following performance indicators as described in the ACHMP:

- (Nil) Number of complaints received regarding Aboriginal cultural heritage management at the Mine; &
- (Nil) Number of incidents or non-compliances recorded regarding Aboriginal cultural heritage at the Mine.

In 2022 WCPL did not exceed the performance indictors as described in the ACHMP i.e. no complaints were received, and no incidents or non-compliance occurred regarding Aboriginal heritage.

The Mine has developed and implemented a Historic Heritage Management Plan (HHMP) in accordance with Condition 49, Schedule 3 of SSD-6764, the HHMP includes a program and description of the measures/procedures that would be implemented for historic heritage management at the Wilpinjong Coal Mine.

In accordance with the HHMP, WCPL are to report on the performance of monitoring the Shale Oil Mine Adit in relation to blasting (**Table 16**). During 2022 the HHMP (Version 6) was revised and updated to include a record of WCPL owned dilapidated buildings demolished in Wollar during 2021 which included the removal of six more depilated structures. The HHMP (Version 6) was approved on the 6 February 2023.

6.4 Biodiversity

A Biodiversity Management Plan (BMP) (Version 7.1) (**Table 7**) has been prepared and implemented for the Mine. In June 2021 revision of BMP included revised disturbance footprint boundary in Pit 6 and figures, accordingly, revised three-year BMP schedule, revised monitoring sites and inclusion of BVT reference sites. The BMP outlines strategies for the management of flora and fauna, threatened species, rehabilitated areas, regeneration areas, biodiversity offset areas (BOA's) and the Enhancement and Conservation Areas (ECA's). A summary report on the Biodiversity Offset requirements and progress against the 3-year Management Schedule is provided in **Appendix 5**.

The Biodiversity Offset Strategy in the BMP comprises a package of BOA's that will be set aside for conservation and managed in perpetuity, and WCPL's rehabilitation strategy. In addition, the Biodiversity Offset Strategy includes a number of ECA's and residual Regeneration Areas associated with the original Wilpinjong Coal Project that will strengthen the linkages between the rehabilitation areas and the Goulburn River National Park and Munghorn Gap Nature Reserve. In addition, the Biodiversity Offset Strategy also includes on-site rehabilitation to establish the biometric vegetation types (BVTs) and fauna habitat as required by Schedule 3, Condition 37 of the Development Consent SSD-6764.

In April 2019, WCPL finalised the BVT performance and completion criteria in consultation with OEH, DoEE and DPIE and accordingly the BMP was comprehensively updated as required to reflect the new criteria and resubmitted in June 2019. WCPL's Biodiversity Monitoring Program in the BMP includes annual monitoring of flora and fauna, and a range of landscape function indicators. This monitoring program is used to evaluate ecosystem function and performance and the success of specific management actions implemented across the various Management Domains[3].

A summary of the 2022 flora and fauna monitoring results are provided below. A summary of the monitoring within rehabilitation areas is provided in **Section 8.2**. For the complete 2022 biodiversity monitoring reports, prepared by Ecological Australia (ELA) and Biodiversity Monitoring Services, refer to **Appendix 5**.

Biodiversity monitoring was undertaken at the Wilpinjong Coal Mine (WCM) during 2022, under the methodology prescribed in the WCM Biodiversity Management Plan (BMP) (WCPL 2021). Monitoring was undertaken at established sites across the WCM Management Domains, including Biodiversity Offset Areas, Enhancement and Conservation Areas, Regeneration and Rehabilitation Areas. A series of reference sites were monitored to provide comparative results.

Reference sites were established in 2019 & 2020 in areas that conform to WCPL's targeted rehabilitation BioMetric Vegetation Types (BVTs), in accordance with Condition 36 of the Development Consent SSD 6764 for the Wilpinjong Extension Project (WEP). These sites have been established to provide comparative data for the approved Wilpinjong rehabilitation BVTs.

Vegetation monitoring was undertaken within the Rehabilitation Areas and Reference Sites in 2022. Most sites monitored in 2022 were assessed as being Moderate to Good/High with one site categorised as Low.

Landscape Function Analysis (LFA) monitoring was also undertaken within the Rehabilitation Areas and Reference Sites. Landscape Organisation Index (LOI) scores remained comparable to 2021 monitoring results. Infiltration and nutrient cycling scores are still consistently below the completion criteria, however improvements in these two measures was observed at two sites for infiltration and at three sites for nutrient cycling. Despite this, all rehabilitation sites monitored in 2022 recorded a <5% annual improvement from the previous monitoring period in at least one Soil Surface Assessment (SSA) measure and as such, review of the relevant Trigger Action Response Plan (TARP) is required.

Fauna monitoring recorded a total species richness of 127 species, comprising of 111 birds, five (5) mammals, two (2) reptiles, and nine (9) positively identified Microchiroptera (microbat) species. Seven (7) species (five (5) bird species and two (2) positively identified microbat species) listed as threatened under the NSW Biodiversity Conservation Act 2016 and/or the Commonwealth Environmental Protection and Biodiversity Act 1999 were observed across the Wilpinjong Management Domains during 2022 monitoring.

A series of recommendations have been provided to ensure the continual improvement of the monitoring program. Recommendations include re-evaluating the current LFA monitoring. As part of the required TARP review for LFA results, it is recommended that consideration is given to the management aims for which LFA monitoring seeks to evaluate, and the efficacy of the LFA method to inform the achievement of these aims. A range of alternative methods are proposed for consideration.

Slate Gully Mine Adit Monitoring

An abandoned underground oil shale mine at Slate Gully, supports colonies of two microbat species; Eastern Horseshoe Bat (*Rhinolophus megaphyllus*) and Large Bent-winged Bat (*Miniopterus orianae oceanensis*, formerly known as Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*). Monitoring undertaken since April 2017 indicates that less than 50 Eastern Horseshoe Bats inhabit the mine workings throughout the year. From exit counts conducted to date, numbers of this species do not vary substantially throughout the year. Numbers of the Large Bent-winged Bat inhabiting the mine vary considerably more throughout the year (BMS, 2023).

[3] Mine closure or rehabilitation domains are identified in the WCPL's RMP.

In accordance with the BMP, Eastern-Bentwing Bat Management Strategies were undertaken in 2019 with the installation of a section of 1000mm diameter steel pipe culvert inserted into the adit to ensure access/egress for microbat species. To mitigate the potential for future collapse, rock debris was removed from around the entrance. On further recommendations provided by WCPL's microbat specialist, further rock material was removed in 2020 from around the top of the pipe to maintain access for microbats through the existing adit entry (**Photo 1**).

Mining excavation works began in early 2020 approximately 600m to the northeast of the Adit. Previous plans estimated the pit to come within 150m of the adit sometime in 2021. Bats within the workings have been or will be subject to vibration and noise. There is also the potential for dust and fumes associated with the open cut operations (BMS, 2022).

Exit counts of bats leaving the adit, as well as capture of exiting bats , has been undertaken over the past five years to determine what species are utilising the old oil shale mine and how their numbers and sexual composition change throughout the year (Fly By Night 2017; Fly By Night 2018; Fly By Night 2019). This has given a firm basis to monitor colonies of the two species roosting within the workings as the adjacent area is strip mined for coal. Previously we recommended that continual monitoring of bat activity via an ultrasonic bat call detector would provide a superior method to monitor the roost long term. This report details the results of automated monitoring over a 12-month period from January 2022 to December 2022, as well as concurrent monthly hand counts of bats exiting the workings (BMS, 2023).

By June 2020 numbers were back to where they were in June 2019, and by August 2020 the number of Large Bent-winged Bats counted indicated numbers were back to levels seen in winter 2017. 2022 counts show that April numbers are an improvement on 2020, but still lower than earlier years, possibly due to late arrival of returning females. June 2022 numbers are as good as those seen in 2017-2018, and the absence of Large Bent-winged Bat activity over summer confirms the absence of maternity roost in the adit. September 2022 count (1050) was the highest that has been recorded in the adit since investigations and monitoring began (BMS, 2023) (**Appendix 5**).

Photo 1 Culvert Support & Bat Detector with Solar Panel setup 20m in front of Adit

6.5 Waste Management

The Mine has developed and implemented a waste management strategy to ensure that waste at the Mine is minimised and effectively managed. WCPL have engaged an appropriately licensed waste management contractor to perform the following activities in relation to waste management, including but not limited to;

- On-site waste management i.e. waste segregation of scrap steel, general waste, recyclables, hydrocarbons and hazardous materials;
- Off-site disposal to licensed waste facilities;
- Off-site recycling to licensed waste centres; and
- Recording and reporting waste volumes.

As required by Condition 58(f), Schedule 3 of SSD-6764, WCPL are required to report on waste management and minimisation (**Table 19** & **Graph 11**) in the 2022 Annual Review. During the reporting period approximately 83.97% of the total waste removed from the Mine was recycled.

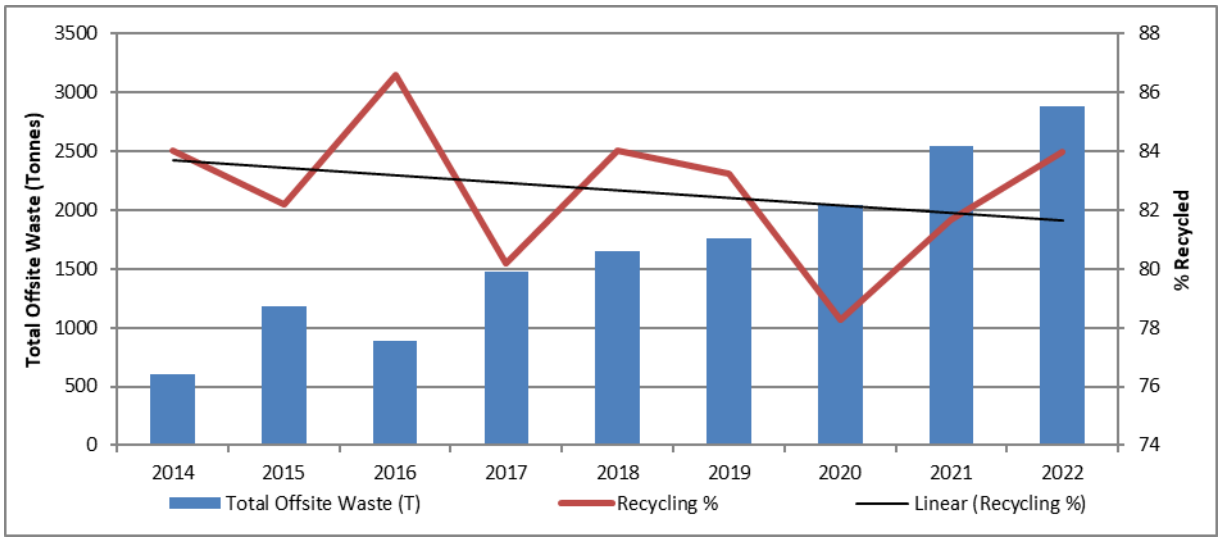
Appendix 3G has the complete summary of waste statistics for the 2022 AR period. Approximately 348.9 tonnes of tyres were disposed of in-Pit during 2022, all of which were buried in Pit 1 South. WCPL are additionally permitted to dispose of building and demolition waste in-pit, in accordance with EPL 12425.

All of the waste inert material generated from the demolition of Peabody owned properties in Wollar during 2021 were transported to site in 2021 and disposed of in pit in January 2022. In 2022 there was no disposal of building and demolition waste in pit, however five dilapidated, Peabody owned properties were demolished in 2022. This demolition is undertaken in accordance with the Social Impact Management Plan. The inert material from this demolition is planned to be transported to the mine site for disposal during 2023. Asbestos recovered from the demolished properties in 2022 was removed and disposed by WCPL's licensed contractor in accordance with all regulatory requirements.

Table 19 Summary of Monthly Waste Statistics for 2022

Totals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
Total Offsite Waste (T)	153.9	150.1	164.6	283.7	182.3	196.8	134.4	218.8	143.6	166.8	174.2	198.0	**2,167.1**
Recycled Waste (T)	132.7	126.4	141.6	263.2	160.9	176.2	109.3	194.9	118.5	141.6	146.2	108.1	**1,819.7**
Recycling %	**86.2**	**84.2**	**86.0**	**92.8**	**88.3**	**89.5**	**81.3**	**89.1**	**82.5**	**84.9**	**83.9**	**54.6**	**83.97**

Graph 11 Waste Statistics and Trends



6.6 Greenhouse Gas

Greenhouse gas management measures for the Mine are outlined in the AQMP. Diesel and electricity usage were recorded during the 2022 AR period, which allows for the calculation of carbon dioxide (CO_2) equivalent emissions. The primary source (approximately 80%) of greenhouse gas emissions at the Mine is due to the release of carbon dioxide (CO_2) and methane (CH_4) during the combustion of diesel fuel during mining operations. Fugitive emissions of CH_4 and CO_2 from the coal seam as the coal is mined and CO_2 released during the use of explosives make up approximately 20% of greenhouse gas emissions at the Mine. Greenhouse gas emission (i.e. Scope 1 & Scope 2) estimates for 2022 are presented in **Table 20**.

Table 20 Estimated Wilpinjong Coal Mine Greenhouse Gas Emissions Financial Year

Year	ROM Coal (Mt)	Electricity Consumed (kWh)	Diesel Consumed (kL)	CO_2-e Electricity Usage (t)	CO_2-e Diesel Usage (t)	CO_2-e Fugitive Emissions (t)	Total CO_2-e Emissions (t)	Total CO_2-e Emissions (t) Predicted (WEP)#
2017	13.6	29,929,870	32,976	25,141	89,356	12,809	127,306	167,977
2018	14.2	32,940,513	38,360	27,341	103,948	13,828	145,117	182,002
2019	15.1	32,037,969	43,647	26,272	118,270	12,980	152,522	180,302
2020	14.7	31,748,174	47,528	25,950.	12,8788	12,636	167,375	176,408
2021	14.48	34,887,914	50,795	27,906	136,572	10,732	175,211	168,387^
2022	13.476	34,456,634	49,392	27,221	133,947	20,082	181,775	168,516^

Notes: kWh = kilowatt hours and kL = kilolitre. * A NSW default factor was used to calculate these values. # Scope 1 and 2 predicted emissions from the WEP for 2017, 2018, 2019 and 2020 based on 15.5Mt, 15.95Mt, 15.28Mt, 14.53Mt and 12.44Mt ROM coal respectively. ^The WEP predictions for 2021 and 2022 based on annual ROM of 12.44Mt.

Greenhouse gas emissions from the Wilpinjong Coal Mine would continue to be monitored and reported annually in accordance with Peabody Energy's obligations under the *Commonwealth Government National Greenhouse and Energy Reporting System*. Peabody Energy and WCPL will also comply with any obligations under the *Commonwealth Clean Energy Act, 2011*.

6.7 Ambient Air Quality Monitoring

Condition 16, Schedule 3 of PA05-0021 and Condition 16, Schedule 3 of SSD-6764 requires WCPL to ensure that no offensive odours are emitted from the site, as defined under the *Protection of the Environment Operations Act, 1997*.

Previous monitoring occurred in the Wollar Village up to April 2018 for the following pollutants that can be released during spontaneous combustion events, including Oxides of Nitrogen (NOx), Sulfur Dioxide (SO_2), Hydrogen Sulfide (H_2S), Benzene, Toluene and *p*-Xylene. An air quality monitoring station was situated in the Village of Wollar to monitor for the above-mentioned pollutants during the removal of Keylah Dump, as required by the SCMP and the Keylah Dump Removal Management Plan. The removal of Keylah Dump was completed during 2017. Therefore, this air quality monitoring station in the Village of Wollar specific for the dump removal, was no longer required and subsequently removed in May 2018.

The SCMP was revised in June 2022. The revised SCMP (Version 8.1) was updated to include 2021 IEA Actions which included the recommendations from 2021 IEA to add corrective actions to inspection program, review the frequency of the aerial thermal imagery inspection program and updated Figure 3 regarding areas of risk.

There were no reportable incidents as a result of spontaneous combustion in 2022. There were two unverified odour complaints received during 2022 (**Section 9**), a decrease of 17 odour complaints received in 2021. Each of the odour complaints during 2022 received follow up checks by WCPL and were either unable to detect significant spontaneous combustion outbreaks with the capacity to generate offsite odours or detect odours beyond the boundary of the Mine. These checks also included a review of the wind speed and wind direction prior to receiving an odour complaint. The complainant also declined to discuss any of the odour complaints with a WCPL representative. Refer to **Section 6.2** and **Section 9** for further details.

7.0 WATER MANAGEMENT

WCPL have prepared and implemented a Water Management Plan (WMP) (**Table 7**). Several key component management plans and programs that support the WMP include the Surface Water Monitoring Program (SWMP), the Groundwater Monitoring Program (GWMP) and the Site Water Balance (SWB). The WMP, SWMP, GWMP and the SWB were reviewed and resubmitted for approval in June 2022.

7.1 Water Licences

Table 21 presents the relevant entitlement volume for the consolidated licence, the estimated inflow or 'take' for 2021-22 and several previous Water Years. **Table 22** lists the converted water entitlement licenses to Water Access License (WAL) that occurred during October 2017.

Table 21 Summary of Annual Volume of Inferred Maximum Groundwater Take (Water Years 2018-2022)

Water Access License	Limit [ML/a]	2018-2019		2019-2020		2020-2021		2021-2022	
		WRM Inflow (2020)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2021)	SLR Water Balance Inflow (SLR, 2022)	SLR Water Balance Inflow (SLR, 2022)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2022)	Modelled inflow (SLR, 2020)
Pits	3,121 ML/a (WAL 41862)	730	797	621	740	840	910	840	870
Dewatering Bores		56.1		275.6*		0		0	
TOTAL		786	848	897	1,016	840	910	840	870

Notes: *Volume of water pumped from dewatering bores [ML] for the water year 2019-20, refer to Section **7** of the SLR Report.

Table 22 Summary of WAL Held by WCPL

WAL[1]	AL #	Water Source	Category	Entitlement[2]	Holder	Work Approval[3]	Expiry date
21499	20AL211215	Wollar Creek	Aquifer	474 Unit shares	Peabody Pastoral Holdings Pty Ltd/Wilpinjong Coal Pty Limited as 100/374 share	20CA211216	31/7/2022
19045	20AL209956	Upper Goulbourn	Unregulated	183 Unit shares	Peabody Pastoral Holdings Pty Ltd	20CA209957	12/11/2022
19055	20AL209954	Upper Goulbourn	Unregulated	50 Unit shares	Peabody Pastoral Holdings Pty Ltd	20CA209955	31/7/2022
19057	20AL209966	Upper Goulbourn	Unregulated	110 Unit shares	Peabody Pastoral Holdings Pty Ltd	20CA209967	7/2/2024
19058	20AL209974	Upper Goulbourn	Unregulated	168 Unit shares	Peabody Pastoral Holdings Pty Ltd	20CA209975	19/11/2022
19426	20AL210793	Wollar Creek	Unregulated	40 Unit shares	Peabody Pastoral Holdings Pty Ltd	20CA210794	31/7/2022
19423	20AL210790	Wollar Creek	Domestic & stock	2 ML	Peabody Pastoral Holdings Pty Ltd	20WA210792	31/7/2022
19425	20AL210795	Wollar Creek	Domestic & stock	1 ML	Peabody Pastoral Holdings Pty Ltd	20WA210796	31/7/2022
19430	20AL210798	Wollar Creek	Domestic & stock	5 ML	Peabody Pastoral Holdings Pty Ltd	20WA210799	31/7/2022
36398	20AL212799	Wollar Creek	Domestic & stock	1 ML	Peabody Pastoral Holdings Pty Ltd	20WA212768	30/7/2023
9476	N/A	Macquarie/ Cudgegong	Regulated (General Security)	790 Unit shares	Wilpinjong Coal Pty Limited	No nominated work	
41862	N/A	Sydney Basin - North Coast Groundwater	Aquifer	3121 Unit shares	Wilpinjong Coal Pty Limited	20MW065002	N/A

Notes: [1]Water entitlement held under NSW *Water Management Act, 2000* is granted in perpetuity. [2]One unit is currently equivalent to 1.0 ML as per the *Available Water Determination Order for Various NSW Unregulated and Alluvial Water Sources*

(No. 1) 2013. [3] Work Approvals only attract an expiry date, applications to extend Work Approvals due to expire will be undertaken in 2023.

7.2 Estimated Groundwater Take

WCPL holds a WAL41862 to cover the extraction of water from all open cut pits. The total authorised volume of groundwater extraction for Water Year from 1 July 2021 to 30 June 2022 is 3,121 ML/year.

