




# **2021 Annual Review**

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**Wilpinjong Coal Mine**

**Table 1 Annual Review Title Block**

<b>Name of operation</b>	Wilpinjong Coal Mine
<b>Name of operator</b>	Wilpinjong Coal Pty Limited
<b>Development consent/project approval #</b>	SSD-6764
<b>Name of holder of development consent/project approval</b>	Wilpinjong Coal Pty Limited
<b>Mining lease #</b>	ML1573, ML1779 & ML1795
<b>Name of holder of mining lease</b>	Wilpinjong Coal Pty Limited
<b>Water licences #</b>	WAL21499, WAL19045, WL19055, WL19057, WL19058, WL19426, WAL19425, WAL19430, WAL36398, WAL9476, WAL39785, WAL41548, WAL41549, WAL41550, WAL41551
<b>Name of holder of water licence</b>	Wilpinjong Coal Pty Limited
<b>MOP start date</b>	01 January 2020
<b>MOP end date</b>	31 December 2022
<b>Annual review start date</b>	01 January 2021
<b>Annual review end date</b>	31 December 2021
<p><b>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 2021 to 31 December 2021 and that I am authorised to make this statement on behalf of Wilpinjong Coal Pty Limited.</b></p> <p><i>Note.</i></p> <p>a) <i>The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p>b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
<b>Name of authorised reporting officer</b>	Kieren Bennetts
<b>Title of authorised reporting officer</b>	Environment & Community Manager
<b>Signature of authorised reporting officer</b>	
<b>Date</b>	31 March 2022

This 2021 Annual Review (AR) (this Report) presents a summary of regulatory compliance, environmental performance and community engagement activities for the *review period* from 1 January 2021 to 31 December 2021.

This Report provides the results and assessment of environmental performance relevant to the current development consent approval SSD-6764 for the *review 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, Industry and Environment (DPIE).

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

- NSW Department of Planning, Industry and Environment (DPIE);
- DPIE – Resource Regulator (DPIE - RR)<sup>1</sup>;
- NSW Environment Protection Authority (EPA);
- NSW Department of Primary Industries – Division of Water (DPI – Water);
- DPIE - Biodiversity, Conservation & Science Directorate (BSC)<sup>2</sup>;
- Mid-Western Regional Council (MWRC);
- NSW Health;
- Department of Agriculture, Water and the Environment<sup>3</sup>; 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](http://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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<sup>1</sup> Formally the Division of Resources and Geosciences (DRG)

<sup>2</sup> Formally the NSW Office of Environment and Heritage (OEH).

<sup>3</sup> Formally the Department of the Environment and Energy (DoEE);

## Contents

<b>1.0 STATEMENT OF COMPLIANCE .....</b>	<b>1</b>
<b>2.0 INTRODUCTION.....</b>	<b>3</b>
2.1 Mining Operations .....	3
2.2 Mine Contact Details .....	3
<b>3.0 APPROVALS.....</b>	<b>6</b>
3.1 Ulan Road Strategy (Summary of Actions 2021) .....	6
3.2 Changes to Approvals .....	7
3.3 Mining Lease Application .....	7
3.4 Management Plans .....	8
<b>4.0 OPERATIONS SUMMARY.....</b>	<b>9</b>
4.1 Other Operational Conditions .....	9
4.2 Next Reporting Period.....	9
<b>5.0 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW .....</b>	<b>10</b>
<b>6.0 ENVIRONMENTAL PERFORMANCE .....</b>	<b>11</b>
6.1 Meteorological Monitoring.....	11
6.2 Air, Blast & Noise Monitoring .....	11
6.3 Heritage.....	26
6.4 Biodiversity .....	26
6.5 Waste Management .....	28
6.6 Greenhouse Gas .....	29
6.7 Ambient Air Quality Monitoring .....	30
<b>7.0 WATER MANAGEMENT.....</b>	<b>31</b>
7.1 Water Licences .....	31
7.2 Estimated Groundwater Take .....	32
7.3 Water Licence Conditions .....	32
7.4 Water Management System .....	32
7.5 Erosion and Sediment Control .....	33
7.6 Surface Water .....	33
7.7 Harvestable Rights.....	36
7.8 Site Water Balance .....	42
7.9 Water Treatment Facility.....	42
7.10 Stream Health & Channel Stability Monitoring.....	44
7.11 Groundwater .....	45
7.12 Compensatory Water Supply .....	46
7.13 Groundwater Monitoring Review.....	46
7.14 Groundwater Model Verification.....	46
<b>8.0 REHABILITATION.....</b>	<b>48</b>
8.1 Rehabilitation Activities .....	48
8.1.1 Summary of Performance .....	48
8.1.2 Summary of Rehabilitation Activities During the Reporting Period.....	51
8.1.2.1Decommissioning.....	52
8.1.2.2Landform Establishment .....	52

8.1.2.3Growth Medium Development .....	52
8.1.2.4Ecosystem Establishment .....	52
8.1.2.5Ecosystem Sustainability .....	53
8.1.3 Summary of Rehabilitation Activities Next Reporting Period .....	56
8.2 Other Rehabilitation Activities .....	57
8.3 Land Management Activities .....	64
<b>9.0 COMMUNITY .....</b>	<b>65</b>
<b>10.0 INDEPENDENT AUDIT .....</b>	<b>68</b>
10.1 Independent Environmental Audit .....	68
<b>11.0 INCIDENTS &amp; NON-COMPLIANCES .....</b>	<b>69</b>
11.1 Reportable Incidents .....	69
11.2 Non-Compliances .....	69
<b>12.0 ACTIVITES FOR NEXT REPORTING PERIOD .....</b>	<b>73</b>
<b>13.0 REFERENCES .....</b>	<b>74</b>

## Tables

Table 1 Annual Review Title Block .....	i
Table 2 Statement of Compliance .....	1
Table 3 Non-Compliances .....	1
Table 4 Compliance Status Key .....	2
Table 5 Mine Contact Details .....	3
Table 6 Mine Approvals, Leases and Licences .....	6
Table 7 Status of Environmental Management Plans .....	8
Table 8 Production Summary .....	9
Table 9 Actions Required from Previous Annual Review .....	10
Table 10 Summary of Air Quality Monitoring Program .....	11
Table 11 Assessment of Spontaneous Combustion Performance Indicators .....	12
Table 12 Air Quality Monitoring Environmental Performance .....	13
Table 13 Summary of the Blasting and Vibration Monitoring Program .....	19
Table 14 Blast Monitoring Environmental Performance (Wollar School) .....	20
Table 15 Blast Monitoring Environmental Performance (Public Infrastructure) .....	21
Table 16 Blast Monitoring Environmental Performance (Heritage Sites) .....	22
Table 17 Summary Noise Monitoring Program .....	24
Table 18 Noise Monitoring Environmental Performance .....	25
Table 19 Summary of Monthly Waste Statistics for 2021 .....	29
Table 20 Estimated Wilpinjong Coal Mine Greenhouse Gas Emissions .....	29
Table 21 Summary of Annual Volume of Inferred Maximum Groundwater Take (Water Years 2018-2021) 31	
Table 22 Summary of WAL Held by WCPL .....	31
Table 23 Surface Water Monitoring Program .....	34
Table 24 Surface Water Performance .....	35
Table 25 Summary of Surface Water Monitoring Result 2021 .....	36
Table 26 Harvestable Rights Position 2021 .....	36
Table 27 Groundwater Monitoring Program .....	45
Table 28 Groundwater Performance .....	47

Table 29 Status of Proposed MOP Rehabilitation.....	48
Table 30 Rehabilitation Status .....	51
Table 31 Typical BVT Seed Mix Rates .....	53
Table 32 LOI and SSA results for Rehabilitation Area Transects .....	54
Table 33: Assessment against Rehabilitation Performance Criteria* for Rehabilitation Sites within their respective BVT .....	55
Table 34: Assessment against OEH BVT Benchmarks* for Rehabilitation Sites within their respective BVT 55	55
Table 35 CCC Members for the 2021 .....	67
Table 36 Summary of CCC Meetings in 2021.....	67
Table 37 Non-compliance SSD-6764.....	69
Table 41 Details of Non-Compliances (EPL12425) .....	72

## Figures

Figure 1 Locality Plan.....	4
Figure 2 The Approved WEP Layout and Surrounds.....	5
Figure 3 Forecast Water Inventory 2022-2024 .....	42
Figure 4 Annual Rehabilitation Status 2008-2021.....	49
Figure 5 Rehabilitation Forecast Vs Actual 2021 .....	50
Figure 6 Location of Dump Batter Drone Seeding .....	57
Figure 7 2021 Tubestock Planting Locations .....	61
Figure 8 2021 Weed Control Areas.....	64

## Graphs

Graph 1 Compliance Annual Average Dust Deposition Results 2011 – 2021 .....	15
Graph 2 Compliance Dust Deposition Trends (Rolling Averages) 2009-2021 .....	15
Graph 3 Compliance HVAS Annual Average PM <sub>10</sub> Results and Trends 2009 – 2021 .....	16
Graph 4 Compliance HVAS (Rolling Averages) Annual Average & 24hr 6-Day Cycle PM <sub>10</sub> Results 2021 16	16
Graph 5 Compliance TEOM 24hr & Annual Average PM <sub>10</sub> Results 2021 .....	17
Graph 6 Compliance TEOM PM <sub>10</sub> 24hr Results and Trends (Rolling Averages) 2015-2021 .....	17
Graph 7 Compliance TEOM PM <sub>10</sub> (Rolling Averages) 2015-2021 .....	18
Graph 8 Compliance TEOM PM <sub>2.5</sub> 24hr Results and Trends (Rolling Averages) 2018-2021 .....	18
Graph 9 Blasting Monitoring Results for 2021 (Wollar School).....	23
Graph 10 Blasting Monitoring Trends 2013 to 2021 (Wollar School) .....	23
Graph 11 Waste Statistics and Trends .....	29
Graph 12 Long-term EC Water Quality Results at WIL_NC .....	37
Graph 13 Long-term pH & NTU Water Quality Results at WIL_NC.....	37
Graph 14 Long-term EC Water Quality Results at WIL_D2.....	38
Graph 15 Long-term pH & NTU Water Quality Results at WIL_D2 .....	38
Graph 16 Long-term EC Water Quality Results at WIL_D.....	39
Graph 17 Long-term pH & NTU Water Quality Results at WIL_D .....	39
Graph 18 Long-term EC Water Quality Results at CC_1.....	40
Graph 19 Long-term pH & NTU Water Quality Results at CC_1 .....	40
Graph 20 Gauging Station Wilpinjong Creek Upstream Long Term Trends.....	41
Graph 21 Gauging Station Wilpinjong Creek Downstream Long Term Trends .....	41
Graph 22 Gauging Station Cumbo Creek Long Term Trends .....	41
Graph 23 RO Daily Discharge Volumes.....	43

Graph 24 RO Daily pH .....43  
 Graph 25 RO Daily EC .....43  
 Graph 26 RO Daily TSS & Oil and Grease .....44  
 Graph 27 Newly established rehabilitation sites LFA scores .....56  
 Graph 28 Summary of Community Complaints and Issues Raised by Complainants 2015 – 2021.....65  
 Graph 29 Percentage Breakdown of Community Complaints in 2021.....66  
 Graph 30 Total Annual Complaints 2006 - 2021 .....66

**Appendices**

**Appendix 1                      Rail Haulage**  
**Appendix 2                      Exploration**  
**Appendix 3                      Environmental Performance**  
                                  Appendix 3A    Meteorological  
                                  Appendix 3B    Air Quality Monitoring  
                                  Appendix 3C    Surface Water Monitoring  
                                  Appendix 3D    Groundwater Monitoring  
                                  Appendix 3E    Blast Monitoring  
                                  Appendix 3F    Noise Monitoring  
                                  Appendix 3G    Waste Management Statistics  
**Appendix 4                      Heritage**  
**Appendix 5                      Biodiversity**  
**Appendix 6                      Community**  
**Appendix 7                      Land Management**  
**Appendix 8                      Plans**  
**Appendix 9                      2021 IEA**

## 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 2, Sch 2	Development carried out in generally accordance with EIS	Non-compliance	IEA 2021 - non compliances in the Audit Period	Section 11.2
	Con 10, Sch 2	All new buildings constructed in accordance with BCA	Non-compliance	IEA 2021 identified no BCA for Pit 3 Pre-Start Facility	
	Con 16, Sch 3	No offensive odours are emitted from site	Non-compliance	IEA 2021 identified odours beyond the mine boundary	
	Con 17, Sch 3	Reasonable and feasible measures employed for dust	Non-compliance	IEA 2021 identified substantial dust emissions	
	Con 19, Sch 3	Operating conditions to minimise odour/dust emissions	Non-compliance	IEA 2021 - as above for Con 16 and Con 17	
	Con 21 Sch 3	Implementation of an AQMP for the development	Non-compliance	IEA 2021 - as above for Con 16, Con 17 and Con 19	
	Con 29 Sch 3	Table 6: Water Management Performance Measures	Non-compliance	IEA 2021 – as below for Con 58	
	Con 12(a) Sch 3	Operating conditions blasting	Non-compliance	Blast monitoring of public infrastructure at Pit 6	
	Con 14(b) Sch 3	Blast Management Plan ensure compliance against criteria	Non-compliance	Blast monitoring of public infrastructure at Pit 6	
	Con 30(d) (iii) Sch 3	Reporting trigger exceedance surface water quality	Non-compliance	Trigger exceedance requires reporting as per TARP	
	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 57 Sch 3	Reasonable and feasible measures employed for lighting	Non-compliance	IEA 2021 identified lighting audit as not yet completed	
	Con 58 Sch 3	Reasonable and feasible measures employed for lighting	Non-compliance	IEA 2021 identified poor hydro-carbon storage	
	Con. 61, Sch 3	The Rehabilitation Strategy was not finalised	Non-compliance	Ongoing consultation in 2021. Resubmit in 2022	
Con 4, Sch 5	2020 Annual Review (AR) not received by 31 March 2021	Non-compliance	Submit future ARs twice through Planning portal		
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	DG11 bottle and funnel broken	
	M2.2	Requirement to monitor concentration of pollutants	Non-compliance	HV4 did not operate due to power outage	



Relevant Approval	Condition	Summary of Condition Description	Compliance Status	Summary of Comment	Section in AR
	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	
	M4.2	Weather Monitoring	Non-compliance	Instrument fault on weather station	

**Table 4 Compliance Status Key**

Risk Level	Colour Code	Description
<b>High</b>	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
<b>Medium</b>	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for serious environmental consequences, but is unlikely to occur; or</li> <li>• potential for moderate environmental consequences, but is likely to occur</li> </ul>
<b>Low</b>	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>• potential for low environmental consequences, but is likely to occur</li> </ul>
<b>Administrative non-compliance</b>	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)<sup>4</sup>. WCPL commenced 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: <a href="mailto:jdutoit@peabodyenergy.com">jdutoit@peabodyenergy.com</a>
Kieren Bennetts	Environment & Community Manager	Email: <a href="mailto:kbennetts@peabodyenergy.com">kbennetts@peabodyenergy.com</a>
Clark Potter	Senior Environmental Advisor	Email: <a href="mailto:cpotter@peabodyenergy.com">cpotter@peabodyenergy.com</a>