SLR completed a review of estimated groundwater take for the 2021/2022 Water Year (SLR, 2023)(**Table 21**). The following summary is provided from SLR's (**Appendix 3D**) review:

- WCPL holds a groundwater licence for3,212 ML/a under WAL 41862 for the Sydney Basin North Coast Groundwater Source. For the 2021-2022 water year the numerical model predicts an inflow of 870 ML/a while the water balance model estimates groundwater inflow of 840 ML/a (SLR, 2023). Both these values are considerably below WCPL's entitlement, indicating WCPL is compliant with licence conditions for WAL 41862 (SLR 2023).
- WCPL holds a groundwater licence for 474 ML/a for the Wollar Creek Water Source to account for alluvial groundwater take. The SLR (2020a) numerical model predicts alluvial groundwater take of around 153 ML/year, this take is well below and compliant with the licence volume held by WCM (SLR 2023).

This take is within and compliant with the licence volume held by WCPL. For more information refer to **Appendix 3D**.

7.3 Water Licence Conditions

Assessment of the various water access licence conditions relevant to WCPL work approvals includes:

- The total volume of water taken under in any water year must not exceed a volume (Complied – refer to **Table 21 & Section 7.2**).
- The volume of water taken in the water year must be recorded (Complied – refer to **Table 21 & Section 7.2**).
- Once the water access licence holder becomes aware of a breach of any condition on this water access licence, the water access licence holder must notify the Minister as soon as practicable (Complied – no breach of conditions occurred during water year 2021/2022).

7.4 Water Management System

Water management activities were undertaken during the 2022 Reporting Period in accordance with the Mine's water management system outlined in the WMP[4]. In summary, water management for the Mine is based on the containment and re-use of mine water as well as the control of sediment laden water that may be potentially carried with runoff from disturbed areas. The mine water management system is shown in schematic form on **Appendix 3C**. The key components of the Mine's water management system include:

- Collection and re-use of surface runoff from disturbed areas;
- Capture and on-site containment of mine water, comprising groundwater inflows and incidental rainfall-runoff to operational areas;
- Re-use of contained mine water for dust suppression over active surfaces (e.g. haul roads).
- Recycling of mine water associated with the CHPP and tailings disposal areas;
- Consumption of contained waters in the Mine water supply system;
- Management of treated sewage effluent in accordance with the OEH's *Environmental Guidelines for the Utilisation of Treated Effluent*;
- Standby-operation of an evaporative spray system on the eastern bank of Pit 2 (West); and

[4] With exception to Emergency Water Discharge (**Section 7.4.1**).

- Discharge of treated water via a water treatment facility to Wilpinjong Creek in accordance with EPL 12425.
- Diversion of clean water upslope of mine disturbance in Pit 6 & 8.

7.4.1 Emergency Discharge (ED)

In October 2022, WCPL sought an exemption under S.284 of *the Protection of the Environment Operations Act* (POEO Act) to allow for the emergency offsite discharge of mine water due to above average rainfall associated with the third consecutive La Niña year.

The total cumulative annual rainfall recorded for 2022 was 987.2mm, for 2021 was 942.4mm and for 2020 was 915.8mm. This represents three consecutive years of annual rainfall well above the long-term cumulative annual average rainfall (in the vicinity of the Mine) ranging from 587.7mm to 651.5mm (WEP EA).

Licence Variation Notice 1623919 to discharge from the premises, under emergency conditions, from surplus rainwater captured and stored in open cut pits and associated dams was approved on the 31 October 2022. *Licence Condition E1 Emergency Water Discharge* permitted the volumes of water discharged from licence discharge point (LDP):

- LDP30 - 18 ML/day
- LDP31 - 18 ML/day
- LDP32 - 35 ML/day

Licence Variation Notice 1625163 to extend the time of the water discharge under emergency water discharge conditions from 5pm on the 25 November 2022 to 5pm 1 January 2023 was approved by the EPA on the 31 October 2022. Water quality sampling for LDP30, LDP31 and LDP32 during discharge included:

- Electrical conductivity - grab sample daily during any discharge;
- pH range of 6.5 to 8.5 - grab sample daily during any discharge; and
- Turbidity - grab sample weekly during any discharge.

A report summarising the volumes of water discharged from licence discharge points (LDP) 30, 31 and 32, the quality of the water discharged and any relevant observations must be prepared following the cessation of the emergency discharge. Discharge assessments reports for LDP30, LDP31 and LDP32 are provided in **Appendix 3C** and summarised below. Details of LDP24 during the Reporting Period are provided in **Section 7.9.**

ED Period 1

Table 23 provides a summary of discharge volumes from the three EPL points (30, 31, 32) between 31 October and 25 November 2022. Discharges never exceeded the EPL daily discharge limit of 71 ML.

Table 23 LDP30, LDP31 & LDP32 ED Volumes 31/10/2022 to 25/11/2022

	Discharge Volume (ML/Day)							
	EPL Point 32 (Pit 2)	Daily Limit	EPL Point 31 (Pit 4)	Daily Limit	EPL Point 30 (Pit 8)	Daily Limit	Total	Daily Limit
Daily Average (ML)	25.2	35	15	18	11	18	49.5	71
Daily Maximum (ML)	33.5		16.6		14		60.7	
Total Discharged (ML)	655		389		243		1,287	

A summary of the three key water quality indicators from the emergency discharge points during October/ November 2022 (**Appendix 3A**) include:

- The EC of discharge water was 3,500 – 4,500 µS/cm and observed to be reasonably consistent at each discharge location. This is higher than the EC of the receiving water in Wilpinjong Creek prior to discharge.

- Turbidity was generally <10 NTU at all discharge sites. This is lower than the turbidity of the receiving water in Wilpinjong Creek prior to discharge.
- pH is between 7 and 8.5 at all discharge sites, this is generally consistent with recent pH of the receiving water in Wilpinjong Creek prior to discharge.

ED Period 2

Table 24 provides a summary of discharge volumes from the two EPL points (30 and 32) between 15 December 2022 and 1 January 2023. Discharge never exceeded the total EPL daily discharge limit of 20 ML, but the daily limit (15 ML) for EPL32 was exceeded for one day (26 December 2022) with a discharge of 15.32 ML (**Section 11**).

Table 24 LDP30 & LDP32 ED Volumes 15/12/2022 to 01/01/2023

	Discharge Volume (ML/Day)					
	EPL Point 32 (Pit 2)	Daily Limit	EPL Point 32 (Pit 8)	Daily Limit	Total	Daily Limit
Daily Average (ML)	13.05	15	4.65	5	17.70	20
Daily Maximum (ML)	15.32		4.95		19.98	
Total Discharged (ML)	235		85		320	
Permitted under EPL (ML)	270		90		360	

A summary of the three key water quality indicators from the emergency discharge points during December 2022 and January 2023 (**Appendix 3C**) included:

- The EC of discharge water was 3,250 – 4,500 µS/cm and observed to be reasonably consistent at each discharge location. This is higher than the EC of the receiving water in Wilpinjong Creek prior to discharge.
- Turbidity was generally <10 NTU at all discharge sites. This is lower than the turbidity of the receiving water in Wilpinjong Creek prior to discharge and lower than historical observations.
- pH is between 7.5 and 8.5 at all discharge sites, this is generally consistent with recent pH of the receiving water in Wilpinjong Creek prior to discharge.

7.5 Erosion and Sediment Control

An erosion and sediment control measures are described in the SWMP (**Table 7**) for the Mine. During the 2022 Reporting Period water management structures were either implemented or maintained to contain potentially sediment laden water from mining activities in Pit 3, Pit 4, Pit 5, Pit 6, Pit 7 and Pit 8 within the Mine's water management system. Other activities included routine removal of sediment from sumps, drains and sediment dams located in the Mining Infrastructure Area (MIA) and CHPP.

There were no reportable incidents in relation to unauthorised water discharges during 2022.

A clean water diversion (CWD) has been constructed in Pit 8 to reduce surface water from Pit 8 (Slate Gully) undisturbed water catchments that will otherwise report into the Pit 8 disturbance footprint. The CWD in Pit 8 will progress with the advancing pit.

WCPL sought a variation to EPL12425 in 2021 to allow the rain water collected by the diversion upstream of Pit 8 to discharge to Wilpinjong Creek under various water quality conditions (**Section 3.2**). Newly approved licence discharge point (LDP) 30 permits water to be discharged from the CWD if the value of turbidity does not exceed the turbidity value measured at the Wilpinjong Creek upstream gauging station. When there is no flow within Wilpinjong Creek at the upstream gauging station the value of turbidity measured at point 30 must not exceed 50 Nephelometric Turbidity Units (NTU).

There were emergency discharge events from LDP30, LDP31 and LDP32 during the Reporting Period in accordance with EPL12425. Turbidity was generally <10 NTU at all discharge sites. This is lower than the

turbidity of the receiving water in Wilpinjong Creek prior to discharge and lower than historical observations (**Appendix 3A**).

WCPL are planning to install a strategic clean water diversion in western area of Pit 6 to reduce surface water from undisturbed water catchments that will otherwise report into the Pit 6 disturbance footprint. During the Reporting period clean water upslope of mining disturbance in Pit 6 & 8 was captured in existing dams, pumped around the active mining area and returned downslope of the mining operation.

7.6 Surface Water

In June 2022, WCPL completed a review of the SWMP (Version 6) included Updates to address 2021 IEA recommendations and 2021 Annual Review, additional information CWD for Pit 6, sampling units for rehabilitation areas, review of pH triggers and TARPs for CC-1, WIL-GSD and WIL-D2 and an additional TARP for Channel Stability. At the time of preparing this 2022 Annual Review the SWMP (Version 6) was still pending approval. A summary of the surface water monitoring program is presented in **Table 25**.

A summary of the surface water monitoring results assessed against each relevant water quality impact criteria from the SWMP is provided in **Table 26**. Further water monitoring results for 2022 Reporting Period, including figures with surface water quality monitoring locations are provided in **Appendix 3C.** A detailed assessment of creek flows, discharge from LDPs and water monitoring results against triggers in the SWMP was completed by SLR (**Appendix 3C**) and summarised throughout.

Table 25 Surface Water Monitoring Program

Monitoring Locations		Frequency	Parameters[1]
Wilpinjong Creek	Licenced Discharge Point No. 24	Continuous (during discharge)	Volume of water discharged[6], EC and pH
		Weekly (during discharge)	Oil & Grease and TSS[7]
	WIL-U, WIL-U2, WIL-PC, WIL-NC, WIL-D and WIL-D2[2]	Monthly	Field pH and EC, turbidity[3], and SO_4
		Quarterly^	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	WILGSU and WILGSD (gauging stations)[2]	Continuous	Flow rate, pH, EC and temperature
		Monthly	Field pH and EC, turbidity[3], and SO_4
		Following significant rainfall events[4]	pH, EC, TDS, TSS and sulphate
	WC1, WC2, WC3, WC4, WC5, WC6, WC7, WC8[5]	Annually	Stream health monitoring
	Forty-nine survey points along Wilpinjong Creek[5]	Annually	Channel stability monitoring (photo-points, description, stability)
Cumbo Creek	CC1, CC2 and CC3[2]	Monthly	Field pH and EC, turbidity[3], and SO_4
		Quarterly^	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	CC3[2]	Following significant rainfall events[4]	pH, EC, TDS, TSS and sulphate
	CCGSU and CCGSD (gauging station)[2]	Continuous	Flow rate, pH, EC and temperature
		monthly	Field pH and EC, turbidity[3], and SO_4
		Following significant rainfall events[3]	pH, EC, TDS, TSS and sulphate
	CC1, CC2[5]	Annually	Stream health monitoring

Monitoring Locations		Frequency	Parameters[1]
	Nine survey points along Cumbo Creek[5]	Annually	Channel stability monitoring
Wollar Creek	WOL 1 and WOL 2[2]	Monthly	Field pH and EC, turbidity, and SO_4
		Quarterly^	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	WO1, WO2, WO3[5]	Annually	Stream health monitoring
Slate Gully Creek	SGC_1[2]	Monthly	Field pH and EC, turbidity, and SO_4
		Quarterly	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
		Following significant rainfall events[4]	pH, EC, TDS, TSS and sulphate

Notes: **1)** Parameters will be analysed provided water samples can be collected. **2)** Monitoring locations are illustrated in Appendix 3C. **3)** Turbidity indicates the potential downstream water quality effects caused by suspended solids. **4)** Greater than 20 millimetres (mm) in 24 hours. **5)** Monitoring locations are illustrated on Figure 21. **6)** Volume to monitored using flow meter and continuous logger. **7)** Grab samples. ^ Quarterly under PA05-0021 then monthly under SSD-6764. Shaded cells indicate added to the water monitoring program as a result of SSD-6764 and the revised Surface Water Management Plan.

Table 26 Surface Water Performance

Location		Approved Criteria[1, 2]	Performance During the Reporting Period [1,2]	Trend/Key Management Implications	Implemented/proposed Management Actions
Wilpinjong Creek Sites: • **WIL_NC** • **WIL_D** • **WIL_D2**	EC (µS/cm)	**3,440 µS/cm** For 3 consecutive readings	No exceedance of triggers	Analysis of the available surface water quality data from monthly grab samples in 2022 does not indicate observable impacts from the WCM mining operations on the adjacent creeks, for the majority of the assessed period. Two Wilpinjong Creek downstream monitoring locations recorded exceedances of water quality monitoring criteria (pH upper limit), with the following point summarising the key findings from the investigation of the trigger exceedances: • The pH observations exceeding the upper trigger level for downstream Wilpinjong Creek may be within the normal range for pH at these locations. The 80th percentile pH from baseline data for these downstream sites is pH 7.9, which is above the established trigger level of pH 7.7. The RO plant was observed to discharge within defined EPL limits in 2022, but the upper bound of these limits is higher (pH 8.5) than the upper pH limit at downstream Wilpinjong Creek (pH 7.7) (SLR 2023). The following recommendations are proposed to enable a more relevant and robust analysis of monitoring data: • The pH trigger level could be revised to reflect observed baseline data to provide a more meaningful indication of when WCM may be impacting water quality on Wilpinjong Creek (SLR 2023). • Downstream water quality sampling sites at Cumbo Creek are recommended to be consolidated and moved further upstream to avoid the potential influence of Ulan-Wollar Road on water quality observations. This replacement site should be sampled in routine monthly and rain-event monitoring and be used at the site to assess trigger levels (SLR 2023).	WCPL will continue to implement the approved WMP and SWMP in accordance with Condition 30, Schedule 3 of SSD-6764. In accordance with Condition 5, Schedule 5 of SD-6764, WCPL will review, and revise, WMP and SWMP within three months of the submission of this Annual Review. This review will consider the recommendations made by SLR in their assessment of the 2022 Annual Review for surface water. Continued implementation of the Surface Water Management Measures (Section of the SWMP) to comply with the water management performance measures (**Appendix 3C**) in Table 6 of the Development Consent SSD-6764.
	Turbidity (NTU)	**24 NTU** For 3 consecutive readings	No exceedance of triggers		
	pH (lower)	**6.9 pH** For 3 consecutive readings	No exceedance of triggers		
	pH (upper)	**7.7pH** For 3 consecutive readings	Triggers exceeded		
Cumbo Creek (Downstream) Site: • **CC1**	EC (µS/cm)	**7,510 µS/cm** For 3 consecutive readings	No exceedance of triggers		
	Turbidity (NTU)	**77 NTU** For 3 consecutive readings	No exceedance of triggers		
	pH (lower)	**7.5 pH** For 3 consecutive readings	Triggers exceeded		
	pH (upper)	**8.2 pH** For 3 consecutive readings	No exceedance of triggers		

Note: [1] Trigger is only considered to have been exceeded if the recorded value at monitoring site is greater than (or less than for lower pH Trigger) all values from the upstream monitoring sites sampled on the same day. In the event that a single result is recorded above/below the 80th/20th percentile value, WCPL will undertake a preliminary investigation to ascertain whether the result was caused by an obvious anomaly or whether further testing is required. [2] Trigger is only considered to be exceeded if recorded value at the monitoring site is greater than (or less than for lower pH trigger) for 3 consecutive readings.

Analysis of continuous data at the WCM gauging stations in 2022 indicated elevated flow conditions at Cumbo Creek and Wilpinjong Creek sites in response to above average rainfall conditions. Flow was also influenced later in 2022 by the permitted discharge of EMW. For most of 2022, water quality data from continuous monitoring (pH and electrical conductivity (EC) was consistent with previous wet periods, while some localised influence on water quality was observed late in 2022, due to the permitted discharge of EMW. Reviews assessing the influence of EMW discharge have shown resultant water quality observations are within the natural variation ranges, and that any influence appears to be local and short-term (SLR, 2023).

Table 27 Summary of Surface Water Monitoring Result 2022

SW Monitoring Point	EC (µS/cm)			pH			SO_4 (mg/L)			Turbidity (NTU)		
	Min	Max	Ave.	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Summary of Surface Water Monitoring Result 2021												
CC1	1870	3370	2917	7.6	8.0	7.8	551	1320	971	1.1	12.8	4.2
CC2	1170	4130	2465	7.7	8.2	8.0	319	1450	766	0.3	3.2	1.7
CC3	411	2060	1426	7.6	8.4	8.0	69	626	392	0.9	13.2	3.7
WIL (U)	221	1510	667	6.9	7.6	7.2	5	448	138	7.3	24.9	14.8
WIL (U2)	210	1440	694	6.7	7.6	7.1	7	412	139	6.9	24.0	13.4
WIL (PC)	432	1410	657	6.9	7.8	7.3	9	282	81	25.8	74.0	40.7
WIL (NC)	396	3530[2]	1208	7.0	8.0[2]	7.3	34	1380	391	0.4	5.0	1.7
WIL (D)	497	3260	1418	7.5	8.3[3]	7.9	47	1160	402	3.6	43.8[2]	14.3
WIL (D2)	527	2790	1410	7.6	8.0[3]	7.9	67	917	387	2.6	12.4	7.6
WOL1	824.0	2760.0	1258.0	7.7	8.1	8.0	101.0	915.0	302.6	2.3	14.5	7.0
WOL2	609.0	1210.0	806.2	6.9	8.2	7.6	54.0	144.0	93.3	2.2	69.1	18.0

Notes: [1] No sample in 2022. [2]Result/s outside of relevant criteria but not for three consecutive readings. [3]Results outside of relevant criteria for three consecutive readings (refer to **Table 2**6 for discussion and recommendations).

7.7 Harvestable Rights

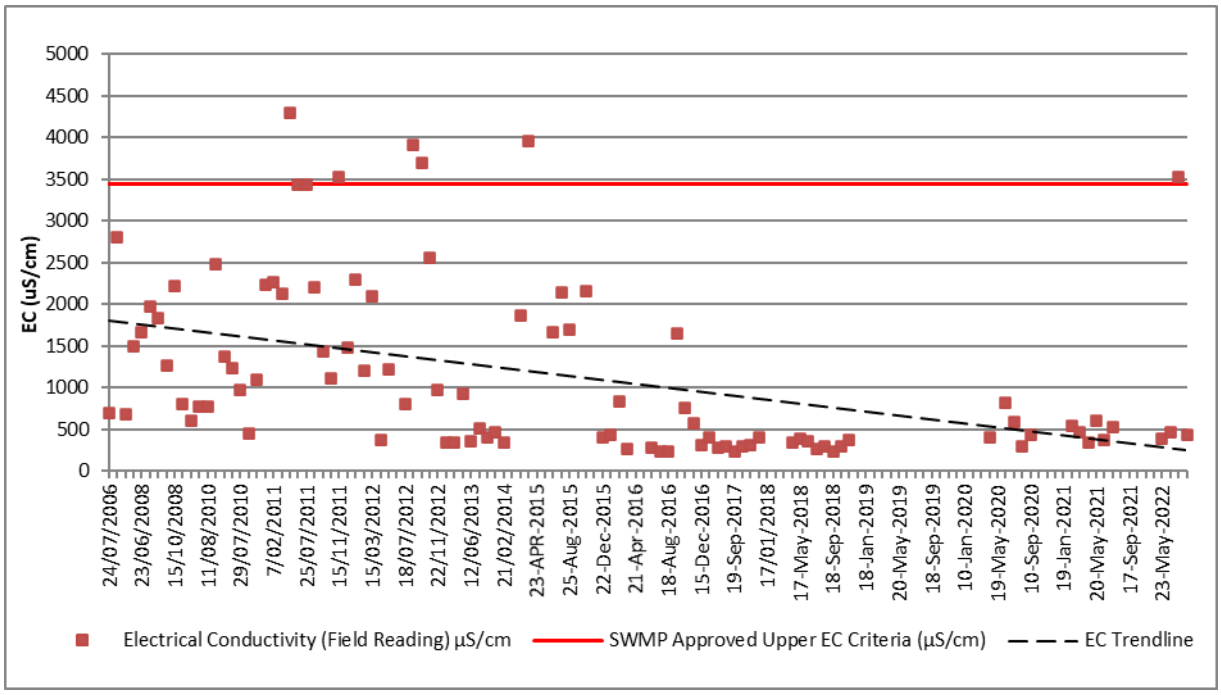
An assessment of WCPL's harvestable rights position was undertaken based on WCPL current landholdings, offset areas, current disturbances at the Mine to the end of 2022 and the inclusion of Pit 6 and development of Pit 8 (**Table 28**). The harvestable rights areas and the rules for capturing rainfall run-off in those areas are specified in Harvestable Rights Order.

Table 28 Harvestable Rights Position 2022

Scenario J 2022 Annual Review: Pit 6 & Pit 8 Diversions – Current Disturbance													
Exempted				Included			Hydrology		Licences	Calculations			
Scenario	Total Area (ha)	Undisturbed Catchment diverted [illegible] (ha)	WCPL Project disturbance area limit (ha)	Undisturbed catchment draining internally (ha)	Disturbed catchment area downstream of 3rd order Stream	Farm Dams (unlicensed) Volume (ML)	Average Rainfall (m)	Runoff Co-efficient	WAL volumes (ML)	Harvestable right (ML)	WCPL Harvested volume (ML)	Surplus position without WALs (ML)	Surplus position with WALs (ML)
1	20400	596	3042	1647	0	256.0	0.5868	0.1067	150	1428	1287	141	291
2	19393	596	3042	1647	0	252.5	0.5868	0.1067	150	1357	1283	74	224
3	19904	596	3042	1647	0	256.0	0.5868	0.1067	150	1393	1287	106	256
4	18814	596	3042	1647	0	225.2	0.5868	0.1067	150	1317	1256	61	211

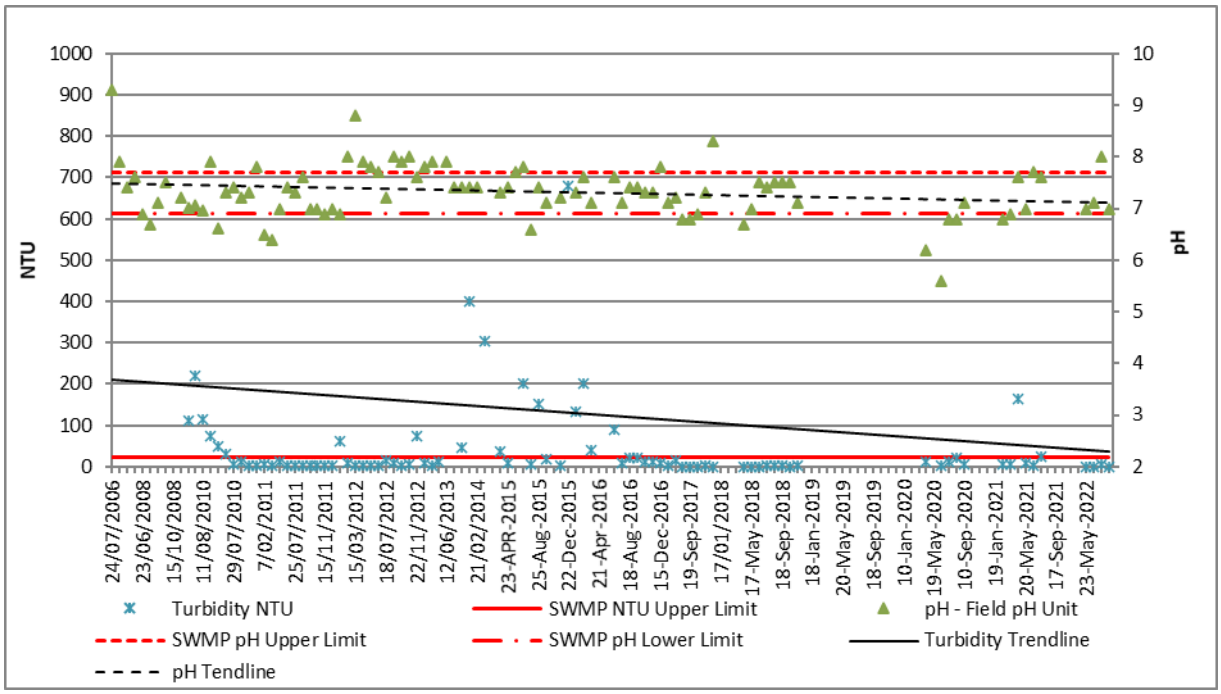
Notes: 1 = WCPL Landholdings – Current. 2 = WCPL Landholdings – Without WEP Offsets. 3 = WEP Offsets & Lynch Properties. 4 = WEP Offsets & Wandoona Properties & Lynch Properties

Graph 12 Long-term EC Water Quality Results at WIL_NC



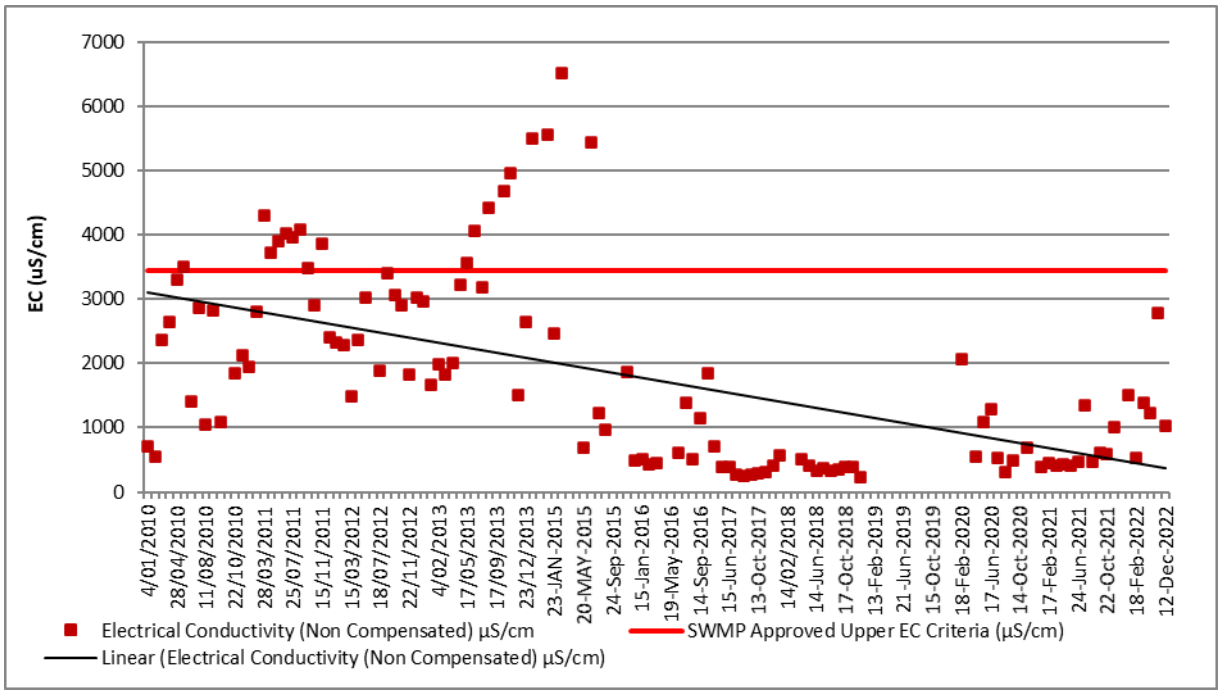
Notes: During the 2022 monitoring period, until late 2022, EC observations at the Wilpinjong Creek Downstream monitoring sites were well below the 80th percentile baseline as well as below the trigger level (3,440 µS/cm) which is related to above average rainfall and high flow conditions in 2022. In late 2022 (December), EC increased at all Wilpinjong Creek downstream monitoring locations, which is most likely related to higher EC water being discharged to Wilpinjong Creek under emergency provisions. While WIL-NC has one observation above the trigger level, this does not fulfil the criteria of a trigger exceedance (SLR 2023).

Graph 13 Long-term pH & NTU Water Quality Results at WIL_NC



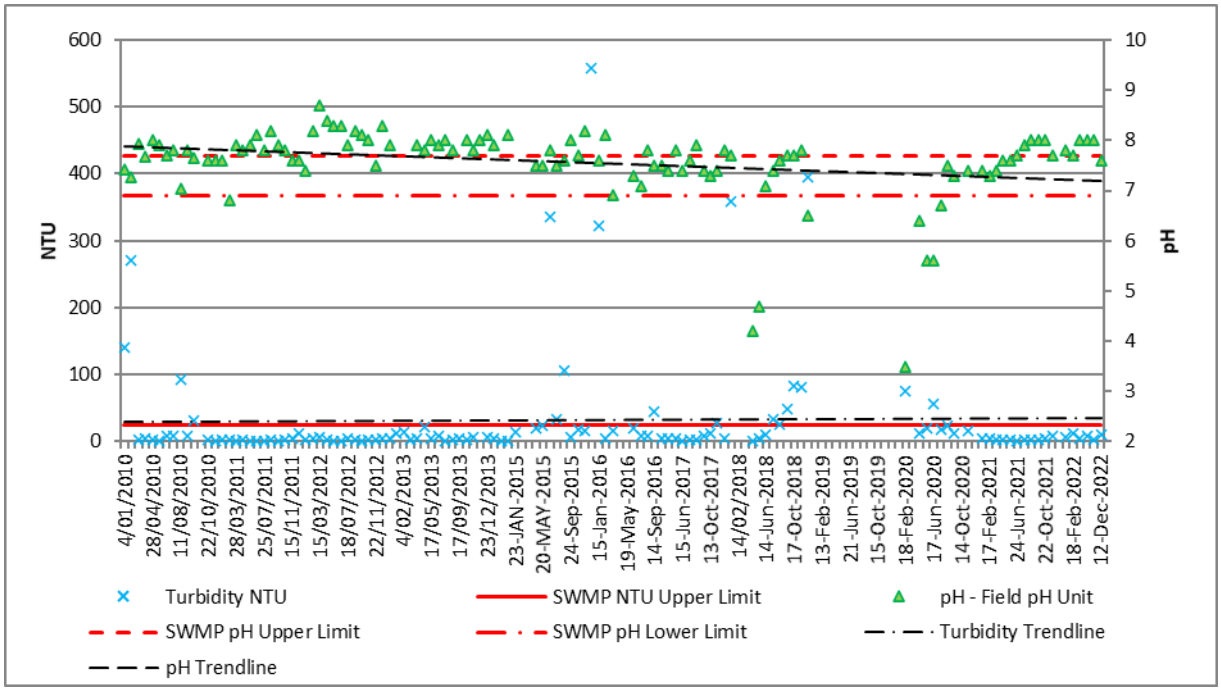
Notes: During 2022, pH observations at Wilpinjong Creek Downstream monitoring sites are above upper trigger values at WIL-D2 (3 consecutive observations from May-November 2022) and WIL-D (5 consecutive observations from April-August 2022). A similar trend was not observed at Wilpinjong Creek Upstream monitoring sites, therefore breaching the upper pH trigger level as defined in the SWMP (SLR 2023). Refer to **Table 26** for discussions and recommendations.

Graph 14 Long-term EC Water Quality Results at WIL_D2



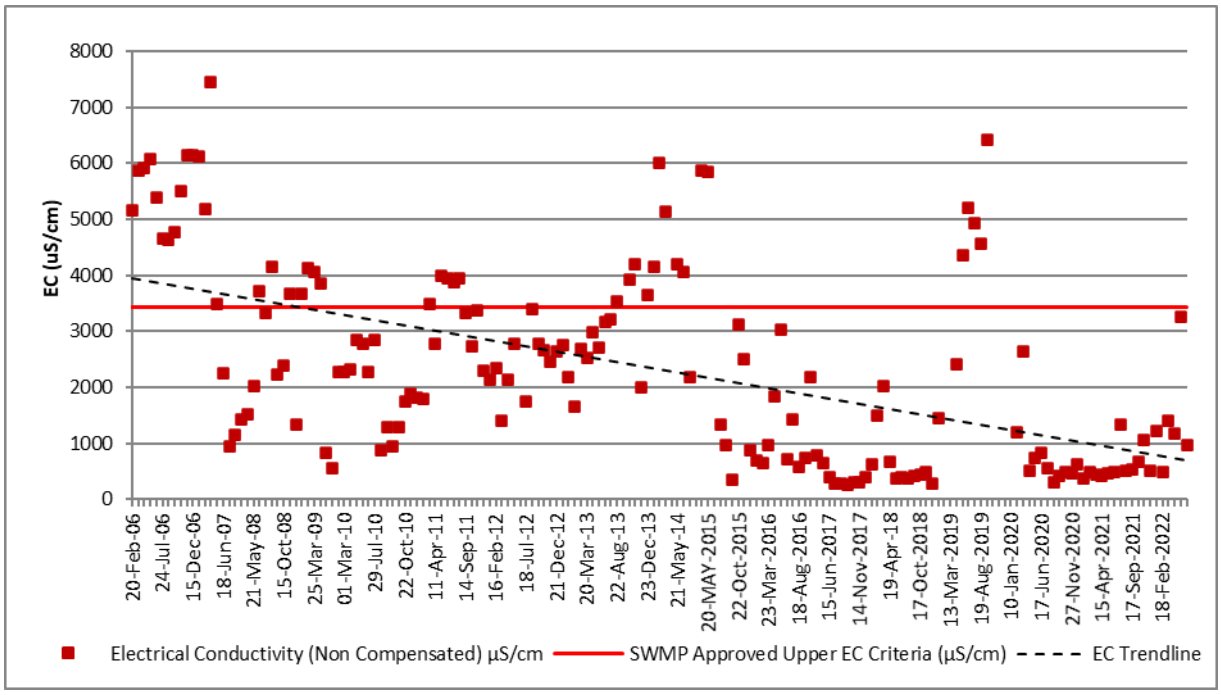
Notes: Until late 2022, EC observations at the Wilpinjong Creek Downstream monitoring sites were well below the 80th percentile baseline as well as below the trigger level (3,440 µS/cm) which is related to above average rainfall and high flow conditions in 2022. In late 2022 (December), EC increased at all Wilpinjong Creek downstream monitoring locations, which is most likely related to higher EC water being discharged to Wilpinjong Creek under emergency provisions (SLR 2023).

Graph 15 Long-term pH & NTU Water Quality Results at WIL_D2



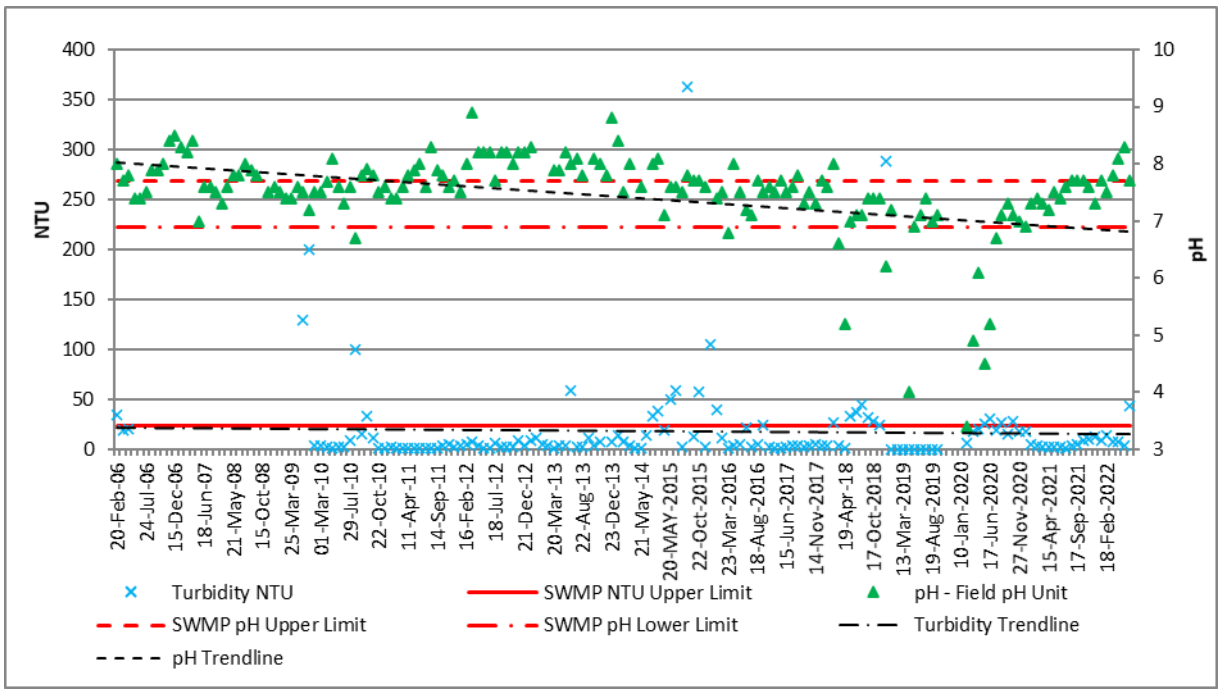
Notes: During 2022, pH observations at Wilpinjong Creek Downstream monitoring sites are above upper trigger values at WIL-D2 (3 consecutive observations from May-November 2022) and WIL-D (5 consecutive observations from April-August 2022). A similar trend was not observed at Wilpinjong Creek Upstream monitoring sites, therefore breaching the upper pH trigger level as defined in the SWMP (SLR 2023). During 2022, turbidity observations at Wilpinjong Creek Downstream monitoring sites are generally below the 80th percentile baseline (28 NTU) and trigger level (24 NTU) (SLR 2023).

Graph 16 Long-term EC Water Quality Results at WIL_D



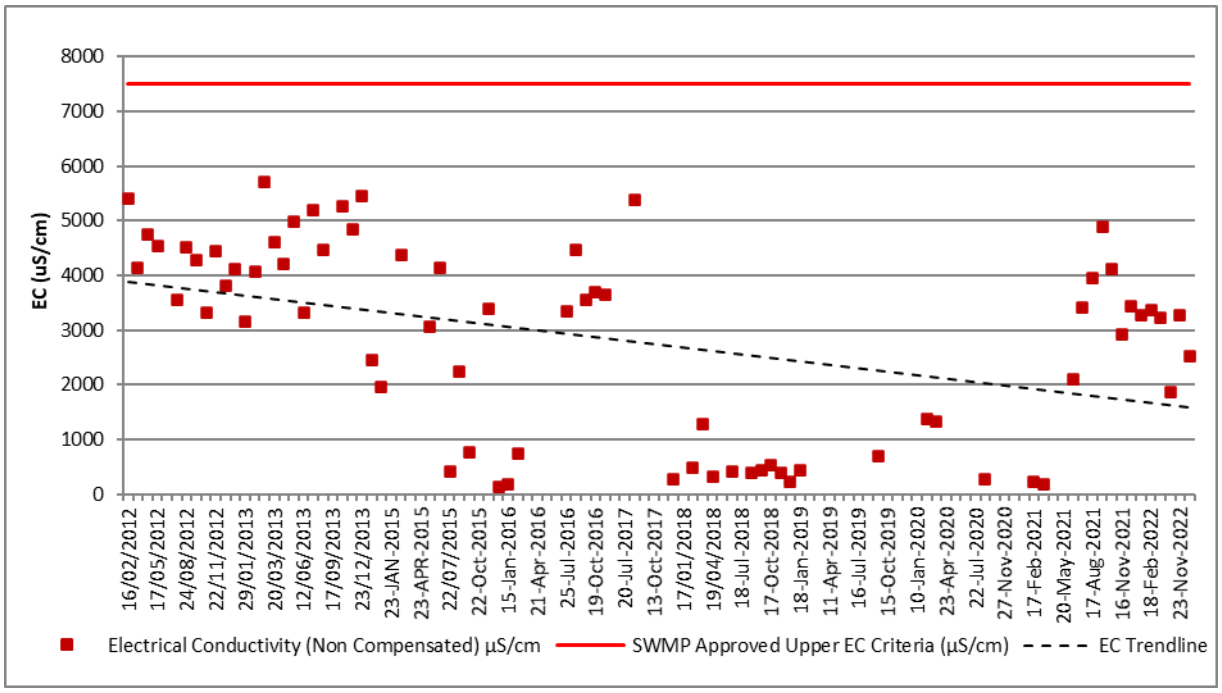
Notes. Until late 2022, EC observations at the Wilpinjong Creek Downstream monitoring sites were well below the 80th percentile baseline as well as below the trigger level (3,440 µS/cm) which is related to above average rainfall and high flow conditions in 2022. In late 2022 (December), EC increased at all Wilpinjong Creek downstream monitoring locations, which is most likely related to higher EC water being discharged to Wilpinjong Creek under emergency provisions (SLR 2023).