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

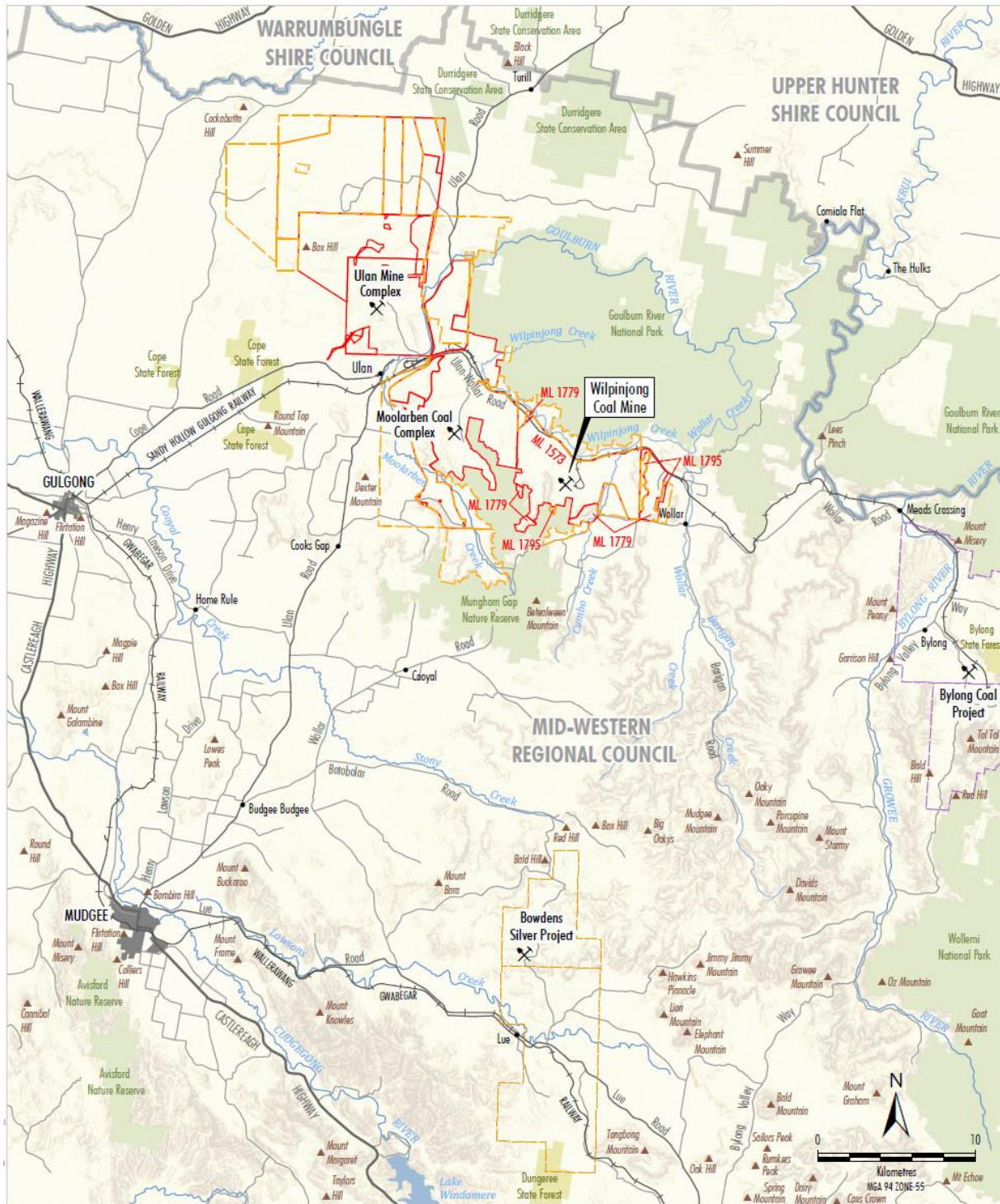
**Street Address**  
1434 Ulan-Wollar Road  
WOLLAR NSW 2850

**Postal Address**  
Locked Bag 2005  
MUDGE E NSW 2850

**Phone Number**  
Ph:(02) 6370 2500

<sup>4</sup> 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

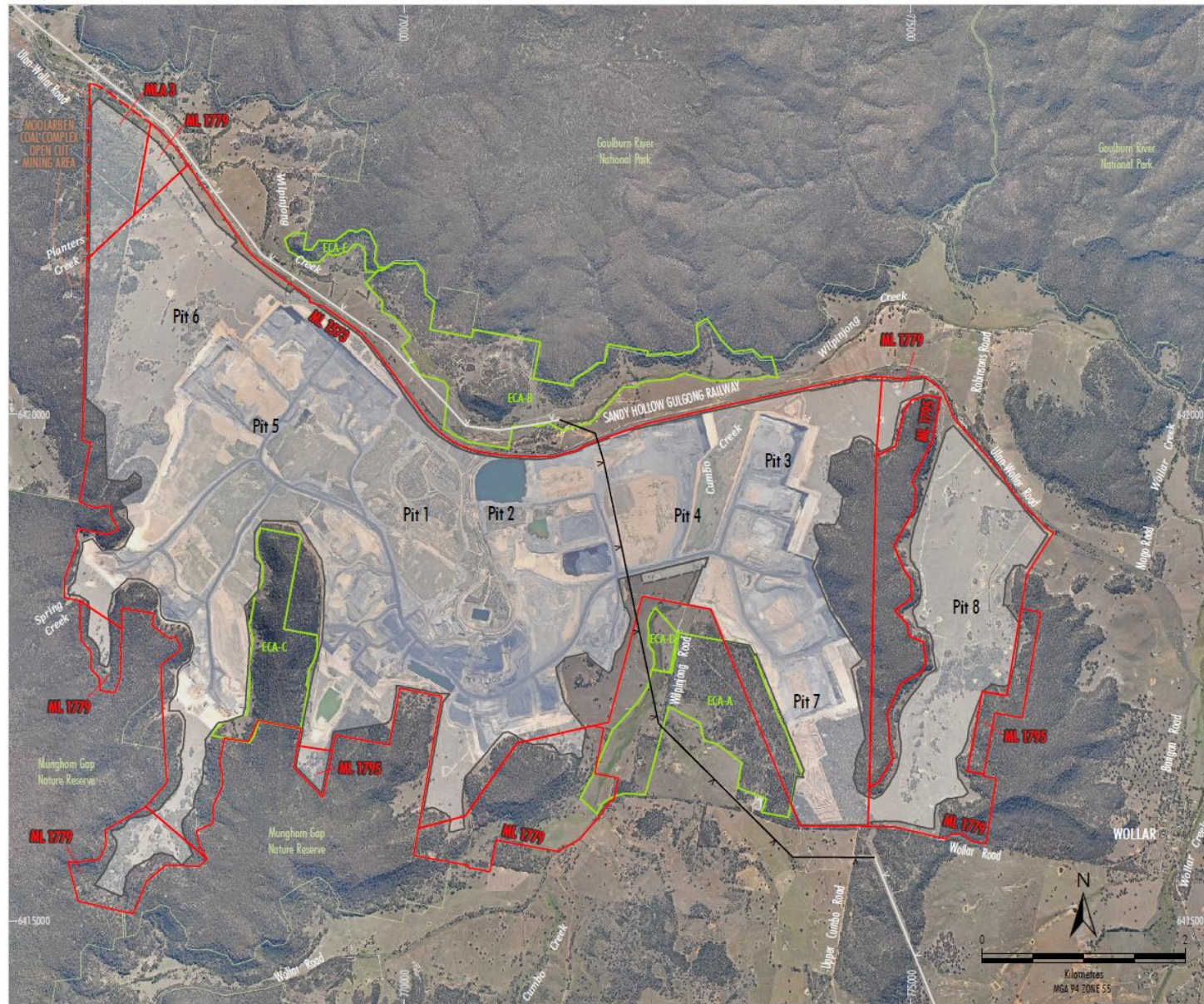


- LEGEND**
- Mining Lease Boundary
  - Exploration Licence Boundary
  - Authorisation Boundary
  - Local Government Boundary
  - NSW State Forest
  - National Park, Nature Reserve or State Conservation Area
  - ✂ Coal Mining Operation

Source: WCPL (2019); Office of Environment & Heritage NSW (2019); NSW Land & Property Information (2017); NSW Dept of Industry (2019); Geoscience Australia (2011)

**Peabody**  
**WILPINJONG COAL MINE**  
 Regional Location

Figure 2 The Approved WEP Layout and Surrounds



- LEGEND**
- Mining Lease Boundary
  - Mining Lease Application Boundary
  - Approved/Existing Open Cut and Contained Infrastructure Area \*
  - Relocated Block Bank and Cumbo Creek Disturbance Area
  - Enhancement and Conservation Area
  - Approved TransGrid 330 kV ETL Deviation
  - Existing TransGrid 330 kV ETL

\* Inclusive of the agreed minor change to the area confirmed by DPIE on 23rd August 2019.

Source: WCPL (2019); NSW Dept of Industry (2019)  
 Orthophoto: WCPL (March 2018)

**Peabody**  
 WILPINJONG COAL MINE  
 General Arrangement

### 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
DPIE	Development Consent	SSD-6764	28 years from commencement of Project Approval (i.e. 2033)
DPIE-RR	Mining Lease	ML1573	February 2027
	Mining Lease	ML1779	20 December 2039
	Mining Lease	ML1795	27 September 2040
	Mining Lease Application 3	(MLA3 yet to be lodged)	<b>Section 3.3</b>
	Exploration Licence	EL 6169	28/11/2022 <sup>^</sup>
	Exploration Licence	EL 7091	03/03/2024
	Mine within Wilpinjong B Notification Area	ML 1573	Endorsed DSC 19 February 2013 Approved 24 January 2014
	Mining Operations Plan (MOP)	Approved on the 20/01/2021	31 December 2022
	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
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
DPI-Water	Water Licences	Refer to <b>Table 22 &amp; Table 23</b> in Section 7.1	Refer to <b>Table 22 &amp; Table 23</b> 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>) <sup>^</sup> Renewal for EL6169 submitted and pending approval

#### 3.1 Ulan Road Strategy (Summary of Actions 2021)

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 being arranged.

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

### 3.2 Changes to Approvals

There was one variation to EPL 12425 during the review period. Licence variation notice 1604816 was issued on the 2 March 2021 by the EPA to include:

- Modification of condition P1.3 to include new discharge Point 30.
- Addition of condition L2.5 to include water quality limits for Point 30.
- Modification of condition M2.4 to include monitoring requirements for Point 30.

During 2021, WCPL proposed a ‘generally in accordance’ amendment of the SSD-6764 disturbance boundary in Pit 6 to maximise coal recovery, improve rehabilitation landform constructability and improve safety of mining process. On 7 June 2021, the DPIE accepted the disturbance boundary footprint change proposed by WCPL was generally in accordance with Wilpinjong Extension Project Environmental Impact Statement.

WCPL received approval for a new Mining Operations Plan (MOP) 2021 to 2022 on the 20 January 2021 by the Resources Regulator (RR). WCPL sought to amend the MOP (MOP Amendment A) to align the disturbance footprint of the Pit 6 mining area. MOP Amendment A included amending the disturbance footprint of the Pit 6 mining area, consideration to re-handle tailings from TD6 and co-dispose, refinement of the final surface landforms and revised local BVT reference sites rehabilitation performance and completion criteria to align with the recently approved version of the Biodiversity Management Plan (BMP). MOP (Amendment A) was approved by DPIE-RR on 6 October 2021.

Other approval related activities that occurred during 2021 included withdrawal of the Water Supply Modification, delaying the community event as required by Social Impact Management Plan (SIMP) due to COVID restrictions and seeking an extension date regarding the transfer of Biodiversity Offset Areas 1-5 (BOAs) to the National Parks and Wildlife Service (NPWS).

### 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.

MLA3 is being progressed and is the last mining lease required to cover the approved mining area for the WEP. The MLA3 will be lodged in the coming reporting period. No mining activities will occur in the MLA3 area until a new ML is issued, and the current MOP and WCPL’s Colliery Holding Boundary is amended and approved by the DPIE-RR. WCPL will also renew existing ELs and ML1573 as required during the life of the Mine.

WCPL submitted ELA5804 (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.

### 3.4 Management Plans

WCPL operates an Environmental Management System to manage compliance and advance continual improvement across the Mine. During the 2021 review period all management plans were revised and updated accordingly and submitted for re-approval as required by SSD-6764 on the 28 June 2021. 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 6.1 approved on 16/08/2021
Blast Management Plan	Condition 14	Version 8.1 approved on 13/08/2021
Blast Fume Management Strategy	Condition 14	Version 5.1 approved on the 06/08/2021
Air Quality Management Plan	Condition 20,	Version 7.1 approved on 16/08/2021
Water Management Plan	Condition 30	Version 7 submitted in June 2021*
Site Water Balance	Condition 30(d)(ii)	Version 5 submitted in June 2021*
Surface Water Management Plan	Condition 30(d)(iii)	Version 5 submitted in June 2021*
Groundwater Management Plan	Condition 30(d)(iv)	Version 5 submitted in June 2021*
Biodiversity Management Plan	Condition 42	Version 7.1 approved on 02/09/2021
Aboriginal Cultural Heritage Management Plan	Condition 47	Version 8.1 approved on 18 November 2021
Spontaneous Combustion Management Plan	Condition 20(g)	Version 7.1 approved on 16/08/2021
Historic Heritage Management Plan	Condition 49	Version 5.1 approved on 19/11/2021
Rehabilitation Management Plan	Condition 64	Version 1.1 approved^ 07/04/2021
Environmental Management Strategy	Condition 1, Schedule 5	Version 8 submitted in June 2021
Social Impact Management Plan	Condition 63	Version 2 approved 09/09/2021

**Notes:** \* Revised and resubmitted in June 2021 and subject to further consultation with NSW Heritage and DPIE Water. ^Approved as the MOP 2021-2022.\* Water related management plans waiting on approval from NRAR

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; and
  - Revised landform concept and resubmission of the Rehabilitation Strategy expected in 2022.

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](http://www.peabodyenergy.com)

## 4.0 OPERATIONS SUMMARY

**Table 8** displays the production summary for 2021 and the forecast production summary for 2022.

**Table 8 Production Summary**

Material	SSD-6764 Approved Limit	This Reporting Period (actual)	Next Reporting Period (forecast)
Waste Rock/Overburden	NA	43.71Mbcm	49.48Mbcm
ROM Coal	16 Mtpa	14.48Mt	13.96Mt
Coarse Reject & Tailings (TFP)*	NA	2.57Mt	2.33Mt
Fine Tailings	NA	0	0
Product Coal	NA <sup>#</sup>	12.17Mt <sup>#</sup>	11.58Mt <sup>#</sup>

**Notes:** \*Tailings Filter Press<sup>5</sup>, Million tonnes per annum = (Mtpa), Million bank cubic meters = (Mbcm). <sup>#</sup> Product coal railed.

### 4.1 Other Operational Conditions

At the end of the 2021 review period, open cut mining operations were located in Pit 1, Pit 2, Pit 3, Pit 4, Pit 5, Pit 6, Pit 7 and Pit 8 as identified in Plan 3A of MOP (as amended) (**Figure 2**).

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.

12.17Mt of product coal was transported from the Mine via rail during the 2021 Annual Review period and involved an average of approximately four train movements per day during 2021 (**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.

Key construction activities in the reporting period included the Ulan Wollar Road Re-alignment, haul road and mine support infrastructure construction in Pit 6 & 8.

### 4.2 Next Reporting Period

The proposed mining locations for the 2022 review period are Pit 1, Pit 2, Pit 3, Pit 4, Pit 5, Pit 6, Pit 7 and Pit 8. The approved MOP accommodates the recently issued ML1779 which allows open cut mining activities in Pit 8.

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

The revised indicative mining schedule and sequence of open cut mining operations are provided MOP Plans 3A (Year 2021) and 3B (Year 2022).

<sup>5</sup> 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 DPIE accepted and approved the 2020 Annual Review on the 28/09/2021. Although the 2020 Annual Review was submitted via the NSW Planning Portal on the 31 March 2021, the DPIE did not receive the 2020 Annual Review by the due date of the 31 March 2021, therefore was noted as a late submission.

To rectify this from occurring again, DPIE informed WCPL to upload and lodge all future Annual Reviews via the NSW Planning Portal twice, i.e., upload Annual Review for consultation to all stakeholders and separately upload Annual Review direct to DPIE.

There was one specific action to be addressed in relation to the 2020 Annual Review to include the number of laden trains (**Table 9**) (in addition to information provided in **Section 4.1** and the graph provided in **Appendix 1**).