Graph 17 Long-term pH & NTU Water Quality Results at WIL_D



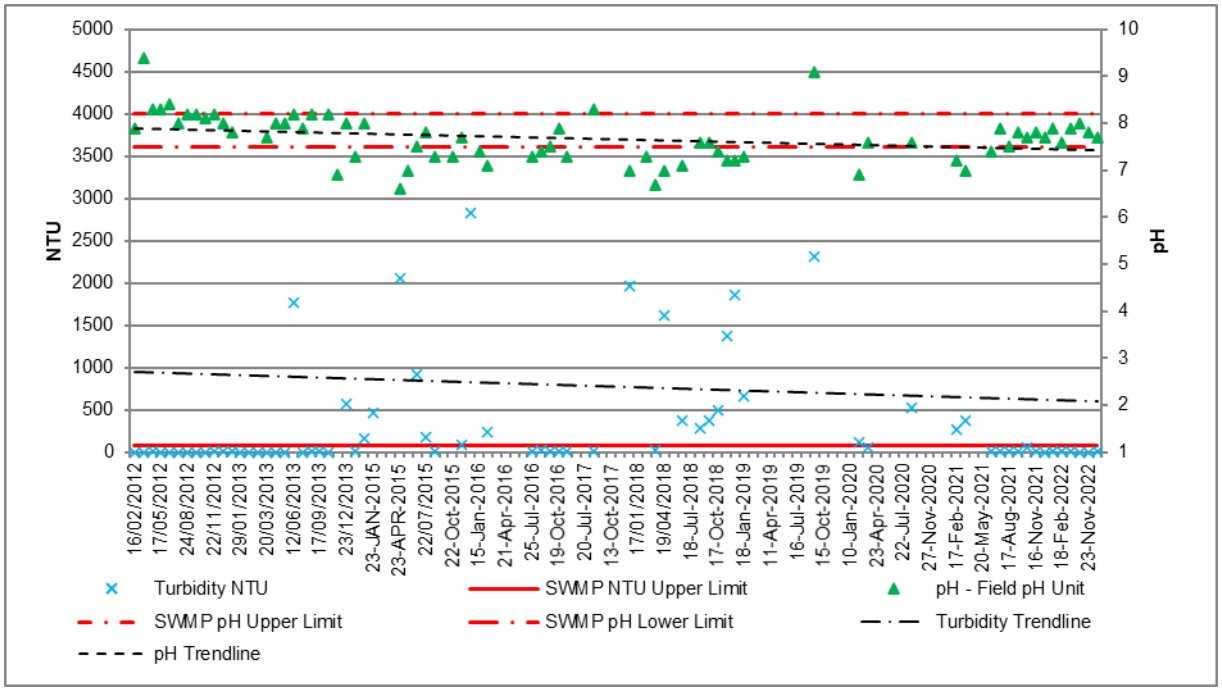
Notes: During 2022, pH observations at Wilpinjong Creek Downstream monitoring sites are above upper trigger values at WIL-D2 (3 consecutive observations from May-November 2022) and WIL-D (5 consecutive observations from April-August 2022). A similar trend was not observed at Wilpinjong Creek Upstream monitoring sites, therefore breaching the upper pH trigger level as defined in the SWMP (SLR 2023). During 2022, turbidity observations at Wilpinjong Creek Downstream monitoring sites are generally below the 80th percentile baseline (28 NTU) and trigger level (24 NTU) (SLR 2023). Three consecutive readings were not observed above the trigger level at any site in 2022, and the observations are also lower than those recorded at upstream monitoring sites. As described in the paragraph above, this does not constitute an exceedance of the trigger level (SLR 2023).

Graph 18 Long-term EC Water Quality Results at CC_1



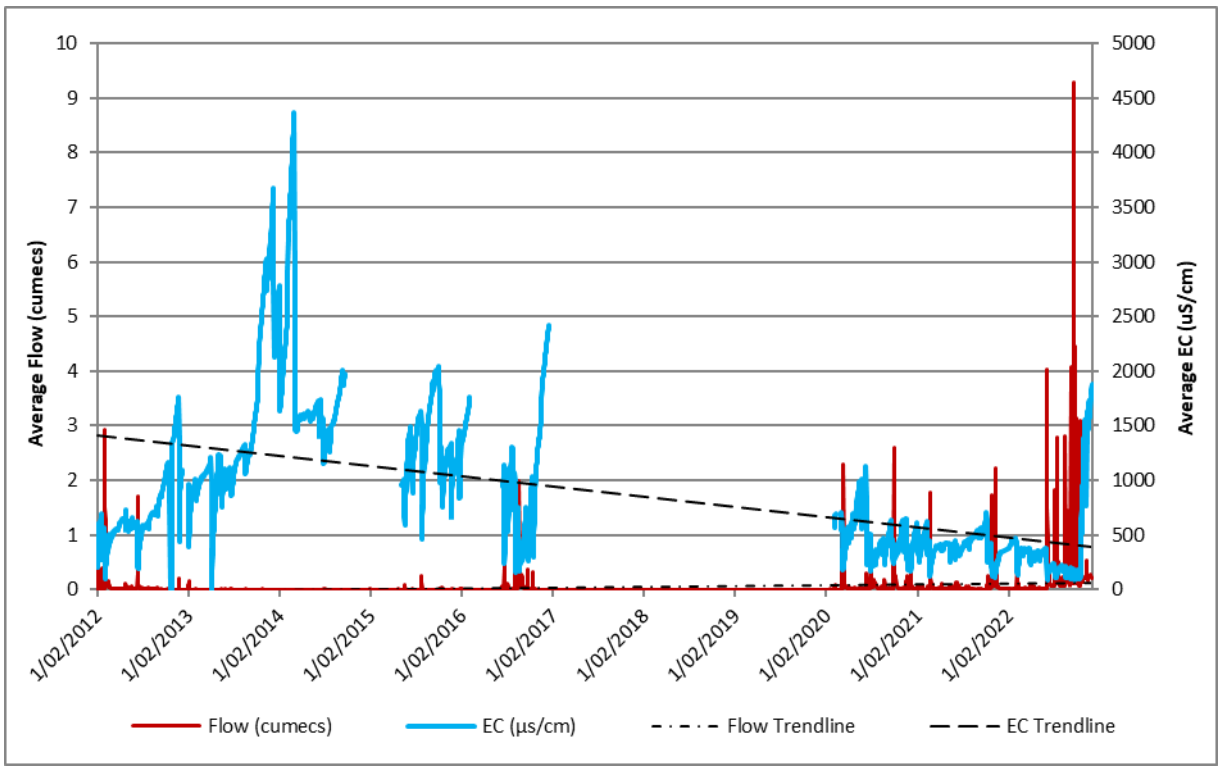
Notes: EC observations at Cumbo Creek Downstream monitoring sites show considerable variation from 2015 through 2022 (<1,000 µS/cm to ~6,400 µS/cm) but have not recorded an observation above the trigger level since 2015 (7,510 µS/cm). During 2022, EC observations at Cumbo Creek Downstream monitoring sites are well below the trigger level (7,510 µS/cm) with readings between <1,000 and 4,000 µS/cm (SLR, 2023).

Graph 19 Long-term pH & NTU Water Quality Results at CC_1



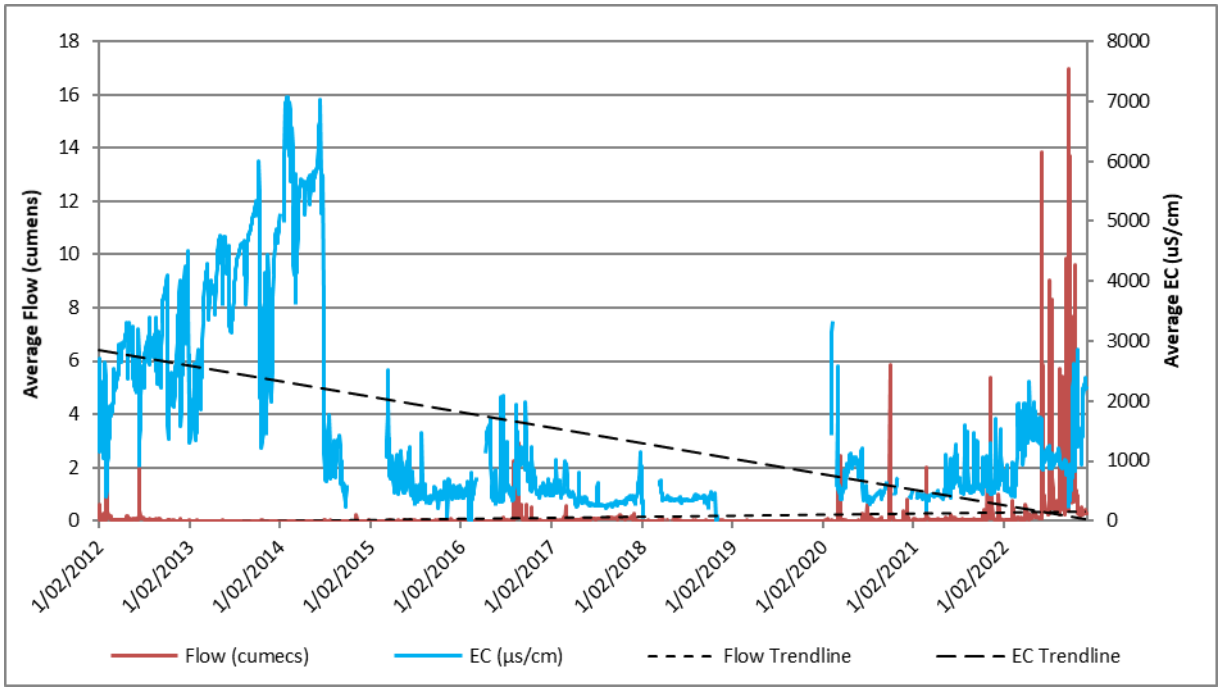
Notes: Throughout 2022 all monitoring sites, CC-1, CC-1 (30m up) and CC-GS-D, were within the pH trigger levels (pH 7.5-8.2) at Cumbo Creek downstream sites. No pH trigger exceedance was recorded in 2022 as more than three consecutive observations were not below the lower pH trigger level at CC1 (SLR 2023). Aside from a single observation at CC-1-(up 30m) turbidity observations at Cumbo Creek Downstream monitoring sites in 2022 are below the trigger level (77 NTU). No exceedance of the trigger level was recorded during 2022 as three consecutive observations above the trigger level are required at CC-1 (SLR 2023).

Graph 20 Gauging Station Wilpinjong Creek Upstream Long Term Trends



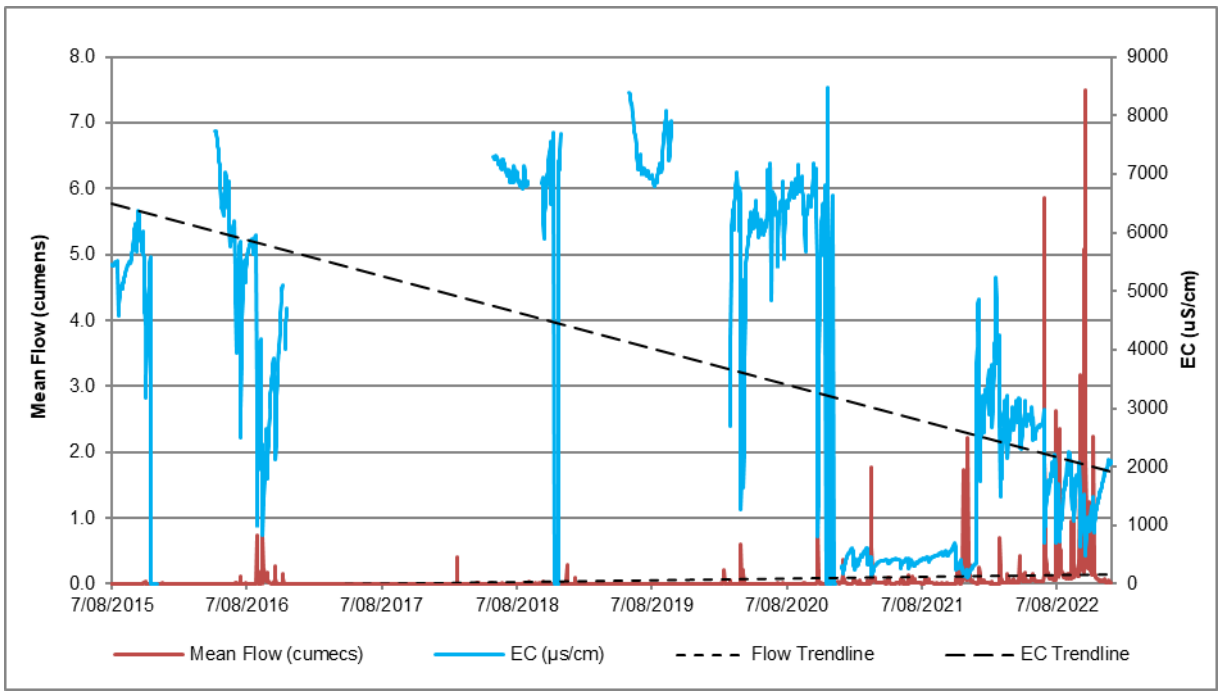
Notes: Flows were observed for the entire monitoring period in both WILGSU and WILGSD throughout 2022, consistent with above average rainfall. WILGSU (0.25-802 ML/day) and WILGSD (1.5-1,200 ML/day). Wilpinjong Creek flow monitoring sites maintained higher flow rates compared to CCGSU in late 2022. This is due to discharge of mine water under emergency provisions by both Wilpinjong and Moolarben Coal supplementing natural flow (SLR,2023).

Graph 21 Gauging Station Wilpinjong Creek Downstream Long Term Trends



Notes: Flows were observed for the entire monitoring period in both WILGSU and WILGSD throughout 2022, consistent with above average rainfall. WILGSU (0.25-802 ML/day) and WILGSD (1.5-1,200 ML/day). Wilpinjong Creek flow monitoring sites maintained higher flow rates compared to CCGSU in late 2022. This is due to discharge of mine water under emergency provisions by both Wilpinjong and Moolarben Coal supplementing natural flow (SLR 2023). Flow at WILGSD is influenced by upstream flow from both Wilpinjong and Cumbo Creeks as well as the RO Plant, which all have different EC values. EC at WILGSD is therefore variable and related to the primary source of flow at any point in time (SLR 2023).

Graph 22 Gauging Station Cumbo Creek Long Term Trends



Notes: During 2022, flow at CCGSU fluctuates between 1 and 650 ML/day in response to rainfall events, with the highest flow events recorded in July (500 ML/day) and October (650 ML/day) 2022. CCGSU was observed to flow for the majority of the year with the exception of two brief periods in February and March. Flow at CCSGU is likely to have a persistent groundwater contribution that is sourced from weathered Permian coal measures. This results in observations of EC between 6,000 and 8,000 µS/cm). Declines in EC are observed following peak rainfall events (SLR 2023).

7.8 Site Water Balance

A Site Water Balance (SWB) (**Table 7**) has been prepared for the Mine. In June 2022 the SWB was revised to include disturbance footprint in Pit 6, updated with 2021 water balance model, calibration of model and forecast of site water inventory for 2021 to 2023 by SLR. At the time of preparing this 2022 Annual Review the SWB (Version 6) was still pending approval.

WCPL have developed and continue to maintain a water balance simulation model for the WCM. The model was updated and converted to Goldsim software in 2020 by SLR Consulting Pty Ltd (SLR, 2020), based on calibration against monitoring data collected between January 2018 and December 2019. Prior to this update the model utilised OPSIM simulation software which was calibrated to monitoring data between January 2014 and January 2018. SLR recalibrated the model again during 2022 to provide updated forecasts for WCM, and for the 2022 annual review process (SLR 2023).

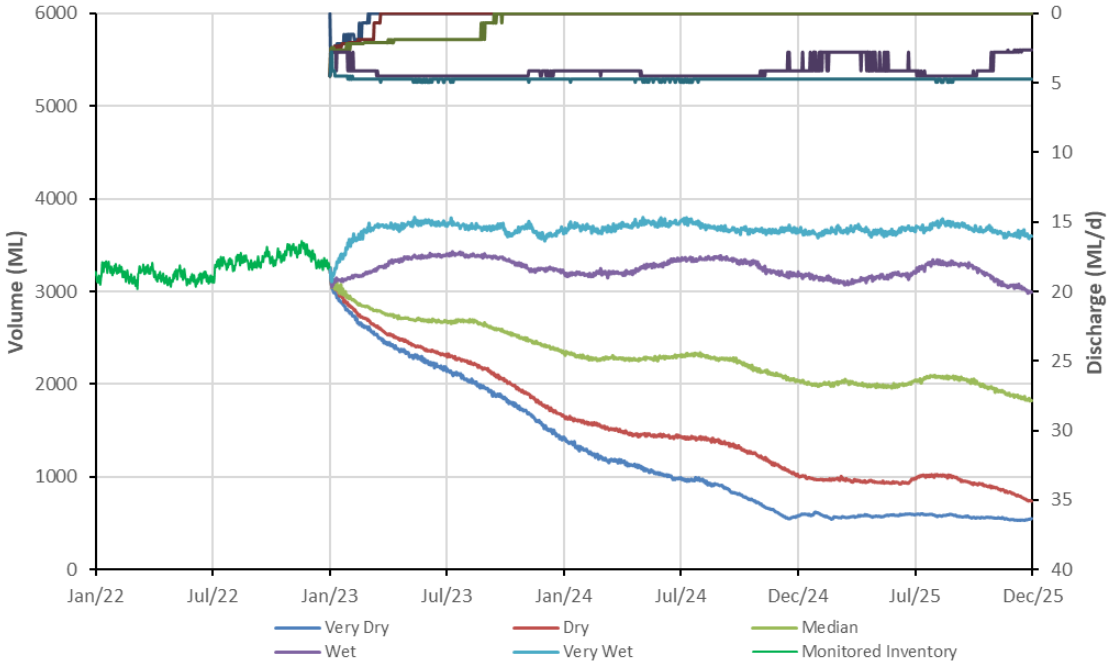
WCPL engaged SLR to review and update the WCPL Water Balance Model (WBM) to capture changes to the site water catchments and management system during 2022 and calibrate the WBM using monitoring data collected up to the end of December 2022. This report documents the model update process and outcomes, including:

- Collation and review of historical water monitoring data;
- Updated catchment and land use mapping and changes incorporated to the Water Management System (WMS) in 2022;
- Calibration of WCPL's Goldsim model against the 2022 Goldsim output and data collected between January 2018 and December 2022;
- Description of Goldsim model, operating rules and model schematic; and
- Forecast of site water behaviour for the next three years (2023 to 2025).

The intent of this review and update of the WBM is to document the basis of the updated WCPL Goldsim model, assess the predicted water balance versus actual monitored water inventory during 2022, and to provide a 3 year forward projection of water balance at WCM (SLR 2023).

Model simulated volumes have been forecast for the period 1 January 2023 to 31 December 2025. Results have been plotted for the combined water inventory in the WMS (comprising Pit 2W, Pit 1S, RWD, CWD, Pit 5N, Pit 4 and Pit 3). Figure 3 shows the forecasted total site inventory and associated WTF discharge for the period 1 January 2023 to 31 December 2025 through varying climatic conditions. Refer to **Appendix 3** for complete report.

Figure 3 Forecast Water Inventory 2023-2025



7.9 Water Treatment Facility

Construction of the Water Treatment Facility (WTF) was completed in June 2012 and approved water releases commenced on 16 June 2012 in accordance with EPL 12425. Under EPL 12425, WCPL are approved to discharge treated water from Licensed Discharge Point 24 (LDP24). The maximum volume of water discharge shall not exceed 5ML/day.