The other request was to provide a copy of the 2020 Annual Review on the Peabody Energy website [www.peabodyenergy.com](http://www.peabodyenergy.com)

**Table 9 Actions Required from Previous Annual Review**

Action required from previous 2020 Annual Review	By Who	Action taken by WCPL
For future Annual Reviews and to demonstrate compliance with Schedule 2, Condition 7, of the consent please include the number of laden trains, in addition to the Graph in Section 4.1 in Appendix 1.	DPIE	Refer to Section 4.1 and Appendix 1 to include the number of laden trains. 2021 daily train movements provided in <b>Appendix 1</b> .
Although the 2020 Annual Review was submitted via the NSW Planning Portal on the 31 March 2021, the DPIE did not receive the 2020 Annual Review by the due date of the 31 March 2021, therefore was noted as a late submission		Refer to <b>Section 11.2</b> WCPL to upload and lodge all future Annual Reviews via the NSW Planning Portal twice, i.e., upload Annual Review for consultation to all stakeholders and separately upload Annual Review direct to DPIE.
Lastly, please make publicly available a copy of the 2020 Annual Review on the company website.		2020 Annual Review is available to the public on the Peabody Energy website <a href="http://www.peabodyenergy.com">www.peabodyenergy.com</a>

## 6.0 ENVIRONMENTAL PERFORMANCE

Environmental management measures undertaken during the 2021 review period have been conducted as required by the MOP (as amended), relevant management plans and monitoring programs developed for the Mine in accordance with SSD-6764 and EPL12425. The 2021 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 2021 review period are provided in **Appendix 3**.

### 6.1 Meteorological Monitoring

Local meteorological data for 2021 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 2021 was 942.4mm and the total cumulative annual rainfall recorded for 2020 was 915.8mm. This represents two 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 249.2mm in November 2021. The least amount of rainfall was recorded in April with just 1.8mm for the month.

A maximum temperature of 35.7°C (at 10m) was recorded in January 2020. The lowest minimum temperature was -3.0°C (at 10m) recorded in July. The 2021 average minimum of 4.4°C was slightly higher than the short term (i.e., year 2006 to 2015) average minimum of 3.0°C. The 2020 average maximum of 28.0°C was slightly lower than the short-term average maximum of 31.7°C.

Wind speed recorded during the 2021 review period displayed an average monthly wind speed range between 1.4 metres per second (m/s) to 2.6m/s. The average windspeed in 2020 appeared to be slightly greater than 2020 with average monthly wind speed ranging between 1.0 m/s to 3.0m/s. A maximum wind speed of 11m/s was recorded in January 2021.

### 6.2 Air, Blast & Noise Monitoring

#### *Air Quality Monitoring*

The Mine has developed and implemented an Air Quality Management Plan (AQMP - Version 7.1) (**Table 7**). Criteria for airborne particulate matter (i.e. dust) are specified in Condition 17, Schedule 3 of SSD-6764. During the 2021 review 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, DG5, DG8, DG11 & DG15	Monthly
	DG12 <sup>#</sup> , DG13 <sup>#</sup> and DG14 <sup>#</sup>	Monthly (mining < 1 km of the site)
High-Volume Air Sampling (PM <sub>10</sub> )	HV1, HV4 <sup>^</sup> & HV5	24hrs every six-day cycle
TEOM (PM <sub>10</sub> )	TEOM 3 & TEOM 4	Continuous (24-hour average)
TEOM (PM <sub>2.5</sub> )	TEOM 5	Continuous (24-hour average)*

**Notes:** <sup>^</sup> Data HV4 for management purposes only. Both DG10 and HV3 were decommissioned in 2020. <sup>#</sup> Aboriginal rock art site monitoring Sites 72, 152 and 153. \* TEOM<sub>2.5</sub> installed and operating prior to 31/12/2017.

Currently, the nearest privately owned residence to the DG4 monitor is located over 5km away in Wollar and thus the DG4 monitor is no longer considered to be representative of dust levels at privately owned

residences. As such, it may be more appropriate to use DG4 as a management monitor rather than a compliance monitor (Todoroski, 2022) (**Appendix 3B**).

**Table 12** contains the air quality monitoring results, as well as a discussion of the results for the review period. Further air quality monitoring results for 2021 review 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. The SCMP was reviewed in June 2021. As described in the SCMP there are areas of the mine prone to spontaneous combustions events. During 2021 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:

- Review the Mining Supervisor Inspection report to 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 (taking into consideration findings from the extensive Ambient Air Monitoring in Wollar, 2013 – 2018, as part of the removal of Keylah Dump); and
- Review the frequency of entire site thermal surveys, noting entire site thermal survey conducted 8 October 2021.

There were no reportable incidents as a result of spontaneous combustion in 2021. There were seventeen unverified odour complaints received during 2021 (**Section 9**).

Each of the odour complaints during 2021 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 in 2021.

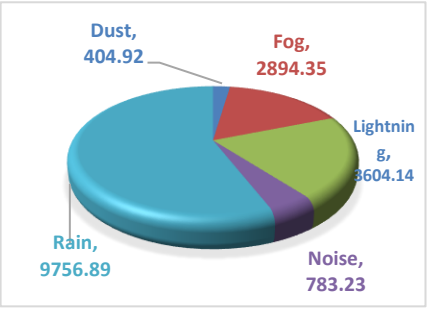
**Table 11 Assessment of Spontaneous Combustion Performance Indicators**

Performance Indicator	2021 Target	2021 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

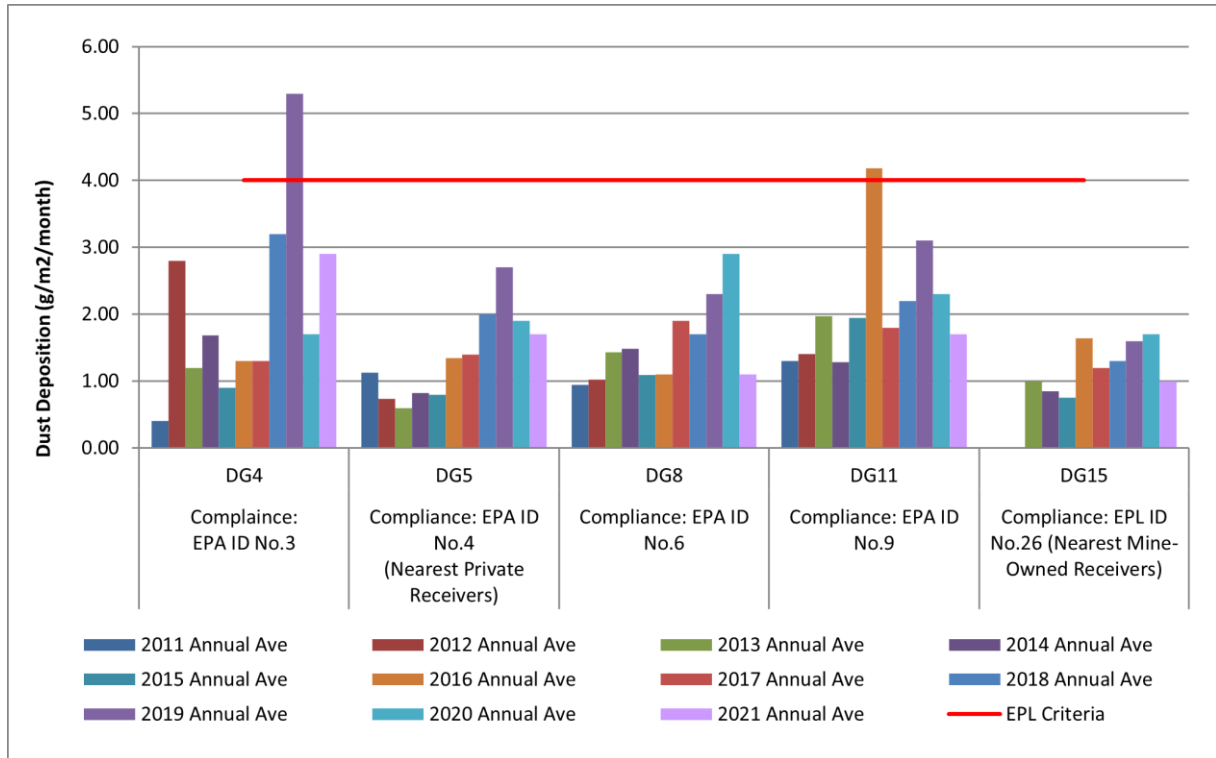
**Notes:** \* Investigated odour complaint and could not determine or verify the likely cause of the odour (refer to **Section 9.0** for further details).

Table 12 Air Quality Monitoring Environmental Performance

Approved Criteria <sup>D</sup>	WEP Predictions	Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions																													
<b>Deposited Dust <sup>C</sup></b>																																	
4 g/m <sup>2</sup> /month <sup>E</sup>  (at any residences on privately owned land)	2g/m <sup>2</sup> /month  DG4, DG5, DG8, DG11 & DG15	<p>The 2021 annual average dust deposition results for compliance purposes were below the approved criteria of 4 g/m<sup>2</sup>/month at compliance monitoring sites:</p> <ul style="list-style-type: none"> <li>- <b>DG4</b> (Ave: 2.9 g/m<sup>2</sup>/month)</li> <li>- <b>DG5</b> (Ave: 1.7 g/m<sup>2</sup>/month)</li> <li>- <b>DG8</b> (Ave: 1.1 g/m<sup>2</sup>/month)</li> <li>- <b>DG11</b> (Ave: 1.7 g/m<sup>2</sup>/month)</li> <li>- <b>DG15</b> (Ave:1.0 g/m<sup>2</sup>/month)</li> </ul> <p>An elevated level of 15.2 g/m<sup>2</sup>/month was recorded at DG4 in November 2021. The sample analysis indicated that 75% of the deposited dust (total insoluble matter) was 75% organic material and thus it was considered that the elevated level was not due to mining operations (Todoroski, 2022) (<b>Appendix 3B</b>).</p>	<p>The 2021 results for depositional dust indicate that deposited dust levels are below the relevant cumulative criterion of 4g/m<sup>2</sup>/month at relevant compliance monitors in 2021.</p> <p>The annual average measured levels in 2021 are generally well aligned with the modelled predictions. It is noted that DG4 recorded a level approximately 1.5g/m<sup>2</sup>/month higher than the predicted level while DG13 and DG14 recorded levels approximately 2.5 g/m<sup>2</sup>/month and 4 g/m<sup>2</sup>/month lower than the model predictions, respectively (Todoroski, 2022) (<b>Appendix 3B</b>).</p>	<p>The Mine rehabilitated approximately 86ha of mine waste rock emplacement areas in 2021. The Mine is scheduled to complete approximately 44ha of mine waste rock rehabilitation in 2022.</p> <p>In 2021 there were a total of 22 complaints regarding air quality, including:</p> <ul style="list-style-type: none"> <li>- Fourteen complaints in relation to dust. This is an increase from one complaint in 2020; and</li> <li>- Eight complaints in relation to odour. A decrease from ten complaints in 2020. Refer to <b>Section 6.2</b> and <b>Section 9</b> for details.</li> </ul> <p>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.</p>																													
<b>PM<sub>10</sub> (24hr Continuous Average Concentrations &amp; 24hr 6 Day Cycle Concentrations)</b>																																	
50 µg/m <sup>3</sup> <sup>AF</sup>	15-20 µg/m <sup>3</sup>  Village of Wollar	<p>The 24-hour average PM<sub>10</sub> concentrations were below the relevant criterion of 50µg/m<sup>3</sup> in 2021, except for days on the 28 and 29 April.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">6 Day Cycle</th> <th>HV1</th> <th>HV4</th> <th>HV5</th> </tr> <tr> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>PM<sub>10</sub> (Max)</td> <td>30.3</td> <td>38.6</td> <td>38.6</td> </tr> <tr> <td>PM<sub>10</sub> (Min)</td> <td>2.8</td> <td>3.0</td> <td>3.0</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Continuous</th> <th>TEOM3</th> <th>TEOM4</th> </tr> <tr> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>PM<sub>10</sub> (Max)*</td> <td>86.6</td> <td>139.51</td> </tr> <tr> <td>PM<sub>10</sub> (Max)</td> <td>25.1</td> <td>35.0</td> </tr> <tr> <td>PM<sub>10</sub> (Min)</td> <td>1.0</td> <td>1.80</td> </tr> </tbody> </table> <p><b>Notes:</b>* Extraordinary event from backburning operation.</p>	6 Day Cycle	HV1	HV4	HV5	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	PM <sub>10</sub> (Max)	30.3	38.6	38.6	PM <sub>10</sub> (Min)	2.8	3.0	3.0	Continuous	TEOM3	TEOM4	µg/m <sup>3</sup>	µg/m <sup>3</sup>	PM <sub>10</sub> (Max)*	86.6	139.51	PM <sub>10</sub> (Max)	25.1	35.0	PM <sub>10</sub> (Min)	1.0	1.80	<p>The 24-hour average PM10 concentrations were above the relevant criterion of 50µg/m<sup>3</sup> for one day in 2021 at TEOM3 and TEOM4. This day was considered to be an extraordinary event due to smoke from hazard reduction burns (Todoroski, 2022) (<b>Appendix 3B</b>).</p>	<p>In accordance SSD-6764 and the recommendations from the 2021 IEA, WCPL will review, and revise, the AQMP within three months of the submission of the 2021 Annual Review.</p> <p>All dust related complaints were responded to in accordance with the Complaints Management Procedure.</p> <p>During the review period the following control measures were implemented in accordance with the MOP and 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.</p>
6 Day Cycle	HV1	HV4		HV5																													
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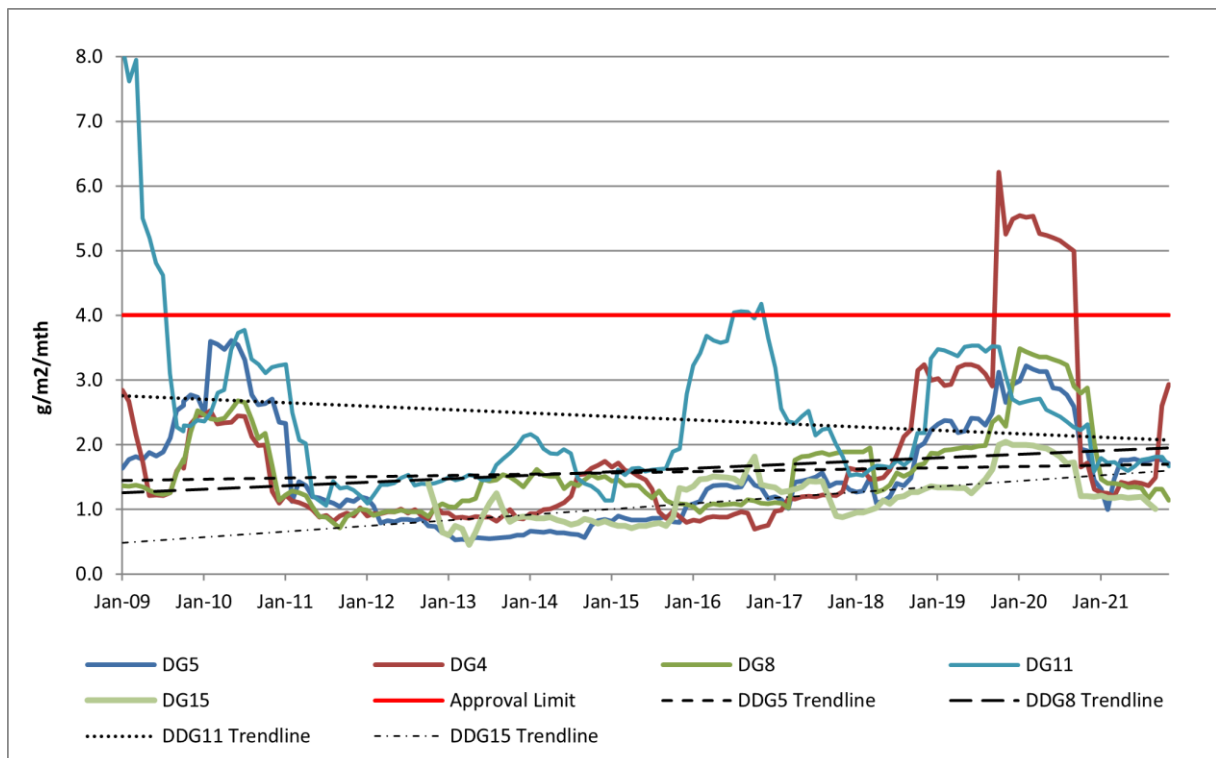
Approved Criteria <sup>D</sup>	WEP Predictions	Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions																			
<b>PM<sub>10</sub> (Annual Average Concentrations)</b>																							
30 µg/m <sup>3</sup> <sup>AE</sup>	15-20 µg/m <sup>3</sup> (for Wollar Road & Village of Wollar)	<p>The 2021 annual average PM<sub>10</sub> concentrations for “all days” were below criterion of 30µg/m<sup>3</sup>:</p> <table border="1"> <thead> <tr> <th rowspan="2">6 Day Cycle</th> <th>HV1</th> <th>HV4</th> <th>HV5</th> </tr> <tr> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>PM<sub>10</sub> (Ave)</td> <td>9.6</td> <td>11.5</td> <td>14.3</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Continuous</th> <th>TEOM3</th> <th>TEOM4</th> </tr> <tr> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>PM<sub>10</sub> (Ave)</td> <td>8.6</td> <td>11.9</td> </tr> </tbody> </table>	6 Day Cycle	HV1	HV4	HV5	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	PM <sub>10</sub> (Ave)	9.6	11.5	14.3	Continuous	TEOM3	TEOM4	µg/m <sup>3</sup>	µg/m <sup>3</sup>	PM <sub>10</sub> (Ave)	8.6	11.9	<p>The 2021 annual average PM<sub>10</sub> concentrations were below the relevant Consent criterion of 30µg/m<sup>3</sup>. The annual average PM<sub>10</sub> levels in 2021 are lower than the levels in previous years. This decrease is likely due to the ending of drought conditions and a significant reduction in the frequency of extraordinary events (Todoroski, 2022) (<b>Appendix 3B</b>).</p>	<p>In 2021 a total ≈404hrs of lost time hours associated with implementation of dust management strategies.</p> 
6 Day Cycle	HV1	HV4		HV5																			
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<b>PM<sub>2.5</sub> (24hr &amp; Annual Average Concentrations)</b>																							
No criteria established	3-4 µg/m <sup>3</sup> (for Village of Wollar)	<p>The 2021 annual average PM<sub>2.5</sub> concentrations for “all days” and excluding extraordinary events were below the relevant criterion of 8µg/m<sup>3</sup>.</p> <table border="1"> <thead> <tr> <th></th> <th>Annual Average</th> <th>Max. 24hr</th> <th>Days &gt; NEPM</th> </tr> <tr> <th></th> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> <th>µg/m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>2021*</td> <td>4.4</td> <td>82.4</td> <td>2</td> </tr> <tr> <td>2021</td> <td>4.1</td> <td>20.4</td> <td>0</td> </tr> </tbody> </table> <p><b>Notes:</b>* Extraordinary event from backburning operation</p>		Annual Average	Max. 24hr	Days > NEPM		µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup>	2021*	4.4	82.4	2	2021	4.1	20.4	0	<p>The annual average PM<sub>2.5</sub> levels in 2021 are lower than the levels in previous years. This decrease is likely due to the ending of drought conditions and a significant reduction in the frequency of extraordinary events (Todoroski, 2022) (<b>Appendix 3B</b>).</p> <p>The 24-hour average PM<sub>2.5</sub> concentrations were above the relevant criterion of 25µg/m<sup>3</sup> for two days in 2021. These two days were considered to be extraordinary events, which are excluded from the air quality criteria in <b>Error! Reference source not found.</b>, due to smoke from hazard reduction burns (Todoroski, 2022) (<b>Appendix 3B</b>).</p>				
	Annual Average	Max. 24hr	Days > NEPM																				
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2021*	4.4	82.4	2																				
2021	4.1	20.4	0																				
<p><b>Notes:</b> g/m<sup>2</sup>/month = grams per square metre per month. µg/m<sup>3</sup> = 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.</p>																							