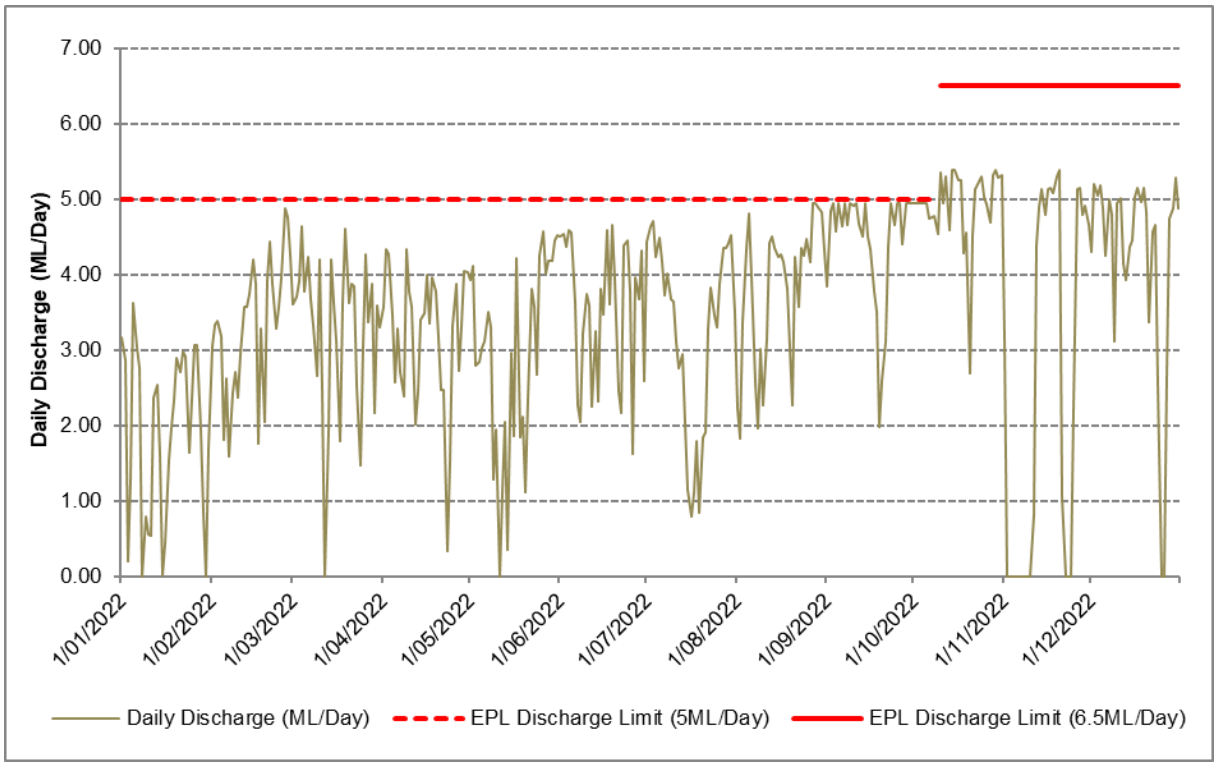
On the 6 October 2022, WCPL sought to vary licence condition L3.1 to increase the daily discharge rate at LDP24 from 5 ML/day to 6.5 ML/day in response to ongoing increased rainfall associated with the La Nina weather conditions (**Section 7.4.1**). The variation to increase to 6.5ML/day was approved by the EPA on the 10 October 2022.

Water quality concentration limits (i.e., 100 percentile concentration limit) for LDP24 include:

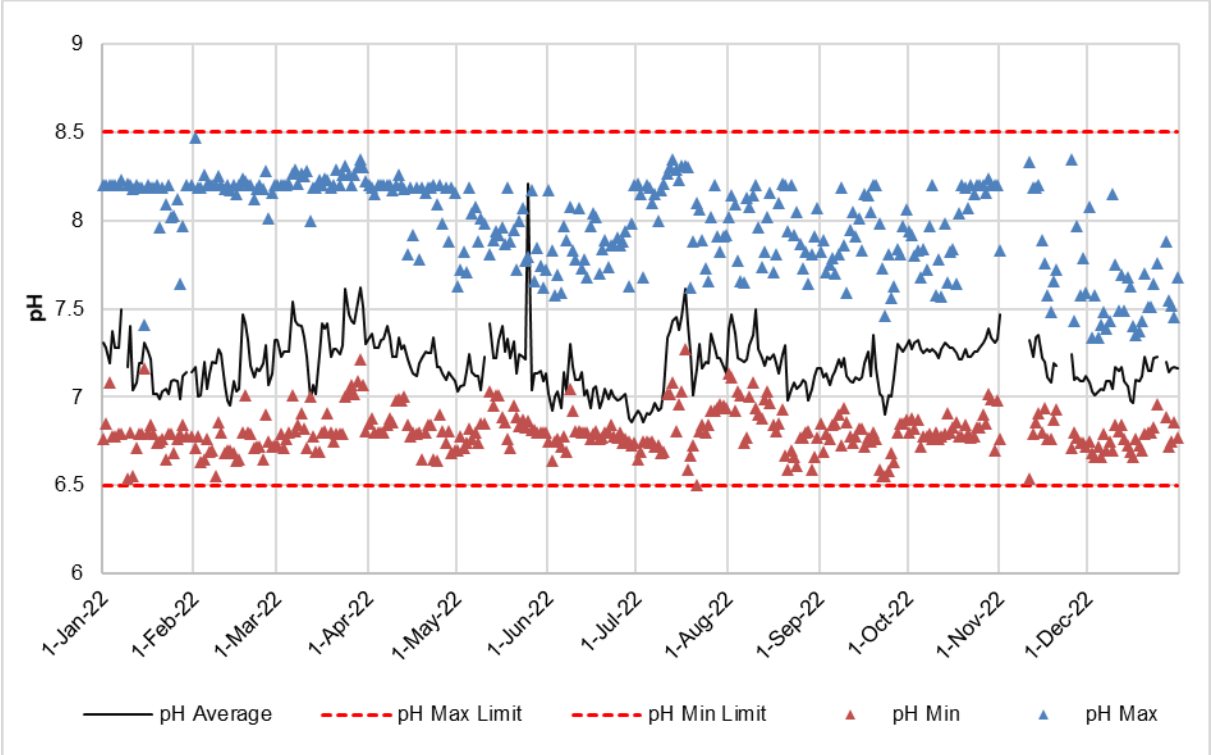
- Electrical conductivity (EC) not to exceed 500 µS/cm (continuous monitoring);
- Oil and grease (O&G) not to exceed 10mg/L (grab sample weekly during any discharge);
- pH range of 6.5 to 8.5 (continuous monitoring); and
- Total suspended solids (TSS) not to exceed 50mg/L (grab sample weekly during any discharge).

During 2022 WCPL complied with EPL water quality and quantity limits for LDP24 (**Graphs 23** to **26**).

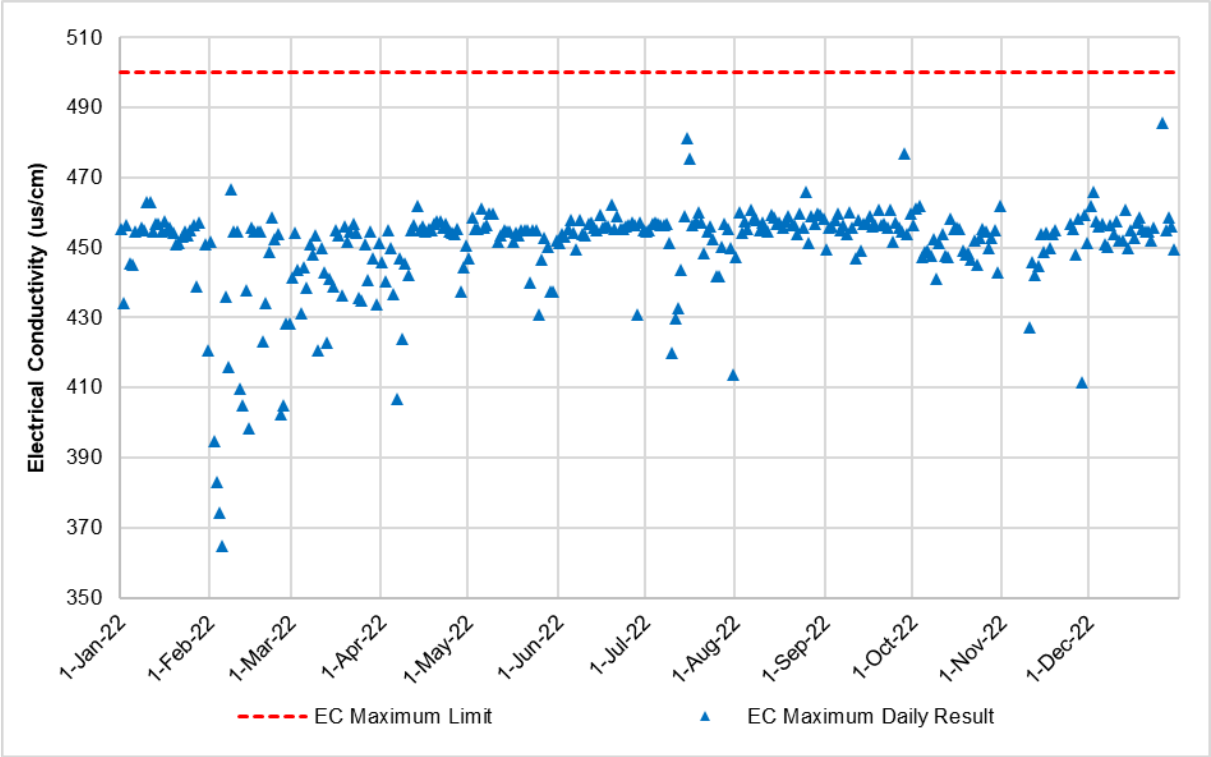
Graph 23 RO Daily Discharge Volumes



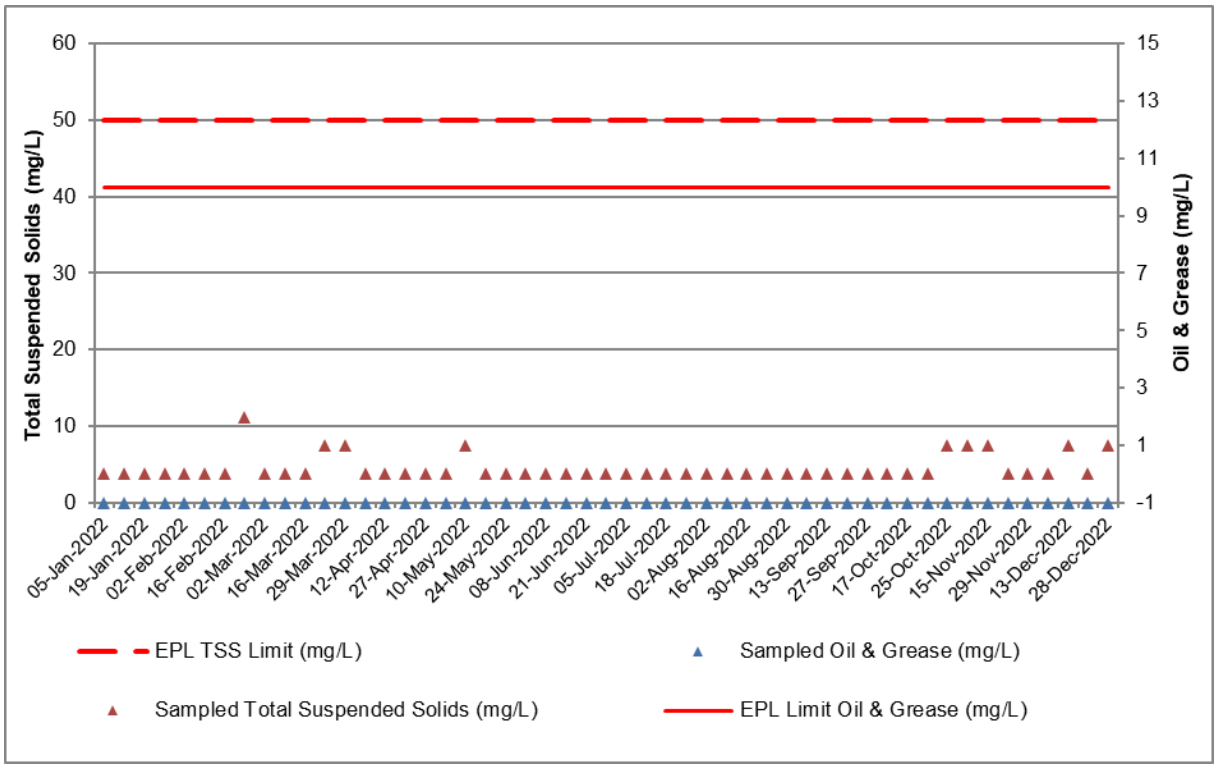
Graph 24 RO Daily pH



Graph 25 RO Daily EC



Graph 26 RO Daily TSS & Oil and Grease



7.10 Stream Health & Channel Stability Monitoring

Channel Stability Monitoring

Channel stability monitoring (CSM) was completed by Eco Logical Australia (ELA) on behalf of Wilpinjong Coal Pty Ltd (WCPL) between 13 February and 15 February 2023, to be included in the 2022 annual monitoring for WCPL. Monitoring was not undertaken in 2022 due to access limitation from inclement weather conditions. The CSM program aims to provide quantitative and qualitative measures of channel stability along Wilpinjong and Cumbo Creeks. Monitoring was undertaken across a total of 59 permanent monitoring locations, including 49 on Wilpinjong Creek and 10 on Cumbo Creek. Consistent with previous monitoring, methods included surveying the designated reach of each monitoring site (approximately 100 m) and completing the Bank Erosion Hazard Index (BEHI) assessment, along with visual and photographic comparative assessment with data from previous years.

CSM results in 2022 were largely consistent with previous years, indicating the unchanged nature of the target creeks. For Wilpinjong Creek, BEHI ratings remained unchanged at all 49 sites, whilst for Cumbo Creek, ratings remained unchanged at all 10 sites. All sites showed a continued increase in both in-stream and bank vegetation ground cover, as well as water levels and stream flow. This follows on from the increases in vegetation cover observed in 2020 and 2021, which has that ensured consistency in BEHI scores across all sites from the previous year.

Identified historical erosion points were monitored in 2022, with most sites experiencing continued active erosion in 2022. The 2022 CSM program was undertaken following above average rainfall in the preceding 12-month period, including the occurrence of significant rainfall events with the potential to cause erosion. An Intensity-Frequency-Duration (IFD) table was generated for the Wilpinjong catchment using the Bureau of Meteorology (BoM) 2016 Rainfall IFD Data system and detailed rainfall data from the WCPL Meteorological Station. There was a rainfall event that exceeded the 1 in 5-year rainfall event generally accepted as likely to cause erosive scouring, which occurred on 3 July. Furthermore, sustained, above average rainfall through the months of July-October likely exacerbated a rainfall event that occurred on 20 October, which lead to major stream flow velocities recorded within both Wilpinjong and Cumbo Creeks.

Overall, erosion points continue to require ongoing monitoring, and additional revegetation and remediation works are recommended to allow for channel bank stability. In particular, reshaping and contouring of the bank, followed by revegetation is recommended at multiple erosion points, including E1, E3, E4, E6, E9 and E11.

The results of the 2022 CSM support conclusions made in previous monitoring and assessments that ongoing mining operations are not causing stability issues within the target creek systems. Both Wilpinjong and Cumbo Creeks are typical of ephemeral creek systems in agricultural landscapes of the surrounding region, with channel stability issues within these creeks reflecting historical disturbances and land use practices, rather than contemporary mining operations. Refer to **Appendix 5** for the complete report.

Stream Health Monitoring

Stream health monitoring (SHM) was undertaken during spring 2022 by ELA (**Appendix 3C**), within the WCM surrounding catchments. The monitoring results were largely consistent with previous years' results, with minor differences attributable to changes in macrophyte cover, likely due to the continued improved climatic conditions following three years of above average rainfall. Most sites recorded mid-range scores, typical of catchments in the region.

Water quality results were recorded for various parameters and differed markedly across most sites in comparison with previous years. Parameters were inside Australian and New Zealand Environmental and Conservation Council (ANZECC) guidelines at most sites for dissolved oxygen (DO) and were within or

close at five sites for electrical conductivity (EC), likely as a result of increased stream flow from rainfall leading up to the monitoring period. Water quality results fluctuate considerably across monitoring years, during times of variable stream flow levels and at sites both upstream and downstream of the WCM licensed discharge point. As such, these results indicate that natural factors and fluctuating climatic conditions, rather than mining operations are the primary influences on water quality in the catchments surrounding the WCM.

Across all monitoring sites, a total of 17 macroinvertebrate Orders and 40 Families were recorded. Stream invertebrate grade number average level (SIGNAL2) scores were variable in 2022, with five sites showing improvements, and five declining in comparison to the 2021 SHM period. Despite this, it shows a continued improvement from 2021, and further showing recovery in habitat quality and availability recognised in the period from 2016 – 2019 due to prolonged drought conditions. In line with previous years, SIGNAL2 scores were <4.0 for all but four sites, which is indicative of severely disturbed systems. The overall temporal and spatial consistency of these macroinvertebrate results indicate that historical disturbances, combined with fluctuating climatic conditions within the catchments surrounding the WCM, are the main factors responsible for current stream health conditions.

7.11 Groundwater

The GWMP outlines WCPL's Groundwater Monitoring Program. In June 2022, the GWMP (Version 6.1) was updated to include addressing the 2021 IEA recommendations, additional groundwater monitoring bores as required by DPE Water and address other DPE Water comments during post consultation from April and August 2022. Approval of the revised GWMP (Version 6.1) was pending at the time of preparing the 2022 Annual Review.

A summary of the groundwater monitoring program is presented in **Table 29**. A summary of the groundwater monitoring results against applicable groundwater triggers is provided in **Table 30**. A summary of the groundwater monitoring results for 2022 Reporting Period is provided in **Section 7.13**, with the complete groundwater assessment report by SLR Consulting Australia Pty Ltd (SLR) provided in **Appendix 3D.**

Table 29 Groundwater Monitoring Program

Monitoring Locations		Frequency	Parameters[1,2]
Open Cut Operations	Main pit sump(s)	Monthly	Volume of water extracted.
		Quarterly	pH, EC, TDS, Na, K, Mg, Ca, Cl, HCO_3, $CaCO_3$, SO_4 and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
Water Supply Bores[3]	GWs10, GwS11, GWs12, GWs14, GWs15	Monthly (During Extraction)	Water level, field pH and EC. Volume of water extracted.
Alluvial Bores	GWa10, GWa11, GWa12, GWa14, GWa15, GWa16, GWa22, GWa32	12 Hr (logger)	Water level, Pressure, Temperature
	GWa1, GWa2, GWa3, GWa4, GWa5, GWa6, GWa7[5], GWa8[5], GWa9, GWa10, GWa11, GWa12, GWa14, GWa15, GWa16, GWa22, GWa32, GWa33[5]	Monthly	Water level, temperature field pH and EC.
		Quarterly	TDS, Na, K, Mg, Ca, Cl, HCO_3, $CaCO_3$, SO_4 and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
Coal Measures Bores	GWc10, GWc11, GWc12, GWc14, GWc15, GWc16, GWc17, GWc18, GWc22, GWc23, GWc24, GWc25, GWc26, GWc27, GWc28, GWc29, GWc30, GWc31, GWc32[5]	Daily (logger)	Water level, Pressure, Temperature
	GWc1, GWc2, GWc3, GWc4[5], GWc5[5,] GWc10, GWc11, GWc12, GWc14, GWc15, GWc16, GWc17, GWc18, GWc19, GWc20, GWc22, GWc23, GWc24, GWc25, GWc26, GWc27, GWc28, GWc29, GWc30, GWc31, GWc33, GWc32[5],GWc34, GWc35	Monthly	Water level, temperature, field pH and EC.
		Quarterly	TDS, Na, K, Mg, Ca, Cl, HCO_3, $CaCO_3$, SO_4 and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
Landholder bores, wells and waterholes[4]		As required	To be determined

Notes: 1) Parameters will be analysed provided sufficient volumes of water can be collected. 2) Na = Sodium, Ca = Calcium, HCO_3 = Bicarbonate, SO_4 = Sulphate, K = Potassium, Mg = Magnesium, Cl = Chloride and Total Fe = Total Iron. 3) Water supply bores not currently in operation. 4) Monitoring may be undertaken, as required, in consultation with individual landholders. Parameters to be

monitored will be determined following consideration of the landholder's concerns. 5) Regional bore – not expected to be affected by mining.

7.12 Compensatory Water Supply

In accordance with Condition 24, Schedule 3 of SSD-6467 WCPL shall compensate potentially affected landowners with privately owned groundwater bore within the predicted drawdown impact zone identified in the EA. During the 2022 Reporting Period this condition was not triggered. There are no privately-owned bores within this predicted impacted zone.

7.13 Groundwater Monitoring Review

SLR Consulting Australia Pty Ltd (SLR) was commissioned by WCPL to conduct the 2022 review of key groundwater level and groundwater quality data (**Appendix 3D**) as summarised below:

- Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2021 to 31 December 2021; and
- Reporting against water licence conditions for WAL41862 – 01 July 2020 to 30 June 2021 with review of inferred inflows from water balance modelling and groundwater modelling.

Since the first quarter of 2020 through to 2022 the area has experienced above average rainfall following the intense drought from 2017 to early 2020. This has resulted in the widespread increase in groundwater levels across many alluvial and coal measures monitoring sites. The following assessment has been made with respect to compliance triggers (Table 30).