Graph 1 Compliance Annual Average Dust Deposition Results 2011 – 2021



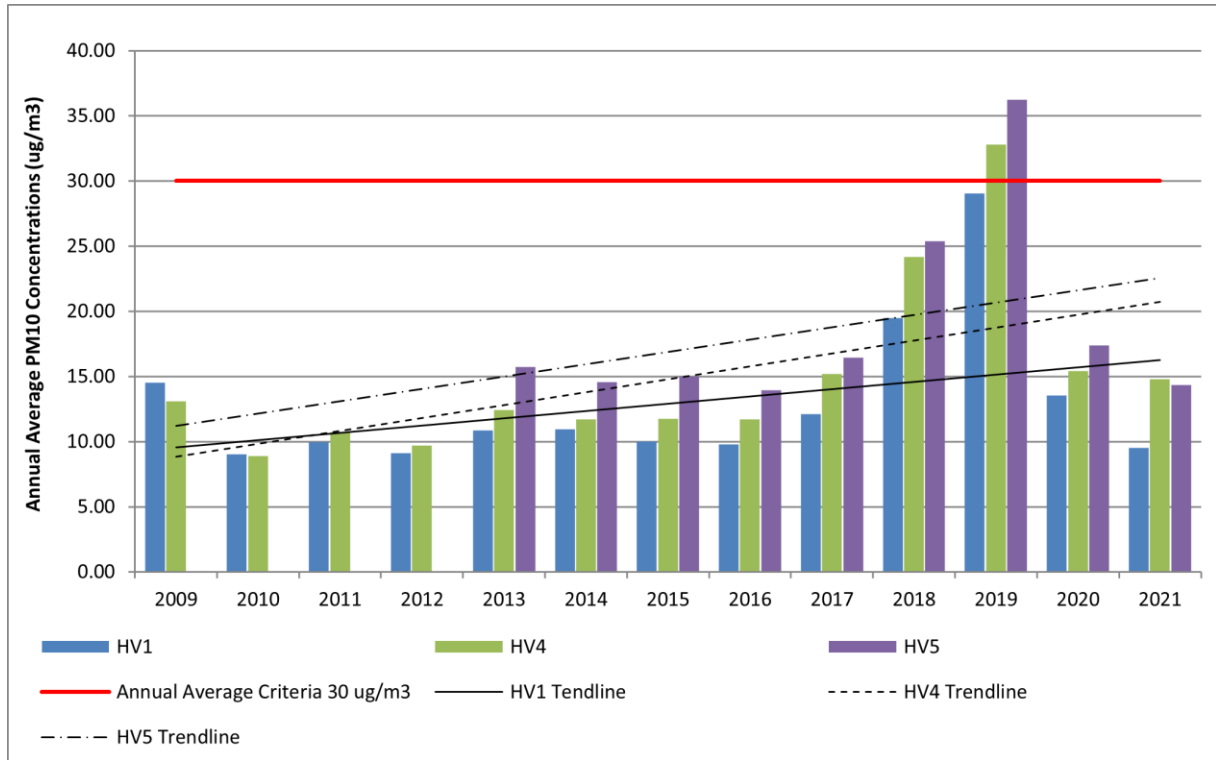
**Notes:** Based on the positioning of the compliance monitors at WCM, it can be assumed that the DG8 monitor is sufficiently away from mining activity and is generally represented of background levels for the area. On this basis, the potential incremental contribution from WCM can be estimated as the level recorded at the compliance monitors minus the level at DG8 (Todoroki, 2019).

Graph 2 Compliance Dust Deposition Trends (Rolling Averages) 2009-2021



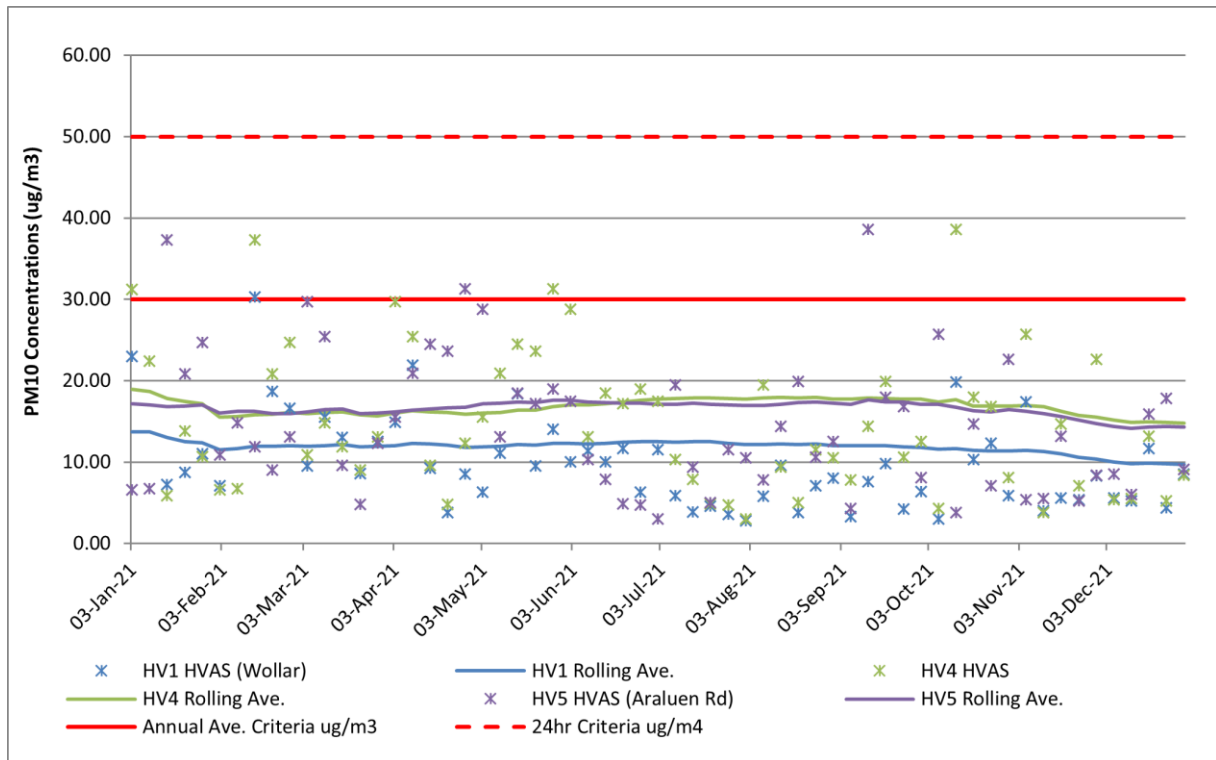
**Notes:** Drought conditions and extraordinary events would have impacted the background deposited dust levels in 2020. Currently, the nearest privately-owned residence to the DG4 monitor is located over 5km away and thus the DG4 monitor is no longer considered to be representative of dust levels at privately owned residences (Todoroski, 2021).

Graph 3 Compliance HVAS Annual Average PM<sub>10</sub> Results and Trends 2009 – 2021



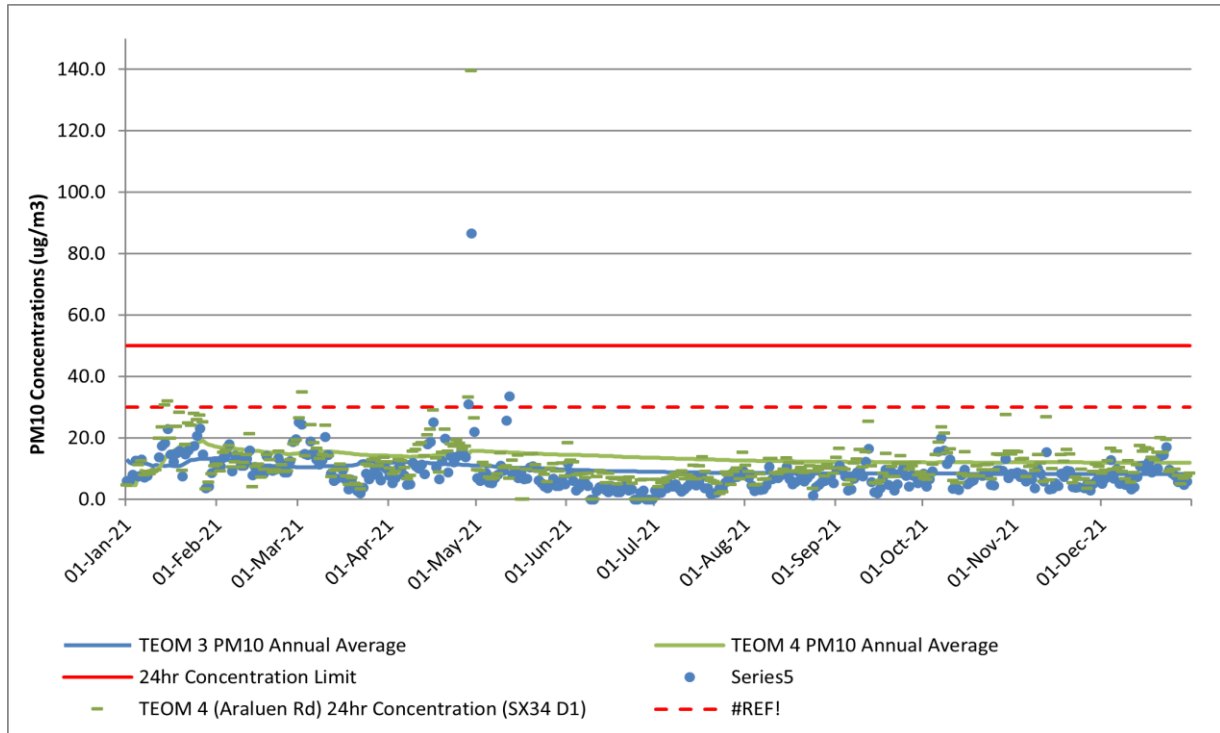
Notes: Elevated results in 2019 were caused by regional extraordinary events as described the 2019 Annual Review.

Graph 4 Compliance HVAS (Rolling Averages) Annual Average & 24hr 6-Day Cycle PM<sub>10</sub> Results 2021



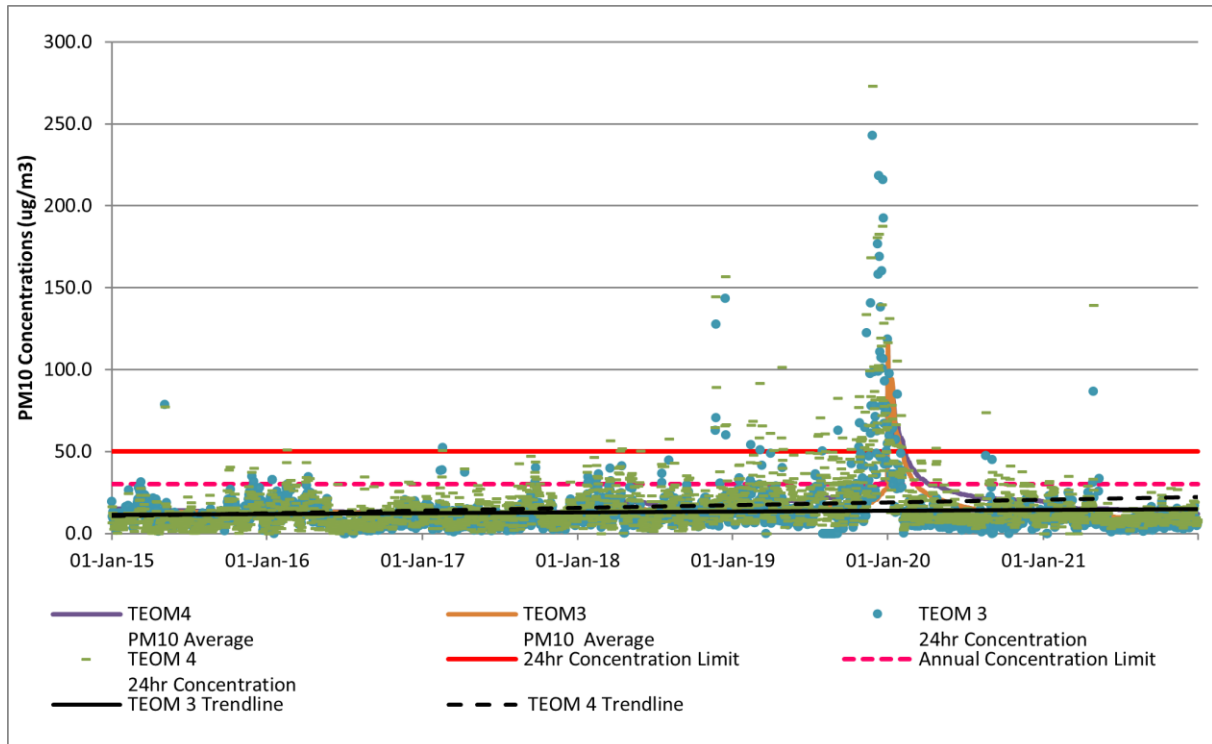
Notes: The nearest private residence to the HV4 monitor is located over 5km away from the monitor, the private residency response protocol (which includes an investigation of elevated readings at monitors representative of privately owned residences) is not triggered when elevated levels are recorded at this location as such, it may be more appropriate use to use HV4 as a management monitor rather than compliance monitor (Todoroski, 2021).

Graph 5 Compliance TEOM 24hr & Annual Average PM<sub>10</sub> Results 2021



**Notes:** 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 (Todoroski, 2022) (Appendix 3B).

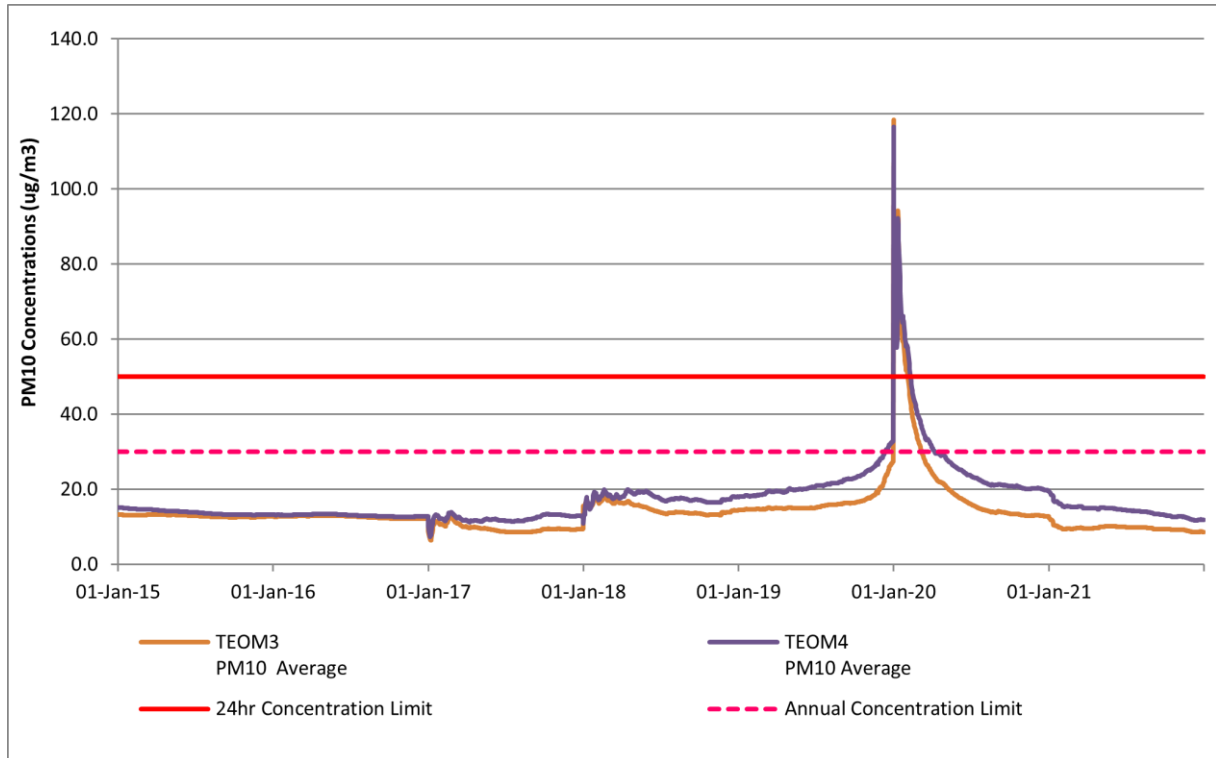
Graph 6 Compliance TEOM PM<sub>10</sub> 24hr Results and Trends (Rolling Averages) 2015-2021



**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. (Todoroski, 2021). 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 (Todoroski, 2022) (Appendix 3B).

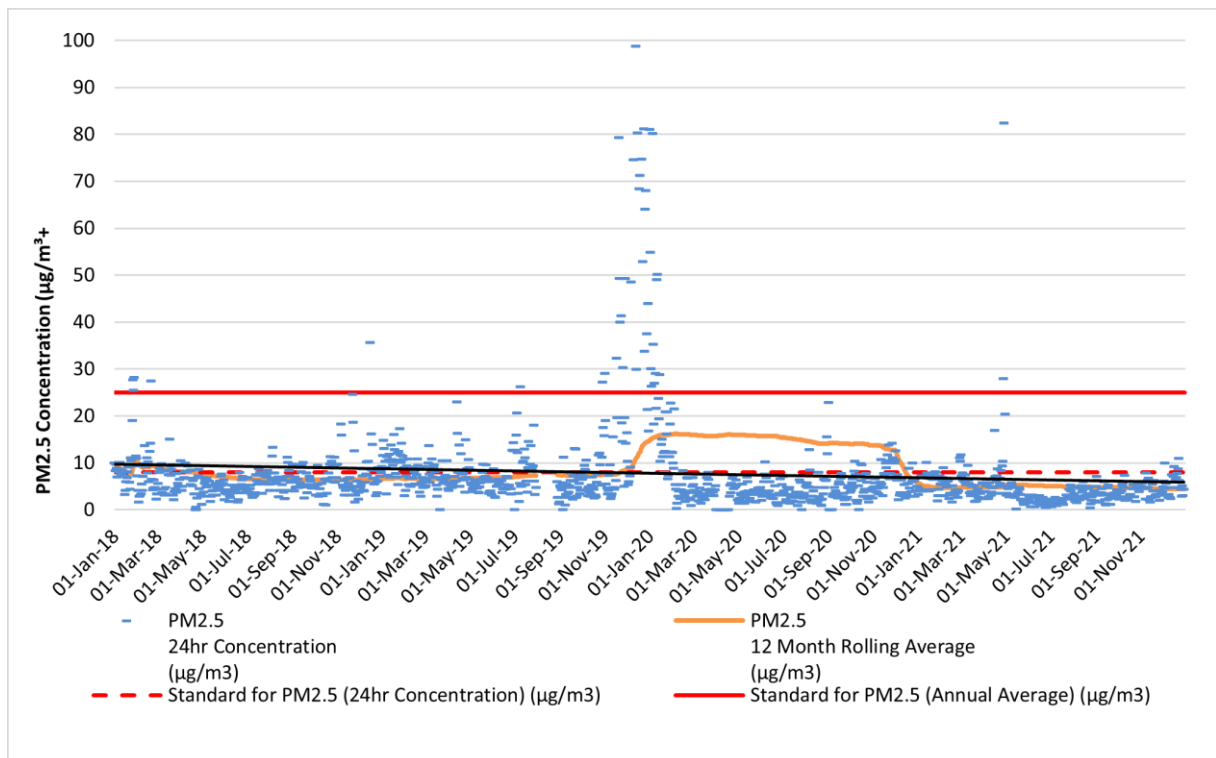


Graph 7 Compliance TEOM PM<sub>10</sub> (Rolling Averages) 2015-2021



**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 (Todoroski, 2021).

Graph 8 Compliance TEOM PM<sub>2.5</sub> 24hr Results and Trends (Rolling Averages) 2018-2021



**Notes:** PM<sub>2.5</sub> 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 (Todoroski, 2021). 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 (Todoroski, 2022) (**Appendix 3B**).

### **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 2021 review 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
<b>Wollar Public School</b>	Airblast Overpressure and Ground Vibration	Every blast
<b>Aboriginal rock art sites: 72, 152 &amp; 153</b>	Ground Vibration	Every blast within 1km of Aboriginal rock art sites.
<b>Archaeological sites: WE7, WE10, WCP535, WE76<sup>^</sup> &amp; WE77<sup>^</sup></b>	Ground Vibration	Every blast within 1km of Aboriginal sites
<b>Historical Mine Adit</b>	Ground Vibration	Every blast within Pit 8
<b>Railway Line/ Culvert</b>	Ground Vibration	Every blast within 350m of railway culverts and 100m of railway lines
<b>Ulan-Wollar Road</b>	Ground Vibration	Every blast within 100m of the Ulan-Wollar Road
<b>TransGrid Powerline Suspension Towers</b>	Ground Vibration	Every blast within 100 of TransGrid powerline suspension towers*
<b>Tailings Dam 3, 4, 5 or 6</b>	Ground Vibration	Every blast within the DSC Approval area*

**Notes:** \* During the reporting period monitoring was not required as the trigger for blast monitoring was not either within the range.  
<sup>^</sup> 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.

To address the non-compliance with the blasting criteria in Table 4 that occurred in late 2020, WCPL reviewed the Blast Management Plan (BMgtP) (Version 8.1) in 2021. This review included:

- Revised disturbance footprint for Pit 6;
- Revised Section 5.2.2 Blast Design and Control Procedures; and
- Update Sensitive Receiver Figure and blast fume management measures in the Blast Fume Management Strategy.

The revised BMgtP (Version 8.1) was approved by the DPIE on the 13 August 2021.

In September 2021, WCPL carried out the Independent Environmental Audit (IEA) (**Section 10**) as required by Condition 10, Schedule 5 of Development Consent SSD-6764. The IEA noted several recommendations completed by WCPL during the review of the Blast Management Plan (BMgtP) (Version 8.1) in 2021 to address the non-compliances against the blast criteria recorded during the previous annual review period of 2020.

Table 14 Blast Monitoring Environmental Performance (Wollar School)

Approved Criteria				Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions
<b>Location</b>	<b>Airblast overpressure (dB(Lin Peak))</b>	<b>Ground vibration (mm/s)</b>	<b>Allowable exceedance</b>	<p>All other blast monitoring results for the reporting period complied (<b>Graph 9 &amp; Appendix 3G</b>) with the approved criteria of 115dB (&lt;120dB) and 5mm/s (&lt;10mm/s) at privately owned residences.</p> <p><u>Wollar Public School:</u></p> <ul style="list-style-type: none"> <li>- <b>Max:</b> 111 dBL</li> <li>- <b>Max:</b> 4.68 mm/s</li> </ul> <p>There was a total of 153 blasts for the 2021 reporting period.</p> <p>No blasts were &gt;5mm/s limit for ground vibration and therefore no blasts were &gt;10mm/s for 2021.</p> <p>No fume events occurred during the 2021 reporting period.</p>	<p>All blast monitoring on privately owned land was undertaken in accordance with the Blast Management Plan in 2021.</p> <p>There were 4 blasting related community complaints in 2021 compared to 5 complaints in 2020.</p> <p>All blasting events during the review period occurred during the approved times of 9.00am to 5.00pm.</p> <p>No blasting occurred on a Sunday or on a Public Holiday during the 2021 review period.</p> <p>There were no more than two blasts per day (max. of 2 allowed) and an average of 2.9 blasts per week (max. of 5 per week allowed).</p> <p>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.</p>	<p>The Blast Management Plan was reviewed in 2021 (Version 8.1).</p> <p>The review included revised disturbance footprint for Pit 6, revised Section 5.2.2 Blast Design and Control Procedures, update Sensitive Receiver Figure and blast fume management measures in the blast fume management strategy.</p> <p>The Blast Fume Management Strategy was reviewed in 2021 (Version 5.1).</p> <p>The review included revising the sensitive receiver figure and minor updates to blast fume management measures.</p> <p>Both the revised <i>Blast Management Plan</i> and the <i>Blast Fume Management Strategy</i> were approved on the 13 and 6 August 2021 respectively.</p>
<b>Residence on privately owned land</b>	115	5	5% of the total number of blasts over a rolling period of 12 months			
	120	10	0%			
<b>All public infrastructure</b>	-	50 <i>(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)</i>	0%			

*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 15 Blast Monitoring Environmental Performance (Public Infrastructure)

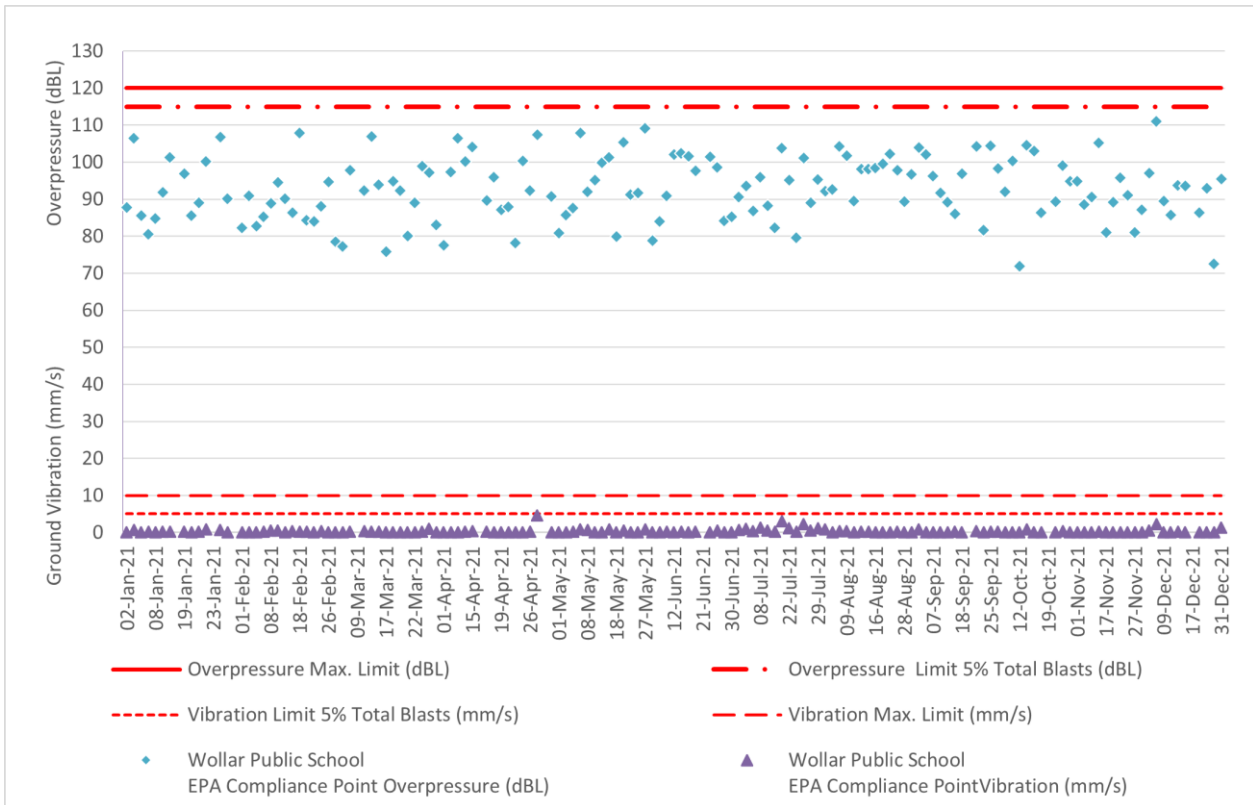
Approved Criteria			Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions
<b>Location</b>	<b>Ground vibration (mm/s)</b>	<b>Allowable exceedance</b>	Blast monitoring results for the reporting period complied with the approved criteria of 200mm/s at a Main Rail Line opposite (Pit 8):	All blast monitoring of public infrastructure was undertaken in accordance with the Blast Management Plan.	The Blast Management Plan was reviewed in June 2021 (Version 8.1).
<b>Tailings Dam<sup>1</sup></b>	50	0%	<ul style="list-style-type: none"> <li>- <b>Max:</b> 97.13 mm/s</li> <li>- <b>Ave:</b> 4.45 mm/s</li> </ul>	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;	The review included revised disturbance footprint for Pit 6, revised Section 5.2.2 Blast Design and Control Procedures, update Sensitive Receiver Figure and blast fume management measures in the blast fume management strategy.
<b>Railway Lines<sup>2</sup></b>	200	-		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.	The Blast Fume Management Strategy was reviewed in June 2021 (Version 5.1).
<b>Railway Culverts<sup>3</sup></b>	100	-	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):	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.	The review included revising the sensitive receiver figure and minor updates to blast fume management measures.
<b>Public Road<sup>4</sup></b>	200	-	<ul style="list-style-type: none"> <li>- <b>Max:</b> 88.44 mm/s</li> <li>- <b>Ave:</b> 5.25 mm/s</li> </ul>	During the preparation of the 2021 Annual Review regarding the blast monitoring analysis for the Ulan-Wollar Road/Culvert opposite (Pit 6), it was identified that some of the required blasting data for the reporting period was not available.	Both the revised Blast Management Plan and the Blast Fume Management Strategy were approved on the 13 and 6 August 2021 respectively.
<b>Public Road Infrastructure<sup>5</sup></b>	100	-		As required by Condition 9, Schedule 5 of SSD-6764, WCPL reported the incident via the NSW Planning Portal and will provide a detailed report to the Secretary within seven days. For further information refer to <b>Section 11.2</b> .	Subject to the pending investigation with regards to Pit 6 monitoring data, WCPL will review and revise the Blast Management Plan as required.
<b>Transgrid Powerline<sup>6</sup></b>	50	-	Blast monitoring results for the reporting period complied with the approved criteria of 100mm/s at Ulan-Wollar Road/Main Rail Culvert opposite (Pit 6):		
<p><b>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.</b></p> <p><b>Note:</b> 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.</p>			<ul style="list-style-type: none"> <li>- <b>Max:</b> 19.18 mm/s</li> <li>- <b>Ave:</b> 3.05 mm/s</li> </ul> <p>No blast monitoring was required at TD6 as all blasts during 2021 were outside the DSC Approval Area.</p> <p>No blast monitoring was required along the Transgrid Powerline as all blasts during 2021 were not within 100m of this infrastructure.</p>		