7.14 Groundwater Model Verification

The approved numerical modelling predictions indicate approximately 1 m drawdown is expected for the life of approved mining at alluvium monitoring locations surrounding WCM. The assessment of modelled vs observed levels for 2022 within the shallow groundwater system indicates the timing and magnitude of predicted WCM impacts generally correlate well, often predicting a repressed response to rainfall that is also seen in the observed data. Modelled groundwater levels at the coal monitoring bores generally continue to show a good correlation with the timing and magnitude of observed drawdown (SLR 2023).

As the last numerical model review was completed in early 2020 (SLR, 2020a), the high rainfall experienced from 2020 to 2022 is not captured in the model used for this update. The observed responses to wetter climatic conditions during this time are therefore not reproduced by the groundwater model. The model is scheduled for more detailed review and update in 2023 consistent with commitments from the GWMP (SLR 2023).

Table 30 Groundwater Performance

Location	Approved Criteria			Performance During the Reporting Period			Trend/Key Management Implications	Implemented/ proposed Management Actions
Groundwater Monitoring (Alluvium)				**Assessment of Triggers**			• Alluvium bores GWa4, GWa14 have exceeded the lower depth-to-water trigger level during 2022 and indicate the possible impact of mining activity at WCM. However, a lack of bore construction and lithology information, the lack of an ongoing mining effect observed at other nearby shallow monitoring sites, and apparent inconsistencies in monitoring limit the reliability of the collected data. • Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2022. EC at GWc1 and GWc3 may be influenced by downwards seepage from overlying strata, lateral flow from backfilled open cuts, or related to difficulties in removing stagnant water from the bores to gain representative groundwater samples. Understanding correlation between water quality in overlying or adjacent strata, and sampling method comparisons between GWc1 and GWc3 could be improved with further investigation. GWc5 has been recording stable observations above the trigger level since 2015 and shows limited impacts to WCM operations. The observed EC is likely to be representative of normal conditions at this site and a review of the EC trigger level should be considered. • No pumping occurred from the WCPL supply borefield in 2022 and none of the cease-to-pump trigger levels were exceeded.	WCPL will continue to implement the approved GWMP, monitor and evaluate the groundwater systems over the 2023 Reporting Period. In accordance with Condition 5, Schedule 5 of Development Consent SSD-6764, WCPL will review and revise the GWMP within three months of the submission of this Annual Review. During the review of the GWMP, WCPL will also consider the recommendations made by SLR (**Appendix 3D**) during their annual review of groundwater.
	Water Levels (mAHD)	EC (µS/cm)	pH (range)	Water Level (mAHD)	EC (µS/cm)	pH		
GWa1^	N/A#	12,272	6.5 - 8	Dry in 2022				
GWa2	373.4	2,280	6.5 - 8	✓	✓	✓		
GWa3	360.5	1,970	6.5 - 8	✓	✓	✓		
GWa4^	353.8	2,596	6.5 - 8	Y^	✓	✓		
GWa5	372.8	13,926	6.5 - 8	✓	✓	✓		
GWa6	N/A#	6,720	6.5 - 8	N/A#	✓	✓		
GWa7	N/A#	10,126	6.5 - 8	N/A#	✓	✓		
GWa8	353.3	2,898	6.5 - 8	✓	✓	✓		
GWa10	367.1	N/A#	N/A#	✓	N/A#	N/A#		
GWa11	365.2	N/A#	N/A#	✓	N/A#	N/A#		
GWa12	362.3	N/A#	N/A#	✓	N/A#	N/A#		
GWa14^	358.0	N/A#	N/A#	Y^	N/A#	N/A#		
GWa15	355.0	N/A#	N/A#	✓	N/A#	N/A#		
Groundwater Monitoring (Coal)								
GWc1	N/A#	2,844	6.5 - 8	N/A#	Y	✓		
GWc2	N/A#	1,290	6.5 - 8	N/A#	✓	✓		
GWc3	N/A#	3,304	6.5 - 8	N/A#	Y	✓		
GWc4	N/A#	2,412	6.5 - 8	N/A#	Y	✓		
GWc5	N/A#	4,798	6.5 - 8	N/A#	Y	✓		
Groundwater Production Bores								
GWs10	346	#	#	**	#	#		
GWs11	348.5	#	#	**	#	#		
GWs12	332.5	#	#	**	#	#		
GWs14	319.5	#	#	**	#	#		
GWs15	314.5	#	#	**	#	#		

Notes: #Not applicable, Y= Yes (trigger exceedances recorded), N= No (trigger exceedances not recorded), ^Bore was dry/near dry during most of 2022

8.0 REHABILITATION

8.1 Rehabilitation Activities

To minimise the area of disturbance at any one time, rehabilitation occurs progressively at the Mine as ancillary disturbance areas and final mine landforms become available for revegetation. The mine waste rock emplacements behind the advancing open cut are constructed to approximate the pre-mining topography or the final landform which was initially approved by Project Approval PA 05-0021.

The Development Consent (SSD-6764) has superseded the Project Approval (05-0021). WCPL are finalising a revised Rehabilitation Strategy to address Condition 61, Schedule 3 of Development Consent (SSD-6764) which will present a revised final landform that builds on the rehabilitation objectives in Table 11 of Development Consent (SSD-6764).

As part of the WEP EIS, WCPL identified an opportunity to prioritise woodland establishment within the existing mine rehabilitation areas where rehabilitation to date has focussed on the establishment of productive pasture for grazing since 2008. WCPL conducted a re-evaluation of the previous rehabilitation areas against contemporary BVT classifications to prioritise Regent Honeyeater habitat establishment within existing mine rehabilitation areas. Therefore, the revised entire post mining land use is now woodland.

Until the performance and completion criteria for BVT and Regent Honeyeater habitat relevant to the Mine's rehabilitation areas was approved on the 24 April 2019, cover crops (**Table 33**) were established as a way of providing stabilisation and soil improvement during this transition. Of the historical completed landforms to date (**Figure 5**) that are currently under pasture or considered not woodland, these landforms will be progressively upgraded with relevant woodland species to meet the BVT requirements.

8.1.1 Status of Mining & Rehabilitation

During the Reporting Period, the Rehabilitation Management Plan (RMP) was prepared by WCPL in accordance with the NSW Resources Regulator (NSW RR) *Form and Way-Rehabilitation Management Plan for Large Mines (NSW RR, July 2021).*

The RMP was also developed to satisfy the requirements of Condition 64, Schedule 3 of Development Consent (SSD-6764). The development of the RMP also satisfies the requirements of Mining Leases (ML) ML1573, ML 1779 and ML1795. The RMP was approved by the DPE on the 25/01/2023.

The former Mining Operations Plan (MOP) 2021-2022 prevailed for rehabilitation requirements until the expiry of the transitional period on 2 July 2022, at which point the MOP was superseded by the RMP and supported by the Annual Rehabilitation Report and Forward Program (ARRFP).

The ARRFP was submitted to the NSW Resource Regulator in July 2022 and provided indicative three-year mining sequence and rehabilitation sequence was provided in plans *Plan 2A Mining and Rehabilitation Year 1*, *Plan 2B Mining and Rehabilitation Year 2* and *Plan 2C Mining and Rehabilitation Year 3*.

The indicative three-year mining sequence and rehabilitation sequence within the ARRFP, was based on the financial year period, which involves primarily the rehabilitation of mine waste rock emplacements as they become available within the overburden emplacement area mining domain. The ARRFP is scheduled to be updated and resubmitted by the end of March 2023 with a revised three-year mining sequence and rehabilitation sequence based on calendar year.

The predictive versus actual cumulative and rehabilitation progression for Year 1 (i.e. Plan 2A) as presented in the current ARRFP completed during the Reporting Period is provided in **Table 31** and **Figure 4**.

To avoid reporting duplication, the rehabilitation reporting requirements for Annual Rehabilitation Report component will be provided in the ARRFP and the rehabilitation reporting requirements for the Annual Review are provided below. The revised ARRFP will be submitted to the NSW Resources Regulator via the www.minerehabilitationportal.nsw.gov.au by the end of March 2023.

Table 31 Predictive Versus Actual Disturbance and Rehabilitation Progression During the Reporting Period

Year	Year 1 (2022) Forecast	Year 1 (2022) Actual
Total Disturbance Footprint – Surface disturbance (ha)	2530	2530
Underground Mining Area (ha)	NA	NA
Total Active Disturbance (ha)	392.38	70.92
Rehabilitation - Land Preparation (ha)	39.95	42.8
Ecosystem and Land Use Establishment (ha)	34.91	47.1

There were only minor changes to rehabilitation areas completed in 2022, as proposed in Year 1 of the ARRFP. These changes relate to variances in the completed rehabilitated surface areas at several rehabilitation locations, which did not affect the total hectares completed against the hectares proposed in the ARRFP (**Figure 4**) and considered generally consistent with the rehabilitation scheduled and targets proposed for Year 1 (Plan 2A). WCPL consider the rehabilitation program proposed in in the ARRFP has been achieved for Year 1.

As displayed in **Table 32**, approximately 948.1ha of completed landforms have been rehabilitated as of the 31 December 2022 (**Figure 5**). No rehabilitated landforms are yet considered ready for formal sign off by the NSW Resource Regulator in terms of meeting the relevant completion criteria as provided in the RMP.

As discussed in **Section 8.1**, WCPL have transition to a BVT performance and completion criteria relevant to the rehabilitation areas which were developed in accordance with Schedule 3, Condition 37 of the Development Consent SSD-6764.

Table 32 Rehabilitation Status

Mine Area Type	2015 Reporting Period (Actual)	2016 Reporting Period (Actual)	2017 Reporting Period (Actual)	2018 Reporting Period (Actual)	2019 Reporting Period (Actual)	2020 Reporting Period (Actual)	2021 Reporting Period (Actual)	2022 Reporting Period (Actual)	Next Reporting Period (Forecast)
A. Total Mining Lease footprint (ha)	2857.34	2857.34	2857.34	2857.34	3725.30*	3725.30*	3725.30*	3725.30*	3791.93^
B. Total active disturbance (ha)	1478	1562	1686	1840	2013	2190	2324	2530	2642
C. Land being prepared for rehabilitation (ha)	43	70	82	98	121	138	86	47.1	46
D. Land under active rehabilitation (ha)	304	374	456	556	677	815	901	948.1	994.0
E. Completed rehabilitation (ha)	0	0	0	0	0	0	0	0	0

Notes: * Increase in total mine footprint now incorporates the additional hectares in ML1779 and ML1795. ^ Increase in total mine footprint now incorporates the additional hectares in MLA616, pending (refer to **Section 3.3**.)

Figure 4 Rehabilitation Forecast Vs Actual 2022

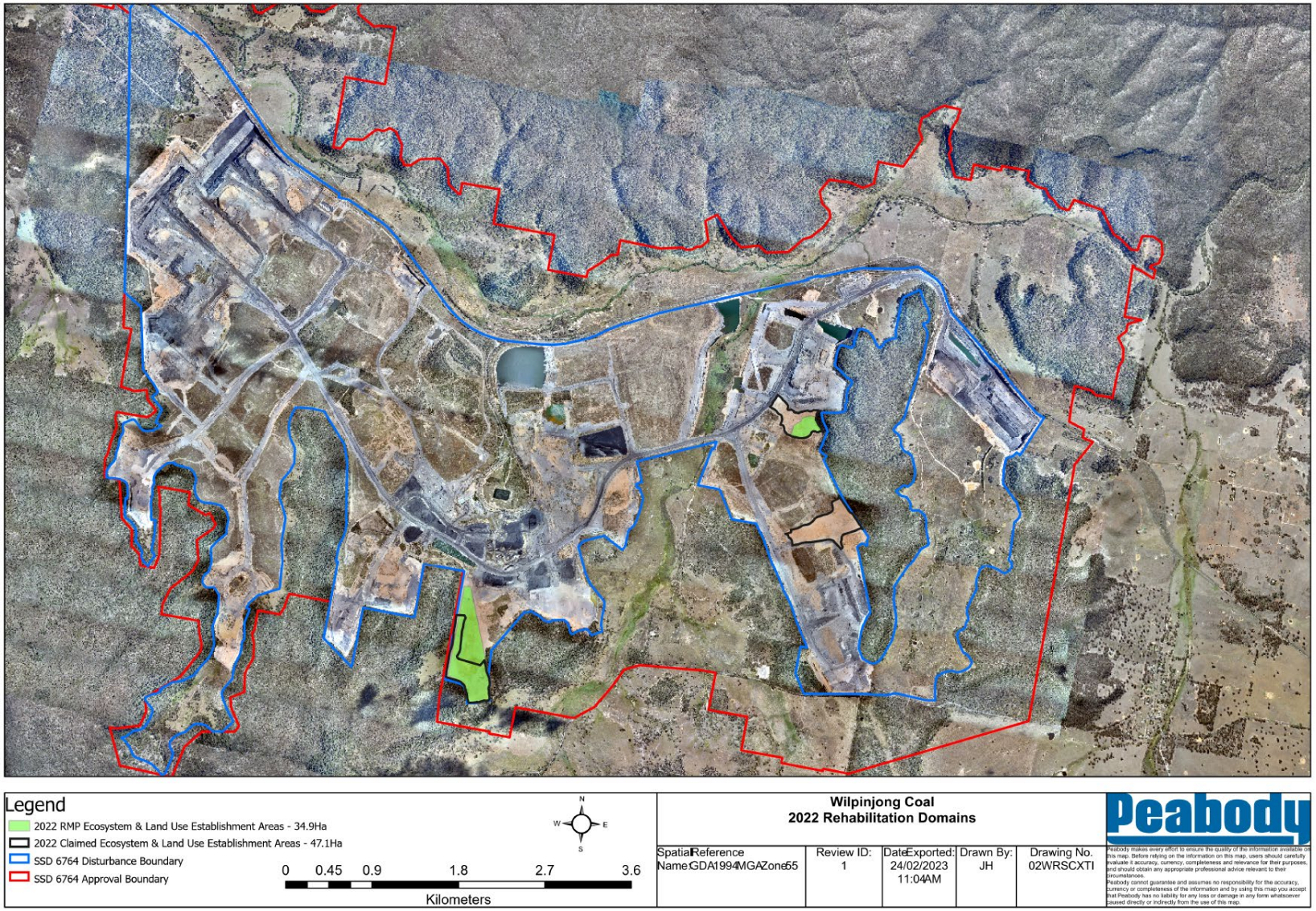


Figure 5 Annual Rehabilitation Status 2008-2022

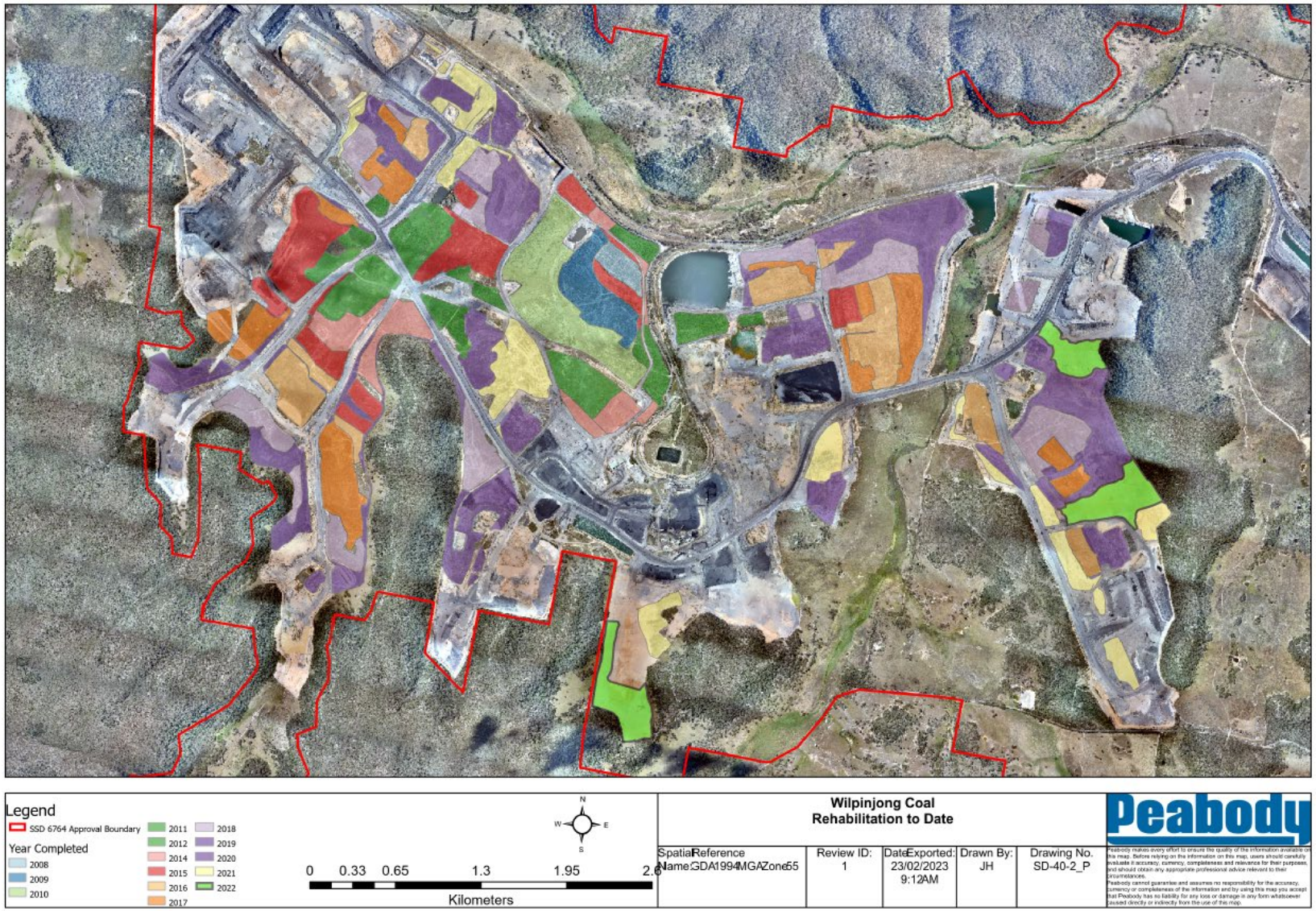
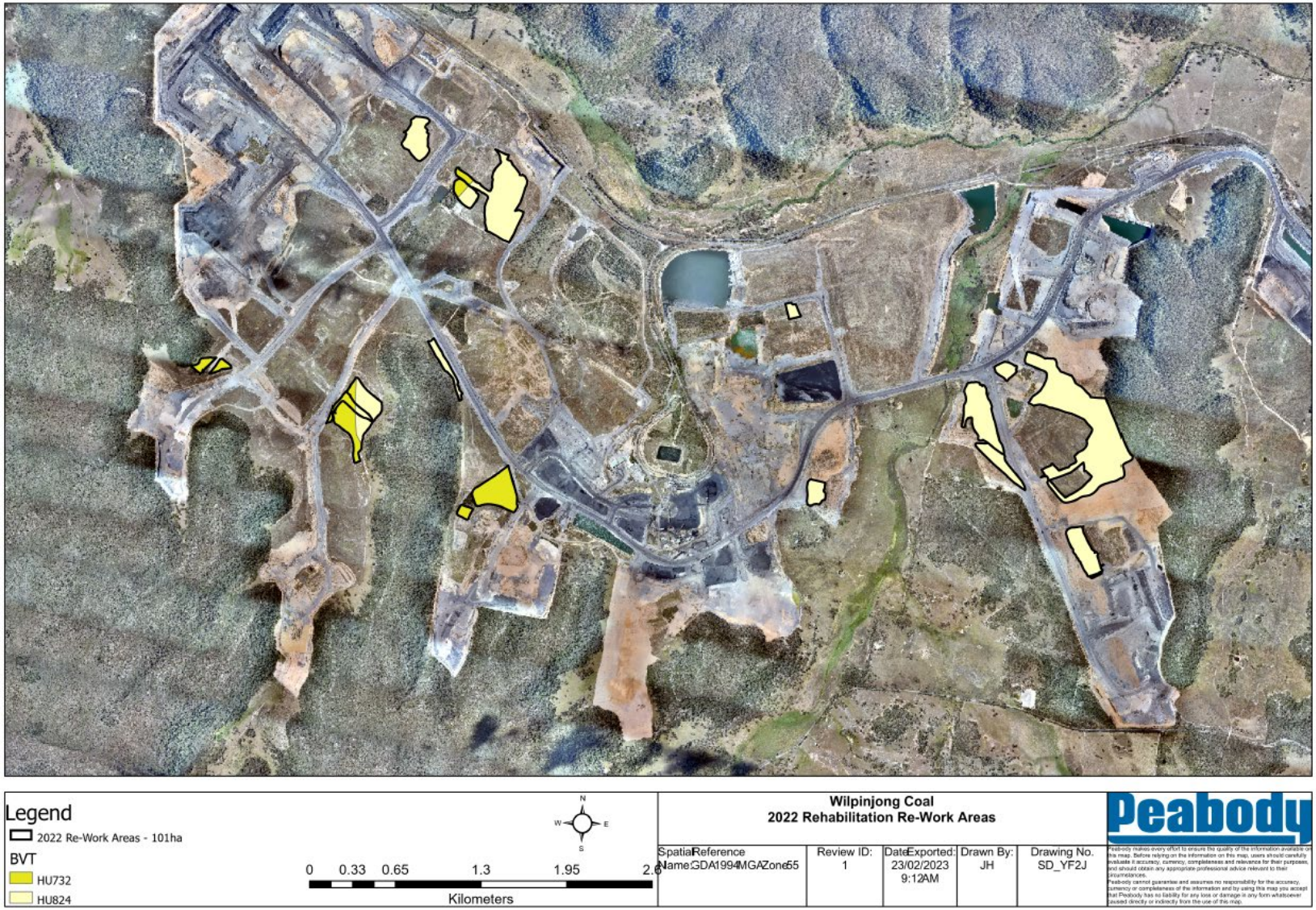


Figure 6 Rework Areas in 2022



8.1.1.1 Decommissioning

There was no decommissioning of major mining related infrastructure undertaken at the Mine in 2022.