Table 16 Blast Monitoring Environmental Performance (Heritage Sites)

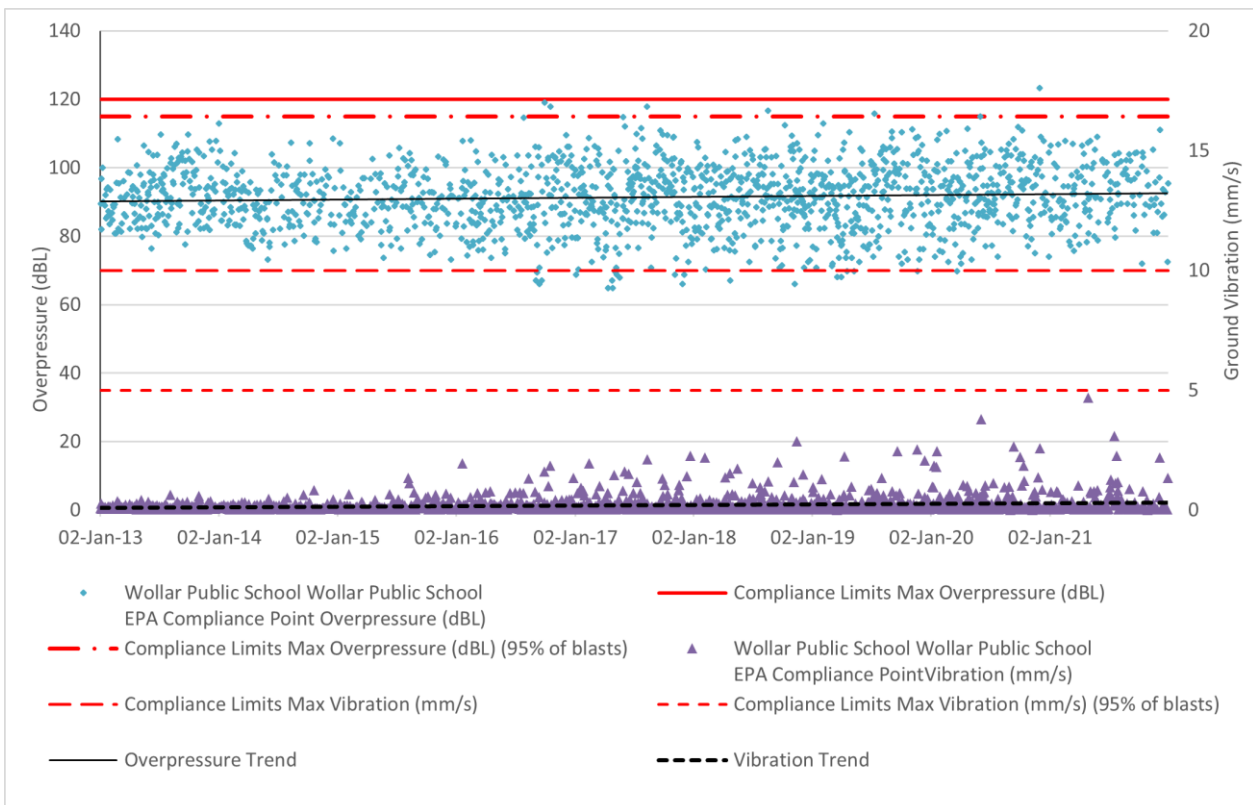
Approved Criteria		Performance During the Reporting Period			Trend/Key Management Implications	Implemented/proposed Management Actions
<b>Location</b>	<b>Ground vibration (mm/s)</b>	Blast monitoring results for the reporting period complied with the approved criteria of 80mm/s at Archaeological Sites 72, 152, 153, WE7, WE10 & WCP535:			<p>All blast monitoring requirements of Aboriginal Heritage Sites were undertaken in accordance with the Blast Management Plan in 2021.</p> <p>All blast monitoring requirements of the historical Mine Adit in Slate Gully were undertaken in accordance with the Blast Management Plan in 2021.</p> <p>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 &amp; WCP535 in 2021.</p> <p>All vibration results were below the performance criteria of 80mm/s of the historical Mine Adit in Slate Gully in 2021;</p> <p>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.</p> <p>Monitoring for microbats utilising the historical Mine Adit in Slate Gully continued in 2021 as required by the Biodiversity Management Plan and the Blast Management Plan.</p>	<p>The Blast Management Plan was reviewed in June 2021 (Version 8.1).</p> <p>The review included revised disturbance footprint for Pit 6, revised Section 5.2.2 Blast Design and Control Procedures, update Sensitive Receiver Figure and blast fume management measures in the blast fume management strategy.</p> <p>The Blast Fume Management Strategy was reviewed in June 2021 (Version 5.1).</p> <p>The review included revising the sensitive receiver figure and minor updates to blast fume management measures.</p> <p>Both the revised Blast Management Plan and the Blast Fume Management Strategy were approved on the 13 and 6 August 2021 respectively.</p> <p>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 review period.</p>
<b>Archaeological Sites 72, 152 and 153 within ML</b>	Performance Indicator 80 <sup>1</sup> Damage Criteria 250 <sup>1</sup>	Rock Art (Site 152) Pit 5 South (mm/s)	Rock Art (Site 153) Pit 5 North (mm/s)	Castle Rock (Site 72) (mm/s)		
<b>Archaeological Sites WE7, WE10 &amp; WCP535 in the Munghorn Gap Nature Reserve</b>	Performance Indicator 80 <sup>2</sup> Damage Criteria 250 <sup>2</sup>	Max 10.46	4.33	4.74		
<b>Archaeological Sites WE76 &amp; WE77 in the Munghorn Gap Nature Reserve</b>	Performance Indicator 80 <sup>2</sup> Damage Criteria 250 <sup>2</sup>	Min 0.04	0.03	0.06		
<b>Mine Adit</b>	- 80 <sup>3</sup>	Ave 0.67	0.70	0.34		
		Rock Shelter WE7 (mm/s)	Rock Shelter WE10 (mm/s)	Rock Shelter WE535 (mm/s)		
		Max 14.15	60.14	30.90		
		Min 0.01	0.03	0.03		
		Ave 0.71	2.77	1.82		
		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 9.68				
		Min 0.00				
		Ave 0.82				

1) When blasting within 1 km 2) Representative site when blasting within 1 km 3) When blasting in Pit 8

Graph 9 Blasting Monitoring Results for 2021 (Wollar School)



Graph 10 Blasting Monitoring Trends 2013 to 2021 (Wollar School)



## Noise Monitoring

The Mine has developed and implemented a Noise Management Plan (NMP) (**Table 7**). During the 2021 review 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 2021 review 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 <sup>^</sup>	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:** <sup>^</sup> Owned by WCPL.

In September 2021, WCPL carried out the Independent Environmental Audit (IEA) (**Section 10**) as required by Condition 10, Schedule 5 of Development Consent SSD-6764. The IEA identified several opportunities for improvement (OFI), one OFI regarding noise monitoring included that all real-time monitors be fitted with new wind shields certified by the supplier to be rated for wind noise mitigation up to 5 m/s, to ensure noise management procedures are informed by data uncorrupted as much as possible by wind. At the time of preparing the 2021 AR, WCPL were investigating the potential to fit new wind shields across the real-time monitoring network.

Table 18 Noise Monitoring Environmental Performance

Approved Criteria					Performance During the Reporting Period	Trend/Key Management Implications	Implemented/proposed Management Actions
Property ID & Location <sup>1</sup>	Day <sup>2</sup>	Evening <sup>3</sup>	Night <sup>4</sup>		<p>Attended noise monitoring during 2021 was undertaken monthly as required by the NMP at N6, N14, N14, N17, N19 and N20 (<b>Table 17</b>) during the night periods of 26/27 January, 11/12 February, 30/31 March, 20/21 April, 4/5 May, 22/23 June, 6/7 July, 12/13 August, 2/3 September, 6/7 October, 1/2 November and 1/2 December.</p> <p>During 2021 attended noise monitoring, noise levels from WCP complied with relevant noise limits at all monitoring locations. Criteria may not always be applicable due to meteorological conditions at the time of monitoring (Global Acoustics, March 2022) (<b>Appendix 3F</b>).</p> <p>Low frequency assessments were carried out in accordance with the EPA 'Noise Policy for Industry' (NPI).</p> <p>Low frequency modification factors were implemented when applicable and did not result in any exceedances of WCP noise limits (<b>Appendix 3F</b>).</p> <p>There was a decrease of noise complaints in 2021. A total of 58 noise complaints were recorded in 2021, as opposed to 88 complaints in 2020.</p> <p>As discussed in <b>Section 9.0</b>, all noise complaints were responded to as required by WCPL.</p> <p>Validation reports of real time noise monitoring are now conducted monthly and are provided in <b>Appendix 3F</b>.</p>	<p>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. Additional discussion of individual monitoring locations is provided below:</p> <ul style="list-style-type: none"> <li>At N14, N19, and N20, site-only LAeq noise levels were inaudible or less than 30 dB during all attended noise monitoring measurements; and</li> <li>At N6, N15, and N17, site-only LAeq noise levels were occasionally above 30 dB during attended noise monitoring, but always below the relevant impact assessment criterion.</li> </ul> <p>Long-term noise trend lines were largely constant or increased slightly.</p> <p><b>EIS Comparison:</b></p> <p>When comparable, measured noise levels were lower than predicted noise levels under corresponding meteorological conditions at all locations during all measurements, with a single exception. During the January 2021 measurement at N17 (Mogo Road), the measured site-only LAeq was 5 dB higher than predicted under calm conditions. However, the measured site-only LAeq was still 12 dB lower than the relevant criterion during this measurement. (Global Acoustics, March 2022) (<b>Appendix 3F</b>).</p>	<p>The Noise Management Plan was reviewed in June 2021 (Version 6.1) to include ML1795, update property ownership and update figures and text accordingly.</p> <p>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.</p> <p>Continue to implement the Noise Management Plan (NMP) in accordance Condition 5, Schedule 3 of SSD-6764.</p> <p>In 2021 there were approximately 783 hours of lost time (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.</p>
	LAeq (15 minute)	LAeq (15 minute)	LAeq (15 minute)	LA1 (1 minute)			
102	36	36	38	45			
Wollar Village – Residential <sup>5</sup>	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 <sup>6</sup>	40 (internal) When in use			-			
900 – St Laurence O’Toole Catholic Church <sup>6</sup>	40 (internal) When in use			-			

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

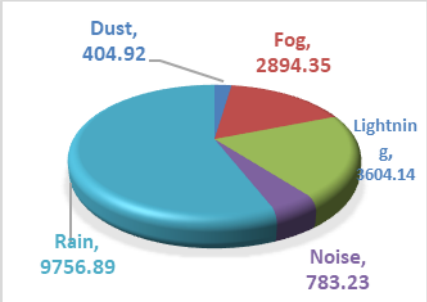
2) Day is defined as the period from 7 am to 6 pm Monday to Saturday and 8 am to 6 pm Sunday and Public Holidays.

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.



Factor	Value
Rain	9756.89
Dust	404.92
Fog	2894.35
Lightning	3604.14
Noise	783.23



### 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 2021 (inclusive of RAPCC) in March, July, November 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 2021 (Version 8.1) with amendments including revised disturbance footprint boundary in Pit 6, updating table of known sites and figures accordingly, status of BOAs 1-5 survey completed and updating Table 4 *Plan of Actions* and consultation.

During the 2021 review 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:

- Excavations at WCP 508 and 509;
- Inspections of four rock shelters in Pit 6 (WCP 475, 308, 476 and unrecorded shelter);
- Rock Hill Open Day (**Appendix 5**); and
- Castle Rock investigation of dung layer complete by CSIRO.

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 2021 WCPL did not exceed the performance indicators 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 2021 the HHMP (Version 5.1) was revised and updated to *included Section 4.7 Archival Reports for Wollar Churches and Wollar Buildings*, record of buildings demolished in Wollar during 2020 and revised disturbance footprint boundary in Pit 6.

### 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 OEHL, 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<sup>6</sup>.

A summary of the 2021 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 2021 biodiversity monitoring reports, prepared by Ecological Australia (ELA) and Biodiversity Monitoring Services, refer to **Appendix 5**.

Biodiversity monitoring was undertaken during Autumn and Spring under the methodology prescribed in the BMP. Monitoring was undertaken at established monitoring sites across the 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 (ELA, 2022a).

Vegetation monitoring was undertaken throughout all WCPL Management Domains. Most sites monitored in 2021 were assessed as being Moderate to Good with one site assessed as being Low (ELA, 2022a).

Landscape Function Analysis (LFA) monitoring was also undertaken within the Rehabilitation Areas and Reference Sites. Landscape Organisation Index (LOI) scores remained comparable to 2020 monitoring results, with R6 experiencing a substantial increase. Infiltration and nutrient cycling scores are consistently below the completion criteria with some sites exhibiting an overall declining trend. With the exception of R5, all rehabilitation sites monitored in 2021 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 (ELA, 2022a).

Fauna monitoring recorded a total species richness of 162 species, comprising of 126 birds, four (4) amphibian, six (6) reptiles, one (1) arachnid, thirteen (13) mammals and twelve (12) positively identified Microchiroptera (microbat) species across all Management Domains. Eight species (five bird species and three 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 2021 monitoring (ELA, 2022a).

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 (ELA, 2022a). A range of alternative methods are proposed for consideration (**Appendix 5**).

### **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, 2022).

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

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<sup>6</sup> Mine closure or rehabilitation domains are identified in the WCPL's MOP.

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).

The following summary details the results of automated monitoring over a 12-month period from January 2021 to December 2021, as well as concurrent monthly hand counts of bats exiting the workings. 2021 counts show that April numbers are an improvement on last year, but still lower than earlier years. June 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 (BMS, 2022).

Results suggest that monitoring of the colony at Slate Gully through nightly recording of echolocation calls provides a feasible means of monitoring use of the disused workings by the two microbat species. Mean monthly activity for the two species can be compared prior to mining taking place in adjacent areas with that post mining. As of December 2021, mining activity is approximately 550m from the adit. As the mine moves closer in 2022, will enable detection of any potential impacts to occupation/activity of the two cave dwelling microbat species. Images from monthly monitoring show the adit entrance has maintained integrity despite the nearby blasting in Pits 3 and 8 (BMS, 2022) (**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.

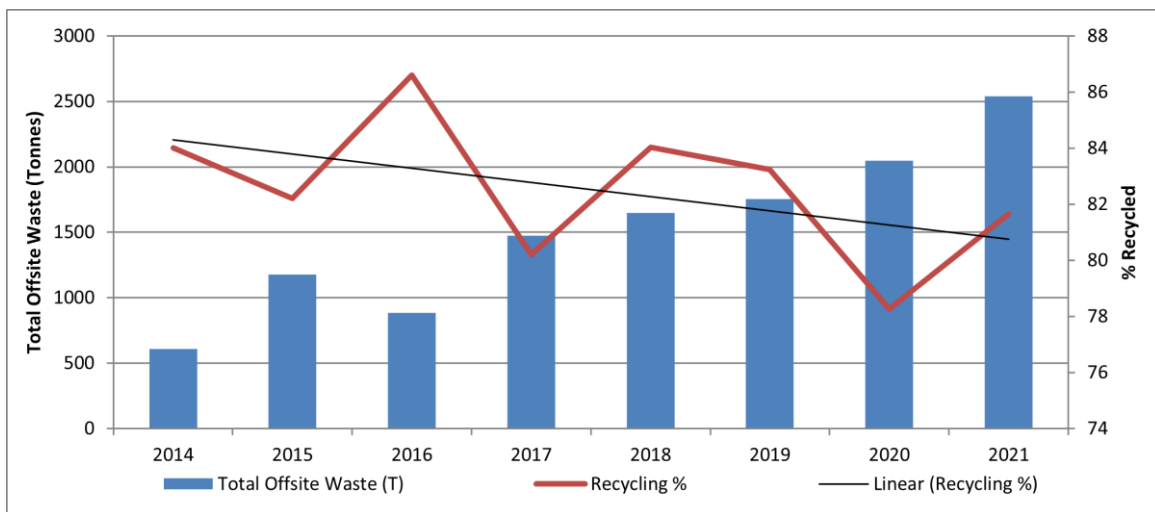
As required by Condition 58(f), Schedule 3 of SSD-6764, WCPL are required to report on waste management and minimisation (**Table 19 & Graph 11**) in the 2021 Annual Review. During the reporting period approximately 81% of the total waste removed from the Mine was recycled. **Appendix 3G** has the complete summary of waste statistics for the 2021 AR period. Approximately 283 tonnes of tyres were disposed of in-Pit during 2021, all of which were buried in Pit 6. WCPL are additionally permitted to dispose of building and demolition waste in-pit, in accordance with EPL 12425.

In 2021 there was no disposal of building and demolition waste from within the Mine, however six dilapidated, WCPL owned properties were demolished in 2021 and approximately 182 truckloads (12 -25 tonne truck capacities) of inert waste material was trucked to the Mine for disposal during 2021. Asbestos recovered from the properties in 2021 was removed and disposed by WCPL’s licensed contractor in accordance with all regulatory requirements.

**Table 19 Summary of Monthly Waste Statistics for 2021**

Totals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Totals
<b>Total Offsite Waste (T)</b>	139.6	122.6	266.2	199.9	240.2	147.5	149.5	196.3	392.5	201.7	299.1	182.5	<b>2537.3</b>
<b>Recycled Waste (T)</b>	120.4	96.76	249.8	171.4	217.1	111.8	112.9	156.9	230.0	171.3	273.2	160.2	<b>2071.7</b>
<b>Recycling %</b>	86.24	78.93	93.83	85.77	90.34	75.99	75.51	79.96	58.60	84.92	91.33	87.75	<b>81.65%</b>

**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 2021 AR period, which allows for the calculation of carbon dioxide (CO<sub>2</sub>) equivalent emissions. The primary source (approximately 80%) of greenhouse gas emissions at the Mine is due to the release of carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) during the combustion of diesel fuel during mining operations. Fugitive emissions of CH<sub>4</sub> and CO<sub>2</sub> from the coal seam as the coal is mined and CO<sub>2</sub> 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 2021 are presented in **Table 20**.

**Table 20 Estimated Wilpinjong Coal Mine Greenhouse Gas Emissions**

Year	ROM Coal (Mt)	Electricity Consumed (kWh)	Diesel Consumed (kL)	CO <sub>2</sub> -e Electricity Usage (t)	CO <sub>2</sub> -e Diesel Usage (t)	CO <sub>2</sub> -e Fugitive Emissions (t)	Total CO <sub>2</sub> -e Emissions (t)	Total CO <sub>2</sub> -e Emissions (t) Predicted (WEP) <sup>#</sup>
<b>2017</b>	13.6	29,929,870	32,976	25,141	89,356	12,809	127,306	167,977
<b>2018</b>	14.2	32,940,513	38,360	27,341	103,948	13,828	145,117	182,002
<b>2019</b>	15.1	32,037,969	43,647	26,272	118,270	12,980	152,522	180,302
<b>2020</b>	14.7	31,748,174	47,528	25,950	12,8788	12,636	167,375	176,408
<b>2021</b>	14.48	34,887,914	50,795	27,906	136,572	10,732	175,211	168,387 <sup>^</sup>

**Notes:** kWh = kilowatt hours and kL = kilolitre. \* A NSW default factor was used to calculate these values. <sup>#</sup> 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. <sup>^</sup>The WEP predictions for 2021 based on annual ROM of 12.44Mt, approximately 2Mt less than actual ROM tonnes for 2021.

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 (NO<sub>x</sub>), Sulfur Dioxide (SO<sub>2</sub>), Hydrogen Sulfide (H<sub>2</sub>S), 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 Mine has developed and implemented a Spontaneous Combustion Management Plan (Version 7.1) (SCMP) (**Table 7**) as Appendix 3 of the AQMP. The SCMP was reviewed in June 2021. As described in the SCMP there are areas of the mine prone to spontaneous combustions events. During 2021 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**) 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:

- Review the Mining Supervisor Inspection report to 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 (taking into consideration findings from the extensive Ambient Air Monitoring in Wollar, 2013 – 2018, as part of the removal of Keylah Dump); and
- Review the frequency of entire site thermal surveys, noting entire site thermal survey conducted 8 October 2021.

There were no reportable incidents as a result of spontaneous combustion in 2021. There were seventeen unverified odour complaints received during 2021 (**Section 9**).

Each of the odour complaints during 2021 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 2021.

### 7.1 Water Licences

**Table 21** presents the relevant entitlement volume for the consolidated licence, the estimated inflow or ‘take’ for 2020-21 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 2018-2021)**

Water Access License	Limit [ML/a]	2018-2019		2019-2020		2020-2021	
		WRM Inflow (2020)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2021)	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
Dewatering Bores		56.1		275.6*		0	
<b>TOTAL</b>		786	848	897	1,016	840	910

**Notes:** \*Volume of water pumped from dewatering bores [ML] for the water year 2019-20, refer to Section Error! Reference source not found. of the SLR Report.

**Table 22 Summary of WAL Held by WCPL**

WAL <sup>1</sup>	AL #	Water Source	Category	Entitlement <sup>2</sup>	Holder	Work Approval <sup>3</sup>	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:** <sup>1</sup>Water entitlement held under NSW *Water Management Act, 2000* is granted in perpetuity. <sup>2</sup>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.<sup>3</sup> Work Approvals only attract an expiry date, applications to extend Work Approvals due to expire will be undertaken in 2022.

## 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 2020 to 30 June 2021 is 3,121 ML/year. SLR completed a review of estimated groundwater take for the 2020/2021 Water Year (SLR, 2022c)(**Table 21**). The following summary is provided from SLR's (**Appendix 3D**) review:

- When annualised from a daily inflow value of 2.3 ML/day, the SLR (2021) March estimate for the 2019-2020 water year is about 840 ML/a;
- The SLR (2022) annualised inflow estimate is within the allocated licence volume for the 2020-21 water year
- The modelled estimate for groundwater take (SLR, 2020a) also indicates the predicted inflow falls beneath the licensed volume for the 2020-21 water year.
- Given the significantly higher than average rainfall though 2020-21 and groundwater level recovery in a number of coal measures monitoring bores future model updates incorporating this climatic data will improve confidence in model predictions.

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 2020/2021).

## 7.4 Water Management System

Water management activities were undertaken during the 2021 review period in accordance with the Mine's water management system outlined in the MOP and the WMP. 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
- Discharge of treated water via a water treatment facility to Wilpinjong Creek in accordance with EPL 12425.

## 7.5 Erosion and Sediment Control

An erosion and sediment control measures are described in the SWMP (**Table 7**) for the Mine. During the 2021 review 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 2021.

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 a number of periodic discharge events from LDP30 during 2021 in accordance with EPL12425. The maximum NTU results during discharge events was 37NTU with average 8 NTU. During discharge events the CWD turbidity value was less the turbidity value measured at the Wilpinjong Creek upstream (**Appendix 3A**).

WCPL propose to install a strategic clean water diversion or diversions (dependant on Pit 6 mining sequence) in Pit 6 in the north western area of Pit 6 to reduce surface water from undisturbed water catchments that will otherwise report into the Pit 6 disturbance footprint.

WCPL commenced revegetation of the visual bund along the northern boundary of the Mine. Pit 7 and Pit 8 visual bund were hydroseeded in 2020 with native seed (Yellow Box Community). Other sections of the visual bund will be re-vegetated as required based upon inspections.

## 7.6 Surface Water

In June 2021, WCPL completed a review of the SWMP (Version 5) included revised disturbance footprint in Pit 6, inclusion of new EPL Point 30, updated TARPs, macroinvertebrate monitoring recommendation and relocation of SC1. Include summary from surface water trigger and flow analysis by SLR. At the time of preparing this 2021 Annual Review the SWMP (Version 5) was still pending approval. A summary of the surface water monitoring program is presented in **Table 23**.

A summary of the surface water monitoring results assessed against each relevant water quality impact criteria from the SWMP is provided in **Table 25**. Further water monitoring results for 2021 review 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 this section.



Table 23 Surface Water Monitoring Program

Monitoring Locations		Frequency	Parameters <sup>1</sup>
Wilpinjong Creek	Licenced Discharge Point No. 24	Continuous (during discharge)	Volume of water discharged <sup>6</sup> , EC and pH
		Weekly (during discharge)	Oil & Grease and TSS <sup>7</sup>
	WIL-U, WIL-U2, WIL-PC, WIL-NC, WIL-D and WIL-D2 <sup>2</sup>	Monthly	Field pH and EC, turbidity <sup>3</sup> , and SO <sub>4</sub>
		Quarterly <sup>^</sup>	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	WILGSU and WILGSD (gauging stations) <sup>2</sup>	Continuous	Flow rate, pH, EC and temperature
		Monthly	Field pH and EC, turbidity <sup>3</sup> , and SO <sub>4</sub>
		Following significant rainfall events <sup>4</sup>	pH, EC, TDS, TSS and sulphate
	WC1, WC2, WC3, WC4, WC5, WC6, WC7, WC8 <sup>5</sup>	Annually	Stream health monitoring
Forty-nine survey points along Wilpinjong Creek <sup>5</sup>	Annually	Channel stability monitoring (photo-points, description, stability)	
Cumbo Creek	CC1, CC2 and CC3 <sup>2</sup>	Monthly	Field pH and EC, turbidity <sup>3</sup> , and SO <sub>4</sub>
		Quarterly <sup>^</sup>	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	CC3 <sup>2</sup>	Following significant rainfall events <sup>4</sup>	pH, EC, TDS, TSS and sulphate
	CCGSU and CCGSD (gauging station) <sup>2</sup>	Continuous	Flow rate, pH, EC and temperature
		monthly	Field pH and EC, turbidity <sup>3</sup> , and SO <sub>4</sub>
		Following significant rainfall events <sup>3</sup>	pH, EC, TDS, TSS and sulphate
	CC1, CC2 <sup>5</sup>	Annually	Stream health monitoring
Nine survey points along Cumbo Creek <sup>5</sup>	Annually	Channel stability monitoring	
Wollar Creek	WOL 1 and WOL 2 <sup>2</sup>	Monthly	Field pH and EC, turbidity, and SO <sub>4</sub>
		Quarterly <sup>^</sup>	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
	WO1, WO2, WO3 <sup>5</sup>	Annually	Stream health monitoring
Slate Gully Creek	SGC_1 <sup>2</sup>	Monthly	Field pH and EC, turbidity, and SO <sub>4</sub>
		Quarterly	Copper, Zinc, Iron, Aluminium, Nickel, Manganese, Barium, Strontium, Lead, Arsenic and Selenium
		Following significant rainfall events <sup>4</sup>	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 24 Surface Water Performance

Location		Approved Criteria <sup>1, 2</sup>	Performance During the Reporting Period <sup>1, 2</sup>	Trend/Key Management Implications	Implemented/proposed Management Actions
<b>Wilpinjong Creek Sites:</b> <ul style="list-style-type: none"> <li>• WIL_NC</li> <li>• WIL_D</li> <li>• WIL_D2</li> </ul>	EC (µS/cm)	<b>3,440 µS/cm</b> For 3 consecutive readings	No exceedance of triggers	<p>Analysis of the available surface water quality data in 2021 indicates periodic observable impacts from WCM mining operations into the adjacent creek lines, with exceedances of water quality monitoring criteria for Cumbo Creek downstream (lower pH) and Wilpinjong Creek downstream (upper pH) monitoring sites. The following points summarise key findings from the investigation of both trigger exceedances (SLR, 2022b):</p> <ul style="list-style-type: none"> <li>• pH observations exceeding the lower trigger level at downstream Cumbo Creek are consistent with observations for the available monitoring record (from 2014). The observations indicate near-neutral pH, and are unlikely to pose a threat to the health of the aquatic ecosystem.</li> <li>• pH observations exceeding the upper trigger level for downstream Wilpinjong Creek may be related to the pH of water discharged from the RO Plant (LDP24). The RO plant was observed to discharge within defined EPL limits in 2021, but the upper bound of these limits is higher (pH 8.5) than the upper pH limit at downstream Wilpinjong Creek (pH 7.7).</li> </ul> <p>The following recommendations are proposed (SLR, 2022b):</p> <ul style="list-style-type: none"> <li>• Review the lower pH trigger level at downstream Cumbo Creek to evaluate the validity of the defined trigger level. This should consider observations used to develop the trigger level (2004-09) and potential sources of acid-forming runoff in the Cumbo Creek catchment caused by WCM mining/disturbance.</li> <li>• Revise the pH trigger levels for downstream Wilpinjong Creek to reflect the EPL discharge limits while discharge from LDP24 is occurring. Outside of this, the current trigger levels should continue to be used. Future data reviews should also consider the real-time pH monitoring from LDP24 to establish its likely influence on Wilpinjong Creek water quality.</li> <li>• 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 again trigger levels.</li> </ul>	<p>WCPL will continue to implement the approved WMP and SWMP in accordance with Condition 30, Schedule 3 of SSD-6764.</p> <p>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.</p> <p>This review will consider the recommendations made by SLR in their assessment of the 2021 Annual Review for surface water.</p> <p>Continued implementation of the Surface Water Management Measures (Section of the SWMP) to comply with the water management performance measures (<b>Appendix 3C</b>) in Table 6 of the Development Consent SSD-6764.</p>
	Turbidity (NTU)	<b>24 NTU</b> For 3 consecutive readings	No exceedance of triggers		
	pH (lower)	<b>6.9 pH</b> For 3 consecutive readings	No exceedance of triggers		
	pH (upper)	<b>7.7pH</b> For 3 consecutive readings	Triggers exceeded		
<b>Cumbo Creek (Downstream) Site:</b> <ul style="list-style-type: none"> <li>• CC1</li> </ul>	EC (µS/cm)	<b>7,510 µS/cm</b> For 3 consecutive readings	No exceedance of triggers	<p>The following recommendations are proposed (SLR, 2022b):</p> <ul style="list-style-type: none"> <li>• Review the lower pH trigger level at downstream Cumbo Creek to evaluate the validity of the defined trigger level. This should consider observations used to develop the trigger level (2004-09) and potential sources of acid-forming runoff in the Cumbo Creek catchment caused by WCM mining/disturbance.</li> <li>• Revise the pH trigger levels for downstream Wilpinjong Creek to reflect the EPL discharge limits while discharge from LDP24 is occurring. Outside of this, the current trigger levels should continue to be used. Future data reviews should also consider the real-time pH monitoring from LDP24 to establish its likely influence on Wilpinjong Creek water quality.</li> <li>• 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 again trigger levels.</li> </ul>	<p>WCPL will continue to implement the approved WMP and SWMP in accordance with Condition 30, Schedule 3 of SSD-6764.</p> <p>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.</p> <p>This review will consider the recommendations made by SLR in their assessment of the 2021 Annual Review for surface water.</p> <p>Continued implementation of the Surface Water Management Measures (Section of the SWMP) to comply with the water management performance measures (<b>Appendix 3C</b>) in Table 6 of the Development Consent SSD-6764.</p>
	Turbidity (NTU)	<b>77 NTU</b> For 3 consecutive readings	No exceedance of triggers		
	pH (lower)	<b>7.5 pH</b> For 3 consecutive readings	Triggers exceeded		
	pH (upper)	<b>8.2 pH</b> For 3 consecutive readings	No exceedance of triggers		

**Note:** <sup>1</sup> 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. <sup>2</sup> 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 WCM gauging stations in 2021 indicated elevated flow conditions at Cumbo Creek and Wilpinjong Creek sites in response to above average rainfall conditions, with continued influence of discharge from the reverse osmosis (RO) treatment plant on flow at the Wilpinjong Creek downstream gauging station. Water quality data from continuous monitoring (pH, electrical conductivity (EC)) was consistent with previous wet periods, where sites have recorded flow most of the monitoring period. There is no evidence of a WCM mining effect in the gauging station data (SLR, 2022b).