8.1.1.2 Landform Establishment

All 2022 rehabilitation landforms were designed in accordance with the approved RMP. All rehabilitation areas were developed with carbonaceous material being progressively placed back in-pit once the coal has been mined before a minimum of a 2m inert encapsulation layer is placed on top. This formation stage, Final Surface Level (FSL) is -3m to previous landform contour. With the encapsulation layer placed, topsoil is then placed on top at a depth of 100mm to 300mm.

Mine waste dumps were constructed using existing mine equipment including truck dumped material before being shaped using the Mine dozer fleet using Lecia technology to design. Overburden and interburden material was progressively placed back into mined out voids. This included reject material from the CHPP being hauled back into the mine and deposited below the natural surface in the mined-out voids as close to the pit floor as practically possible. Reject material is dispersed throughout the overburden within the mine waste rock emplacements to manage its geochemical characteristics.

All rehabilitated slopes constructed during the 2022 reporting period were shaped to no greater than 1:6 (10 degrees or 17%) across areas. The surface of mine waste rock emplacements were constructed to approximate the existing topographic form of the shallow valleys which drain the Mine area. Mine waste rock emplacement surfaces are ripped to a depth of approx. 150mm to ensure the topsoil was bounded with the underlying inert material and allow infiltration of water into the constructed landform.

During 2022, a combination of approximately 42.8ha within the Mining Domain of overburden emplacement areas were completed in preparation for topsoil placement, ripping and seeding (**Figure 4**).

8.1.1.3 Growth Medium Development

Topsoil placement involved dozers and graders to spread to the desired depth. Direct placement was undertaken were possible and conducted by scrapers and rear dump trucks before final trimming conducted by dozers and graders. Topsoil was placed on top of the final landform to act as germination medium for vegetation and as a seed source from the natural seed bank present at the time of topsoil stripping. Topsoil placement was conducted upon the completion of final landform and major drainage works (i.e. graded banks, drainage channels and rock waterways if required). All topsoil was sourced from existing topsoil stockpiles or via direct placement during topsoil stripping activities.

Soil testing within the proposed areas for rehabilitation was conducted in 2022 which indicted deficiencies requiring the application of lime, gypsum and organic matter. All ameliorants were spread and incorporated into the topsoil prior to native seeding. Various amelioration rates were used to address the deficiencies including;

- Lime 0.5t/ha;
- Liquid gypsum 50L/ha; and
- Re-work areas organic matter 3-5t/ha.

During 2022, a combination of approximately 47.1ha within the Mining Domain of overburden emplacement areas were topsoiled and ameliorated (**Figure 4**).

8.1.1.4 Ecosystem Establishment

Previously undertaken and as discussed in **Section 8.1.1**, cover crops were established on rehabilitation areas as a way of providing stabilisation and soil improvement. This method was undertaken in rehabilitation areas during the transition from Project Approval 05_0021 to SSD_6764 and the subsequent conversion from improved pastures and woodland corridors to specific BioMetric Vegetation Types (BVTs).

The method of cover cropping typically dominant with annual cereal pastures was not undertaken in 2021 and 2022.

Areas rehabilitated in 2022 were directly seeded with specific native seed species aligning to particular BVTs (**Figure 4**). These BVT mixes did include a small ratio of cover crops (cereals) to provide quick germination, soil stability and structure. Of the 47.1ha rehabilitated in 2022, a total of 2 BVT's were established onsite with specific BVT seed mixes, these included;

- HU732 – Yellow Box Grassy Woodland
- HU824 – White Box – Black Cypress Pine Shrubby Woodland

101ha hectares of existing rehabilitation was reworked in 2022 to convert from cover crops and improved pasture species to a BVT HU732 and HU824 (**Figure 6**). This was achieved by spreading via a conventional fertiliser spreader attached to a tractor, with land prepared via spraying, fertiliser application and tilling prior to seeding.

WCPL continued to maintain a native seed inventory partly collected from locally native seed sources carried out by suitably qualified personnel which will be used in rehabilitation activities.

Table 33 Typical BVT Seed Mix Rates in 2022

Pasture Species	Average Rates (kg/ha)
HU732	27kg
HU824	22kg

8.1.1.5 Ecosystem Sustainability

During 2022, Ecosystem Sustainability activities occurred within Final Land Use Domains which primarily included monitoring, applying biometric assessments as described below and minor maintenance activities.

Existing rehabilitation domains were monitored in accordance with the BMP and compared BVT Performance and Completion Criteria (Approved by DPIE, April 2019). Irrespective of the monitoring results, all rehabilitation areas across WCPL are required to be 're-worked' to develop these sites from agricultural and non-specific Plant Community Types to prescribed BVT Communities aligning to Development Consent conditions. Monitoring and maintenance activities are ongoing with the results assessed and used to refine rehabilitation techniques.

During 2022, WCPL carried out monitoring within the area sown by a drone in 2021, as part of the Drone Seeding Trial in Pit 5 South. At this stage, conclusions are difficult to draw from the plot parameters due to the impact vertebrate pest herbivory is having across the site, and to a lesser extent weed competition in specific sections. Germination of seeded species has been recorded across all plots; however, growth levels are unable to be gauged due to grazing and browsing across all plots to a greater or lesser extent. Therefore, conclusions as to soil ameliorants and additives to seed coating to enhance germination and subsequent initial establishment of seedlings are unable to be drawn as there can be little to no comparison on growth due to the continuous herbivory affecting establishing plants. The inspection undertaken November 2022 showed emerging new germinants of seeded native species across all sites, as well as increasing growth on many. For further information refer to **Appendix 4**.

Landscape Function Analysis (LFA)

Progress towards the Performance and Completion Criteria is also measured using Landscape Function Analysis (Tongway & Hindley 2004) and the BioMetric methodology (WCPL 2014).

During 2022, ELA completed LFA monitoring in accordance with the current BMP. The complete report and result are attached as **Appendix 5**, a summary of the LFA results by ELA is provided.

In addition, photographic monitoring of the rehabilitation at established and newly established sites was completed in 2022 as provided in **Appendix 4**.

A self-sustaining ecosystem is deemed to have been achieved when soil surface assessment (SSA) scores of 50 or more are recorded (the LFA Completion Criteria, expected to be achieved by Year 10 of the management cycle.

Incremental improvement toward that target is expected with each year of monitoring. Failure to achieve an increase of 5% in the annual LFA scores represents a trigger for implementation of the Landscape Stability LFA TARP described in Table 21 of the BMP (WCPL, 2021). Comparative annual results have been colour-coded to provide a visual indicator, with green reaching or exceeding the incremental increase of 5% or more, and red showing an increase of less than 5% (or in some cases, a reduction from the previous year). Red colour-coded cells indicate the TARP needs to be implemented. Results maintained at or above the Completion Criteria (50%) have been coded green regardless of comparative incremental increases or decreases from previous monitoring periods.

The LOI and SSA scores calculated from Spring 2022 LFA monitoring are presented in **Table 34** below. The results are presented as a comparison to 2021 LFA monitoring data to provide an assessment against the LFA completion criteria.

Four LFA monitoring sites located within Rehabilitation Areas were monitored in 2022. The LOI and SSA scores for these sites are presented in **Table 34**.

Spring 2022 monitoring results show that the LOI has remained relatively constant between the current and 2021 monitoring periods, except for R13, with had a slightly lower LOI in 2022. The LOI is heavily influenced by climatic conditions and the associated generation of litter and plant cover. Therefore, the continuation of high LOI results across these four sites can be attributed to favourable seasonal conditions throughout 2022.

In accordance with the TARP for LFA, WCPL will review these scores and assess if remedial actions are required to address declining scores in consideration of the LFA method to inform the achievement of these aims.

Table 34 LOI and SSA results for Rehabilitation Area Transects

Site	Monitoring Season	Landscape Organisation Index (%)	Soil Surface Assessment		
			Stability	Infiltration	Nutrient cycling
R5	Spring 2022	0.85	49.2	31.7	29.4
	Spring 2021	0.86	51.4	29.6	26.1
	Annual incremental increase		-2.2	2.1	3.3
R6	Spring 2022	0.85	48.9	25.6	18.5
	Spring 2021	0.84	49.3	22.4	14.7
	Annual incremental increase		-0.4	3.2	3.8
R9	Spring 2022	1	50.3	26.1	23.1
	Spring 2021	0.98	50.3	29.5	23.9
	Annual incremental increase		0.0	-3.4	-0.8
R13	Spring 2022	0.87	44.5	30.9	72.9
	Spring 2021	0.95	48	30.7	25.5
	Annual incremental increase		-3.5	0.2	2.4

Assessment against Rehabilitation BVT Benchmarks

Vegetation monitoring results for the Rehabilitation Areas were assessed against the WCPL Rehabilitation Performance Criteria and the Local Reference Site BVT Benchmarks (see **Appendix D**). A Site Value Score (SVS) was calculated for each site using the BioMetric Tool (NSW Department Environment Climate Change and Water, DECCW 2011) which combines the quality and quantity of native vegetation by measuring ten condition variables within a plot compared to the pre-European benchmarks for the BVT.

Table 35 and **Table 36** present the individual site attribute and SVS for each 2022 rehabilitation monitoring site. **Table 35** presents comparison of sites against the approved WCPL Performance Criteria and **Error! Reference source not found.** presents comparison of sites against the Local Reference Site BVT Benchmarks. SVS which do not meet the BVT Benchmark Targets or Performance Criteria are highlighted in red – monitoring results from these sites trigger the Interim Rehabilitation Performance Criteria (Years 1 – 10) Trigger Action Response Plan (TARP) detailed in Table 19 of the BMP (WCPL, 2021). Amber is not applied to the SVS as anything below the Benchmark Target or Performance Criteria is considered LOW. A colour coding system has been applied to all site attribute results.

GREEN indicates site attributes that have met the relevant Benchmark Targets or Performance Criteria (indicating that no additional management intervention is required).

AMBER indicates site attributes that have not met the relevant Benchmark Targets or Performance Criteria but are within 50 - <100% of the targets.

RED indicates site attributes that are <50% of the relevant Benchmark Targets or Performance Criteria.

Table 35: Assessment against Rehabilitation Performance Criteria* for Rehabilitation Sites within their respective BVT

BVT	Season	Site	Vegetation condition	SVS	Site attributes (% cover)									
					NSR	NOC	NMC	NGCG	NGCS	NGCO	EC	NTH (Count)	OR	FL (M)
HU824	Autumn	R6	Mod to Good – Good	57	22	14.2	5	6	2	4	62	0	0.25	0
	Spring	R6	Mod to Good – Medium	55	23	6	4	0	0	4	64	0	0	1
	Autumn	R9	High	71	27	18.5	1.5	8	0	16	54	0	0.33	25
	Spring	R9	High - Benchmark	83	24	22.5	3.5	0	0	26	40	0	1	25
Unclassified	Spring	R5[5]			44	20	6	12	2	14	34	0	0	0

Notes: SVS = Site Value Score, NSR = Native Plant Species Richness, NOC = Native Overstorey Cover, NMC = Native Midstorey Cover, NGCG = Native Ground Stratum Cover (grasses), NGCS = Native Ground Stratum Cover (shrubs), NGCO = Native Ground Stratum Cover (other), EC = Exotic Plant Cover, NTH = Number of Trees with Hollows, OR = Overstorey Regeneration and FL = Length of Fallen Logs **Rehabilitation Biometric Performance Criteria was approved by DPIE on June 2021, and is incorporated into the BMP

[5] Site R5 has no specified BVT and cannot be compared to any performance criteria

Table 36: Assessment against Local Reference Site BVT Benchmarks* for Rehabilitation Sites within their respective BVT

BVT	Season	Site	Vegetation condition	SVS	Site attributes (% cover)									
					NSR	NOC	NMC	NGCG	NGCS	NGCO	EC	NTH (Count)	OR	FL (M)
HU824	Autumn	R6	Mod to Good – Poor	40	22	14.2	5	6	2	4	62	0	0.25	0
	Spring	R6	Poor	33	23	6	4	0	0	4	64	0	0	1
	Autumn	R9	Mod to Good – Medium	50	27	18.5	1.5	8	0	16	54	0	0.33	25
	Spring	R9	Mod to Good – Medium	53	24	22.5	3.5	0	0	26	40	0	1	25
Unclassified	Spring	R5[8]			44	20	6	12	2	14	34	0	0	0

Notes: SVS = Site Value Score, NSR = Native Plant Species Richness, NOC = Native Overstorey Cover, NMC = Native Midstorey Cover, NGCG = Native Ground Stratum Cover (grasses), NGCS = Native Ground Stratum Cover (shrubs), NGCO = Native Ground Stratum Cover (other), EC = Exotic Plant Cover, NTH = Number of Trees with Hollows, OR = Overstorey Regeneration and FL = Length of Fallen Logs. *BVT Benchmarks are taken from Local Reference Sites and was approved by DPIE on June 2021, and is incorporated into the BMP (WCPL, 2021)

BioMetric monitoring was undertaken within the BOA and Rehabilitation management domains, as well as selected Reference sites prescribed by the BMP during 2022. BOAs continued to be monitored, however they were not compared to the BMP Performance and Completion Criteria as these are specific to Rehabilitation Areas. ECA and Regeneration Area were not assessed in 2022.

When assessed against the WCPL Rehabilitation Performance Criteria, all rehabilitation sites are at or above the Moderate to Good SVS. When assessed against the local reference site benchmarks, site R9 was designated a Moderate to Good SVS. The remaining site (R6) recorded a low SVS score and low NOC and Or, as well a high exotic cover (64%). Weed management measures should be implemented accordingly.

In accordance with the TARP for BioMetric monitoring, WCPL will review these scores and assess the requirement for appropriate remedial actions.

Sites R6, R9, R5 are sites which have been previously rehabilitated to PA05-0021 of which will be either be reworked to specific BVTs to confirm to the WEP SSD6764 or remain in situ if surplus to rehabilitation and offset requirements.

Eight sites were established in February 2022 within Rehabilitation Areas which had been direct seeded during 2020, with seeding designed to establish these areas as the target BVT specified in the BMP. Vegetation monitoring consistent with the methods described in the BMP were undertaken at these sites during autumn in 2022 to determine ongoing progress of these areas since they were first monitored in February 2022, although establishment of BioMetric monitoring plots is not required until years 3 – 4 within the Rehabilitation Areas (as per Table 11 within the BMP [WCPL, 2021]). LFA was not completed.

8.1.2 Summary of Rehabilitation Activities Next Reporting Period

WCPL are scheduled to complete and rehabilitate a total of 46ha of mine waste rock emplacements during 2023 within the Mining Domain of overburden emplacement area (**Appendix 8**). These areas will be sown with the appropriate BVT species.

Historical rehabilitation areas currently consisting of improved pasture and mixed woodland community species, not categorised as a desirable mine closure BVT, are proposed to be progressively converted to appropriate BVT communities aligning to the WCPL performance and completion criteria from 2021. In 2023 WCPL propose to complete approximately 78ha of reworking existing rehabilitation areas towards the applicable BVT. The rehabilitation progress against the RMP and ARRFP will provided in the next Annual Review.

8.2 Other Rehabilitation Activities

During the Reporting Period the focus was the 101hectares of existing rehabilitation was reworked in 2022 to convert from cover crops and improved pasture species to a BVT HU732 and HU824 (**Figure 6**). WCPL also addressed targeted areas of heating (spontaneous combustion) in Pit 2 South with addition inert material placed and compacted over these areas,

8.3 Land Management Activities

Pest and Weed Management

WCPL completed pest management works on WCPL owned properties during 2022. Activities included:

- Fox and wild dog control was conducted in conjunction with the local wild dog group, Local Land Services and National Parks and Wildlife Services control programs.
- Aerial dog bating. This program was coordinated by Local Land Services (LLS) as a result of know wild dog activity in the local area; and
- Lessees across the broader company landholdings also continued with ongoing vertebrate pest management.

WCPL continued with weed spraying program throughout 2022.

9.0 COMMUNITY

A protocol for the management and reporting of community complaints has been developed as a component of the Mine's EMS. In accordance with Condition M6.1 of EPL 12425, a dedicated telephone number (ph.: **1300 606 625**) for the provision of comments or complaints is maintained by WCPL. In addition, a separate hotline for blasting information is also maintained by WCPL (ph.: **1800 649 783**).

In accordance with Condition M6.2 of EPL 12425, these telephone lines are advertised via the Wilpinjong Community Newsletter, via the Wilpinjong Community Consultative Committee and on the Peabody website:

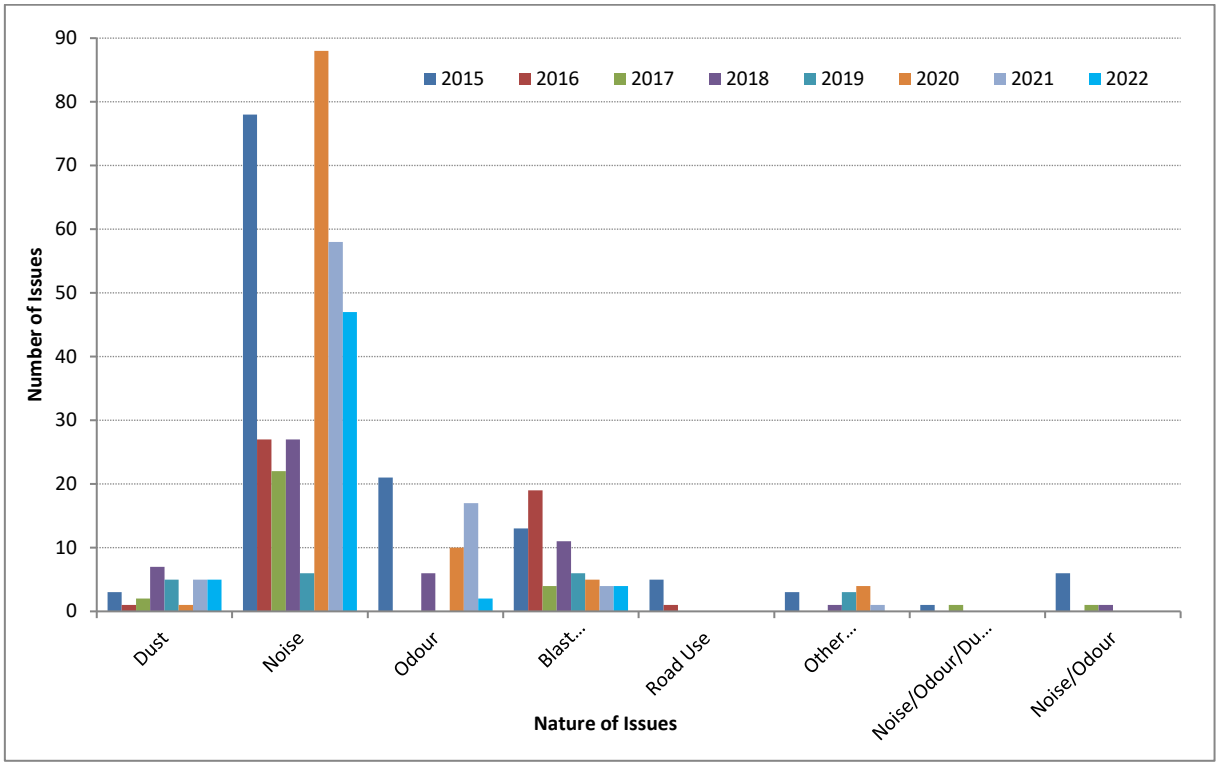
https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wilpinjong-Mine

WCPL records and responds to all complaints and maintains a complaints register on its website. The complaints are managed in accordance with the WCPL Complaints Management Procedure. The Complaints Management Procedure outlines WCPL reporting requirements as follows:

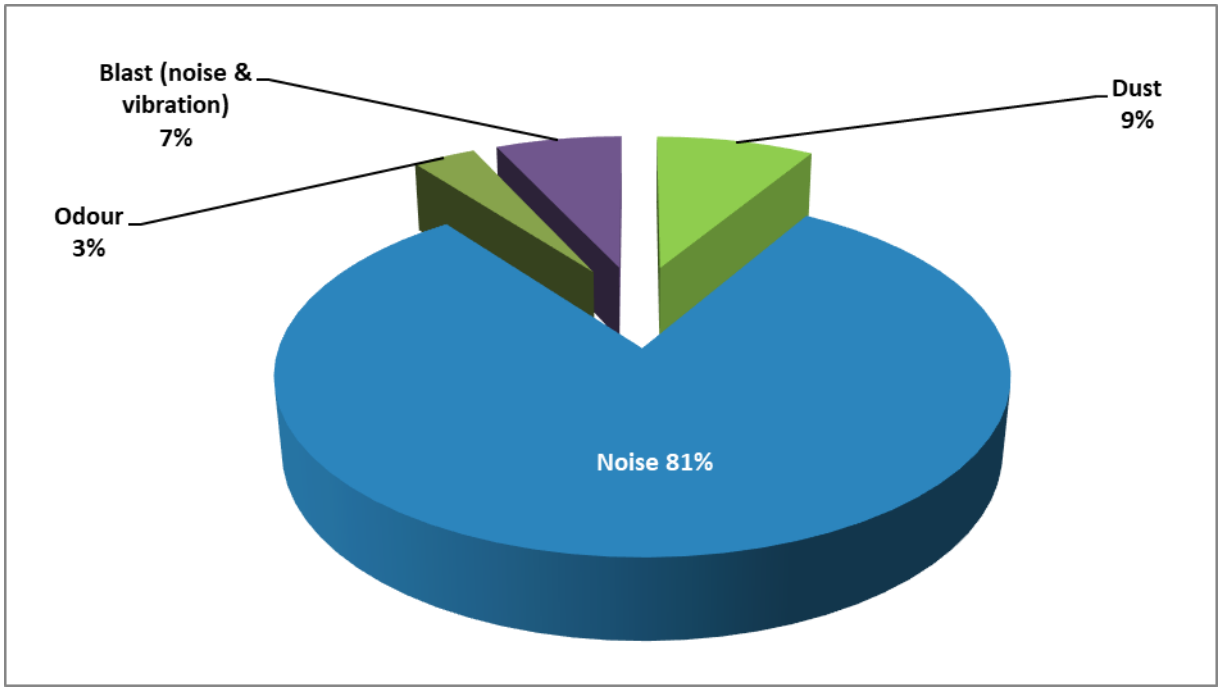
- A summary of complaints received is reported monthly on the Peabody website;
- A summary of complaints received and actions taken is presented to the WCPL CCC as part of the operational performance review;
- A summary of complaints received and actions taken is included in the Annual Review and the Annual Return to the EPA.

During the 2022 Reporting Period, 58 community complaints were received by WCPL (**Appendix 6**) as opposed to 85 community complaints in 2021. **Graph 28** presents a comparison of the environmental complaints received by WCPL over the period 2015 to 2022.

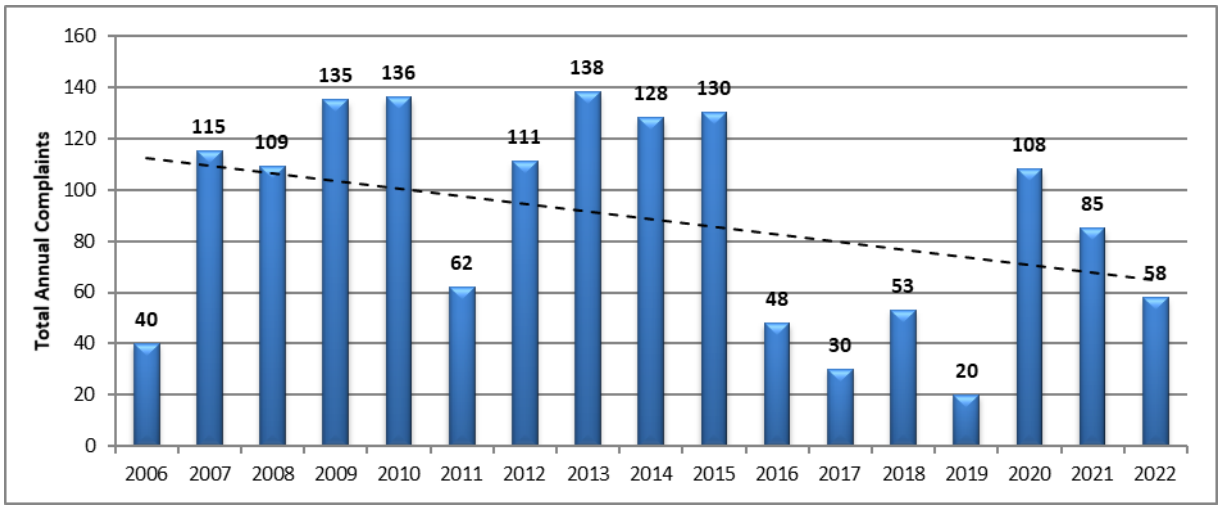
Graph 27 Summary of Community Complaints and Issues Raised by Complainants 2015 – 2022



Graph 28 Percentage Breakdown of Community Complaints in 2022



Graph 29 Total Annual Complaints 2006 - 2022



Community Consultative Committee

In accordance with Condition 7, Schedule 5 of SSD-6764, the Community Consultative Committee (CCC), as of December 2021, (**Table 38**) continued to meet during the 2022 Reporting Period.

The CCC for the Mine is operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007).

Consistent with the requirements of the CCC Guidelines, the committee is comprised of one independent chairperson, and representatives of the MWRC, NPWS, WCPL and members of the general community. Consultation regarding the WEP was undertaken at the CCC meetings in March, June, September and November 2022.

WCPL has undertaken individual consultation with private landholders and lessees that reside in the vicinity of the mine to discuss the ongoing development of the Wilpinjong Coal Mine and the WEP. **Table 37** provides a summary of the CCC meetings held during the 2022 Reporting Period.

Table 37 CCC Members for the 2022

Name	Organisation
Des Kennedy	Mid Western Regional Council
Lisa Andrews	CCC Independent Chair Person
Rod Pryor	Community Representative
Scott Lillis	Community Representative
Brian McDermott	Community Representative
Bev Smiles	Community Representative and Mudgee District Environmental Group Representative
Bruce Hughes	Community Representative
Kim Peach	Community Representative
Lisa Menke	NSW National Parks and Wildlife Service Representative

Table 38 Summary of CCC Meetings in 2022

Date	Key Outcomes
7 March	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2021/22 exploration program, rehabilitation update, animal and weed control programs, EL6415, RFS participation, community donations and support update, summary of complaints.
6 June	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2021/22 exploration program, rehabilitation update, WEP Rehabilitation Strategy, MLA3 now MLA616 animal and weed control programs, EL6415 now EL9399, property demolition in Wollar, community donations and support update, summary of complaints.
5 September	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2021/22 exploration program, rehabilitation update, WEP Rehabilitation Strategy – addressed DPE review, MLA616 and EL9399 updates, animal and weed control programs, property demolition in Wollar, regional projects including Wollar Solar and Energy Co, community donations and support update, summary of complaints.
28 November	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2021/22 exploration program, rehabilitation update, WEP Rehabilitation Strategy – addressed DPE review, MLA616 and EL9399 updates, animal and weed control programs, property demolition in Wollar, regional projects including Wollar Solar and Energy Co, community donations and support update, summary of complaints.

Community Support Program

During the 2022 reporting period, WCPL continued its support of local community groups and sporting associations, schools and charitable organisations (total amount in 2022 was approximately $71,845.00), including local schools, Community Groups, Charities and sporting groups. More information regarding WCPL's community support program is provided in **Appendix 6**.

Have a Chat Meeting

WCPL also provided an information newsletter regarding upcoming 'have a chat' sessions, held at the Wollar Store 1st Thursday of the month from 1:30pm to 4:30pm. The initiative aims at providing the community a casual setting to ask questions or raise concerns relation to the Mine's operations.

Access to Information

Condition 12, Schedule 5 of SSD-6764 details the requirements for access to information applicable to the Mine, and outlines the documents required by the Project Approval to be made publicly available on the Peabody website www.peabodyenergy.com

Employment Status

At the end of the 2022 reporting period there were 473 full time equivalent employees at WCPL, 89 staff and 129 full time equivalent contractors.

10.0 INDEPENDENT AUDIT

10.1 Independent Environmental Audit

As required by Condition 10, Schedule 5 of SSD-6764, WCPL are required to complete an Independent Environmental Audit (the IEA) of the development within a year of commencing the development. The Notice of Commencement to the DPIE, as required by Condition 8, Schedule, 2 of SSD-6764 was confirmed by WCPL with its intention to commence the approved development on the 19 September 2017.

In consultation with the DPE, RPS Australia East Pty Ltd (RPS) and their specialists were endorsed by the Secretary on the 26 February, 11 May and 9 September 2021 to undertake the 2021 IEA in accordance with Condition 10(a), Schedule 5 of SSD-6764.

The previous 2018 IEA covered the period from 19 September 2017 to 24 August 2018. The Audit Period to which the 2021 IEA applied is inclusive of the period from 25 August 2018 to 23 September 2021.

As required by Condition 11, Schedule 5 of SSD-6764, WCPL submitted a copy of the 2021 IEA to the Secretary and responses to any recommendations contained in the IEA, with a timetable for implementation within 3 months of the IEA on the 22 December 2021. A copy of the 2021 IEA and timetable to implement actions was provided in the 2021 Annual Review.

Additional opportunities for improvement (OFIs) that were identified in the IEA will be reviewed on a case-by-case basis for constructiveness and incorporated as necessary, into the relevant management plan as required under SSD-6764.

An update of the activities undertaken during 2022 to address the remaining 2021 IEA actions/OFI is provided in **Appendix 8**.

The 2021 IEA is also publicly available on WCPL's website as required by Condition 12, Schedule 5 of SSD-6764 at:

https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wilpinjong-Mine/Approvals,-Plans-Reports

11.0 INCIDENTS & NON-COMPLIANCES

11.1 Reportable Incidents

There were no reportable incidents during the 2022 Reporting Period.

11.2 Non-Compliances

There were a total of sixteen non-compliances as identified in **Table 39** against SSD-6764, identified during the 2021 Reporting Period[6]. **Table 40** includes non-compliances identified against EPL 12425.

Table 39 Non-compliance SSD-6764

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
Con 30(d)(iii) Sch 3	2022 Reporting Period	Non-compliance of Section 7.1 of the Surface Water Management Plan – did not report to the relevant agencies as soon as practicable that an exceedance of the surface water trigger levels had occurred.	There were 3 or more consecutive pH (upper) results recorded at downstream monitoring locations in Wilpinjong Creek during 2022.	WCPL commenced an investigation into the trigger exceedences with the results provided in the 2022 Annual Review. SLR completed the investigation (Appendix 3C) to verify if the exceedences were mining related. WCPL have revised the SWMP in 2021 and 2022 which included revising the surface water triggers and reporting requirements.
Con 30(d)(iv), Sch 3	2022 Reporting Period	Non-compliance of Section 8.1 of the Groundwater Management Plan – did not report to the relevant agencies as soon as practicable that an exceedance of the groundwater trigger levels had occurred.	Alluvium bores GWa4 and GWa14 have exceeded the lower depth-to-water trigger level during 2022. The groundwater assessment is carried out annually by WCPL's specialist groundwater consultants (refer to Appendix 3D).	Supplementary investigation and the consideration of installing replacement bores for GWa4, GWa14, GWa5 and GWa7. These sites appear to show impacts associated with WCM operations. Quarterly reviews to identify earlier trends and exceedances. Update TARP and the GWMP as required.
Con 30(d)(iv), Sch 3	2022 Reporting Period	Non-compliance of Section 8.2 of the Groundwater Management Plan – did not report to relevant agencies as soon as practicable that an exceedance of the groundwater quality trigger levels had occurred.	Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2022. The groundwater assessment is carried out annually by WCPL's specialist groundwater consultants (refer to Appendix 3D).	GWc1 and GWc3 undergo further investigation to evaluate the groundwater source and recharge mechanism at each site. Quarterly reviews to identify earlier trends and exceedances. Update TARP and the GWMP as required.
Con. 61, Sch 3	2022 Reporting Period	The Rehabilitation Strategy was not finalised.	Ongoing consultation with departments in 2022. As of the end of the 2021 reporting period The Rehabilitation Strategy was not finalised.	Comments received from DPIE and WCPL are now progressing finalisation and resubmission of the Rehabilitation Strategy expected in 2022.

[6] **Table 37** lists non-compliances identified either by WCPL or during the 2021 IEA, that occurred during the 2021 Reporting Period or were identified by the auditors occurring in the 2021 Reporting Period. Non-compliances identified by the 2021 IEA during the Audit Period that have previously been reported in past Annual Reviews are therefore not provided in **Table 37**.

Table 40 Details of Non-Compliances (EPL12425)

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
M2.2	27 Jun 2022 12 Dec 2022	Two (2) PM10 dust samples were not collected and analysed at monitoring point 13 (HV1).	An anomaly with the filter paper resulted in no weight being obtained for HV1 on the 27 June 2022. On 12 December 2022 HV1 did not operate for the time required due to a power outage.	HV1 checked after every sample date and following power outages.
M2.2	3 Jul 2022 9 Jul 2022 13 Sep 2022 19 Sep 2022 25 Sep 2022 1 Oct 2022	Six (6) PM10 dust samples were not collected and analysed at monitoring point 27 (HV5).	As a result of high rainfall and flooded causeway HV5 could not be visited in the required time on 3 and 9 July 2022 and 13 and 19 September 2022. On the 25 September 2022 HV5 did not run and on 1 October 2022 HV5 appeared to run beyond the required sample time.	HV5 checked after every sample date and HV5 replaced by a new unit after 1 October 2022.
M2.2	Within the period from 8 February 2022	For the reporting period 4.2% of the continuous PM10 dust monitoring was rejected or did not occur at monitoring point 25 (TEOM 3).	TEOM 3 (PM10) and TEOM 2.5 (PM2.5) are a combined instrument. Continuous data was either rejected or not recorded. The cause of data being rejected is due to unusual readings that may occur when there are air leaks or the TEOM's driers and coolers do not respond in time to changes in atmospheric conditions. Data was not recorded because of instrument component failure or power interruptions.	TEOM3 checked remotely each day to identify potential faults, onsite each month and following power outages or when unusual data recorded.
M2.2	Within the period from 8 February 2022	For the reporting period 0.7% of the continuous PM10 dust monitoring did not occur at monitoring point 28 (TEOM 4).	Continuous data was not recorded by TEOM 4 mostly due to power interruptions.	TEOM4 checked remotely each day to identify potential faults, onsite each month and following power outages or when unusual data recorded.
M2.2	Within the period from 8 February 2022	For the reporting period 4.2% of the continuous PM2.5 dust monitoring was rejected or did not occur at monitoring point 29 (TEOM 2.5).	TEOM 3 (PM10) and TEOM 2.5 (PM2.5) are a combined instrument. Continuous data was either rejected or not recorded. The cause of data being rejected is due to unusual readings that may occur when there are air leaks or the TEOM's driers and coolers do not respond in time to changes in atmospheric conditions. Data was not recorded because of instrument component failure or power interruptions.	TEOM2.5 checked remotely each day to identify potential faults, onsite each month and following power outages or when unusual data recorded.
M4.2	20 May 2022 2 Oct 2022 22 Nov 2022	For the reporting period 0.1 % of continuous monitoring for: air temperature, wind speed/direction, lapse rate, rainfall and humidity did not occur at monitoring point 21.	Continuous data was not recorded by the meteorological weather station due to planned equipment maintenance.	Weather station checked remotely each day to identify potential faults.

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
O1.1	11 April 2022	On 11 April 2022, Wilpinjong Coal employees were exposed to and affected by NOx fume from a planned blast.	Blasting product degradation caused by unidentified groundwater ingress in blasting holes resulted in NOx fume to form.	Wilpinjong Coal activated its PIRMP. The NSW Resources Regulator (lead agency) issued Wilpinjong Coal with a Section 195 notice. Actions to prevent recurrence are detailed in the incident report prepared for the Regulator.
E1.1	26 December 2022	On 26 December 2022 15.35ML was recorded at EPL Point 32.	On 26 December 2022, Wilpinjong Coal (**WCPL**) ceased discharging excess rainwater from EPL discharge point 32 ('Point 32') with a daily total of 14.6 ML recorded, which was less than the 15 ML/day EPL limit. A WCPL 'fill in' serviceman refueled and serviced the Point 32 pump and then restarted the pump at 22:31 with good intent. At 23.15 the Mining Manager became aware the pump was operational and switched off the pump at 23:31.	On the 26 December 2022 the total water discharged via Point 32 and the second discharge location permitted by Condition E1.1, being point 30, was 19.98 ML. This volume was below the Condition E1.1 combined discharge limit for Point 30 and Point 32 of 20 ML/day.

* Excludes planned maintenance/calibration and planned/unplanned electricity supply interruptions.

12.0 ACTIVITES FOR NEXT REPORTING PERIOD

Activities proposed to be carried out by WCPL at the Mine during the 2023 Reporting Period (i.e. 1 January 2023 to 31 December 2023) include the following:

- Construction of the remaining WEP related infrastructure (Pit 6 Pre-Start Facility);
- Revise the BMP accordingly, to the approved of the Rehabilitation Strategy;
- Transfer of the WEP Biodiversity Areas;
- Continuation of rehabilitation works in completed mined areas;
- Inspection and review of rehabilitation areas to assess maintenance requirements;
- Continued weed and animal pest control across WCPL-owned land.
- Continued stock exclusion in the ECAs to promote regeneration.
- Ongoing demolition of WCPL owned derelict houses in Wollar, including in-pit disposal of inert building material.
- Continued consultation with surrounding landholders.
- Ongoing CCC meetings, including continued publication of the meeting minutes on the Peabody website.
- Continuation of Wollar “Have-a-chat” sessions on a monthly basis;
- Undertake geochemical analysis through the geological profile;
- Continue the Spontaneous Combustion Propensity testing regime;
- Complete 46ha of rehabilitation in 2023 – in accordance with Forward Program.
- In accordance with Condition 5, Schedule 5 of Development Consent SSD-6764 WCPL will review, and if necessary, revise the strategies, plans and programs required under the Project Approval within three months following submission of this Annual Review and Environmental Management Report or as otherwise specified in the Project Approval.

13.0 REFERENCES

- *2022 Annual Biodiversity Monitoring Report*, Eco Logical Australia Pty Ltd (March, 2023)
- *Wilpinjong Coal 2022 Stream Health Monitoring Report*, Eco Logical Australia Pty Ltd (March 2023)
- *Wilpinjong Coal 2022 Channel Stability Monitoring Report*, Eco Logical Australia Pty Ltd (March 2023)
- *Monitoring of Microbats at Slate Gully Adit (Pit 8), Wilpinjong Coal Mine,* Biodiversity Monitoring Services (March 2023).
- *Environmental Noise Monitoring* (January 2022 to December 2022), Global Acoustics Pty Ltd (now EMM).
- *2023 Annual Environmental Monitoring Review – Surface Water, SLR* (March, 2023)
- *Annual Environmental Monitoring Groundwater Review – Groundwater Compliance 2022*, SLR (March 2023)
- *Water Balance Model Update 2022 – Model Update & Calibration Report*, SLR (March, 2023)

Appendices

Appendix 1 **Rail Haulage**

Appendix 2 **Exploration**

Appendix 3 **Environmental Performance**

- Appendix 3A Meteorological Data
- Appendix 3B Air Quality Monitoring Data
- Appendix 3C Surface Water Monitoring Data
- Appendix 3D Groundwater Monitoring Data
- Appendix 3E Blast Monitoring Data
- Appendix 3F Noise Monitoring Data

Appendix 4 **Land Management**

Appendix 5 **Biodiversity**

Appendix 6 **Community**

Appendix 7 **Plans**

Appendix 8 **2021 IEA – Actions Updated**

Appendix 9 **Lighting Audit**