Table 25 Summary of Surface Water Monitoring Result 2021

SW Monitoring Point	EC (µS/cm)			pH			SO <sub>4</sub> (mg/L)			Turbidity (NTU)		
	Min	Max	Ave.	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Summary of Surface Water Monitoring Result 2021												
CC1	179.0	4880.0	2802.8	7.0	7.9	7.6	14.0	1740.0	884.9	2.1	366.0	80.4
CC2	3080.0	7870.0	5356.4	7.8	8.2	8.0	811.0	3000.0	1938.3	0.5	2.8	1.0
CC3	2090.0	3310.0	2508.6	8.3	8.7	8.4	593.0	1130.0	756.6	0.8	18.3	7.0
WIL (U)	258.0	511.0	391.8	6.9	7.2	7.0	6.0	52.0	24.2	7.5	19.3	12.7
WIL (U2)	321.0	582.0	425.6	6.8	7.2	7.0	10.0	28.0	19.9	8.2	18.6	12.7
WIL (PC)	304.0	633.0	490.6	6.8	7.2	7.0	7.0	32.0	19.4	10.1	1700.0	173.5
WIL (NC)	343.0	609.0	477.8	6.8	7.7	7.3	51.0	89.0	66.5	1.1	164.0	35.1
WIL (D)	374.0	1330.0	606.9	7.2	7.7	7.5	34.0	317.0	102.3	1.6	13.3	5.1
WIL (D2)	400.0	1340.0	600.3	7.3	8.0	7.7	40.0	319.0	107.4	1.6	8.8	3.6
WOL1	571.0	1670.0	1003.5	7.9	8.4	8.1	63.0	293.0	153.8	1.0	12.4	3.3
WOL2	469.0	2910.0	1526.8	7.5	8.0	7.9	51.0	471.0	241.9	0.8	11.6	3.2
SGC_1^	206	206	206	8.0	8.0	8.0	11	11	11	1.8	1.8	1.8

Notes: ^ One sample in 2021

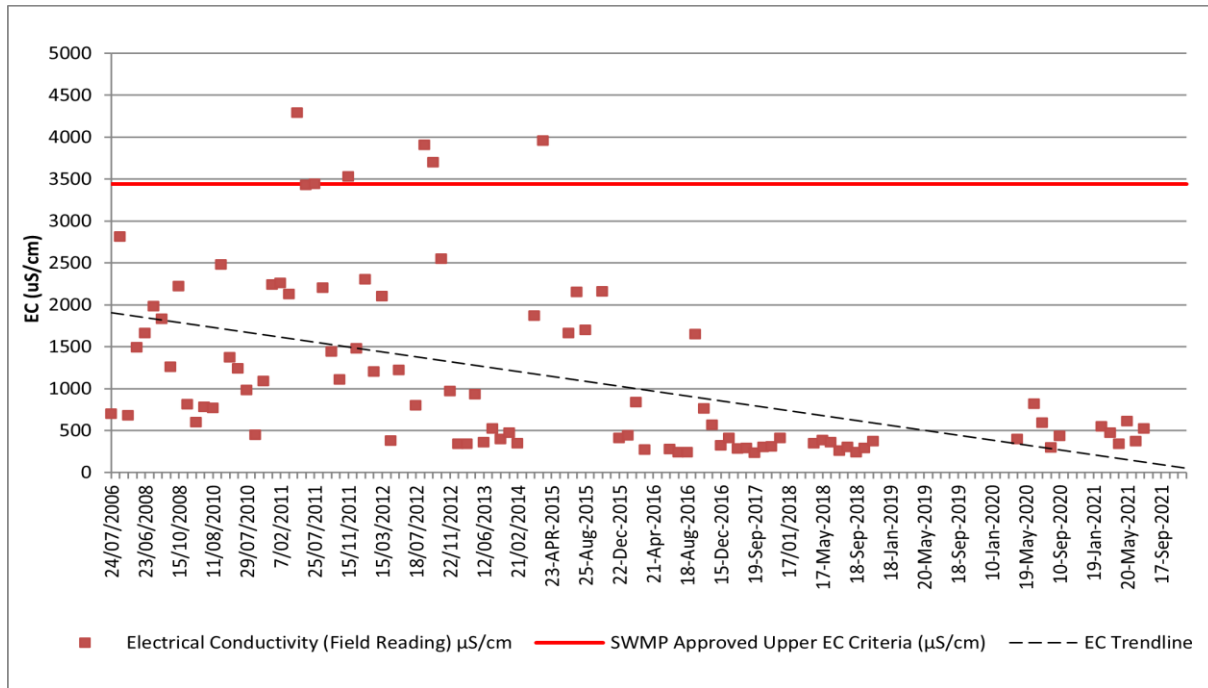
## 7.7 Harvestable Rights

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 2021 and the inclusion of Pit 6 and development of Pit 8 (Table 26). The harvestable rights areas and the rules for capturing rainfall runoff in those areas are specified in Harvestable Rights Order.

Table 26 Harvestable Rights Position 2021

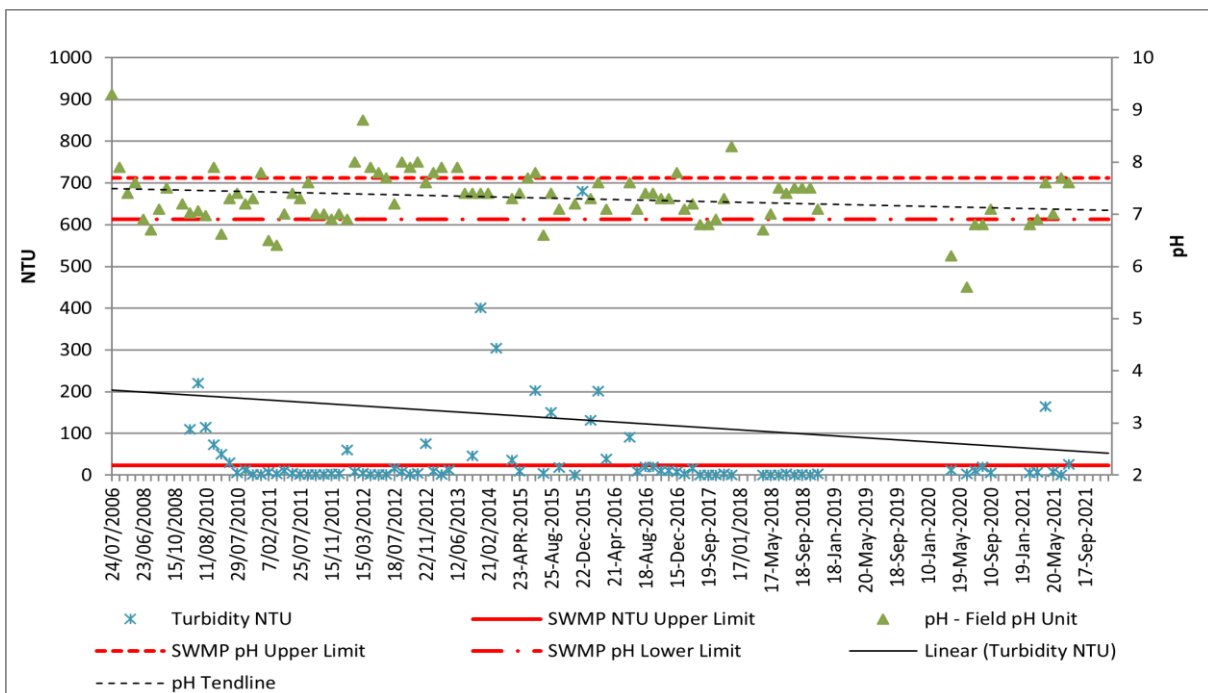
Total Area (ha)	Exempted			Included		Hydrology		Licences		Calculations		
	Undisturbed Catchment diverted externally (ha)	WCPL Project disturbance area limit (ha)	Undisturbed catchment draining internally (ha)	Disturbed catchment area downstream of 3rd order Stream (ha)	Farm Dams (unlicensed) Volume (ML)	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)
20400	314	3042	2010	0	256.0	0.5868	0.1067	150	1428	1514	-86	64

Graph 12 Long-term EC Water Quality Results at WIL\_NC



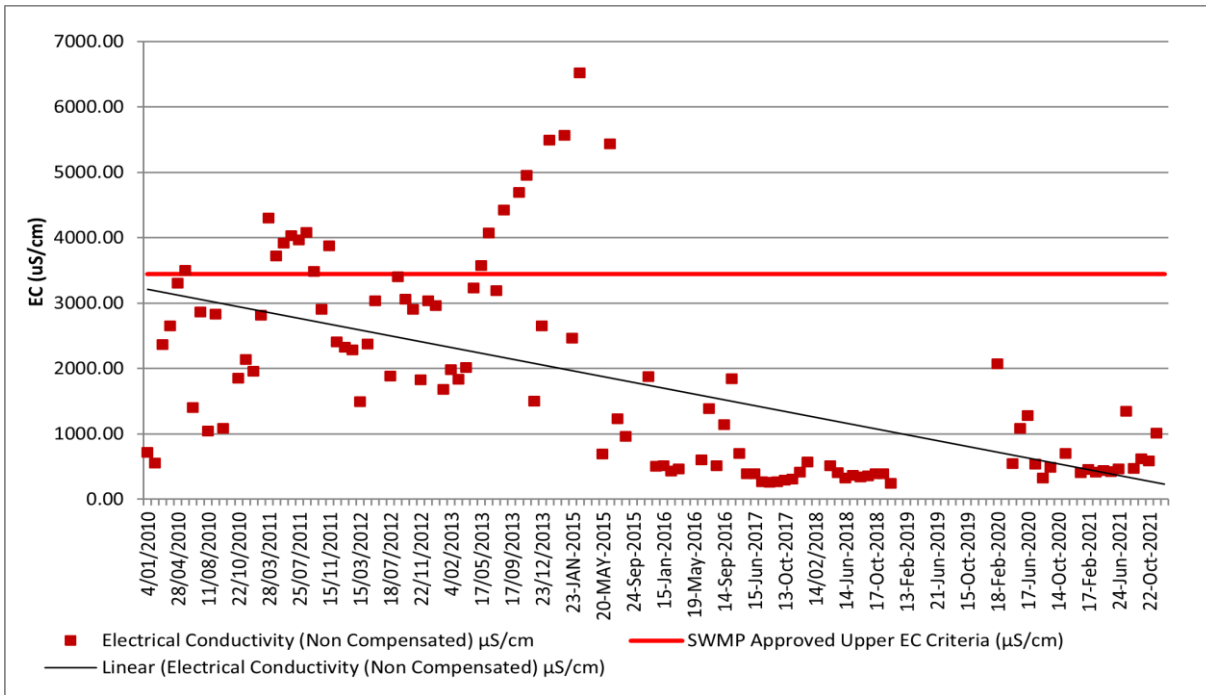
**Notes:** During the 2021 monitoring period, EC observations at the Wilpinjong Creek Downstream monitoring sites are well below the 80th percentile baseline as well as below the trigger level (3440 µS/cm). Overall, the observations seem to reach equilibrium at around 500 µS/cm as the rainfall trend increases in 2021 and the RO plant is discharged from more continuously (SLR, 2022). No available water samples at WIL\_NC during the 2019 reporting period were available for sampling due to the prolonged drought conditions.

Graph 13 Long-term pH & NTU Water Quality Results at WIL\_NC



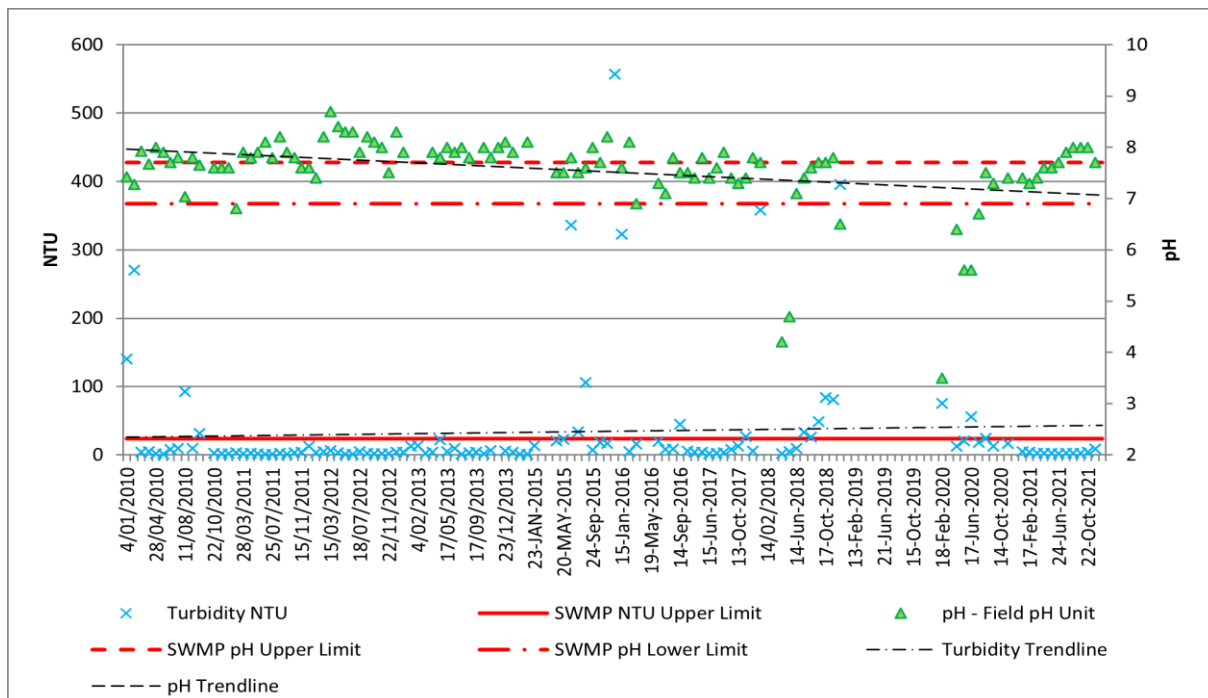
**Notes:** Elevated pH results towards trigger values in June and July. No further samples available for August to December 2021 due to safe access issues to water monitoring site. During 2021, turbidity observations generally range from 10 - 200 NTU with few outliers, again showing connectivity of the sites during periods of above average rainfall and flow (SLR, 2022). No available water samples at WIL\_NC during the 2019 reporting period were available for sampling due to the prolonged drought conditions.

Graph 14 Long-term EC Water Quality Results at WIL\_D2



**Notes:** During the 2021 monitoring period, EC observations at the Wilpinjong Creek Downstream monitoring sites are well below the 80th percentile baseline as well as below the trigger level (3440 µS/cm). Overall, the observations seem to reach equilibrium at around 500 µS/cm as the rainfall trend increases in 2021 and the RO plant is discharged from more continuously (SLR, 2022). No available water samples at WIL\_D2 during the 2019 reporting period were available for sampling due to the prolonged drought conditions.

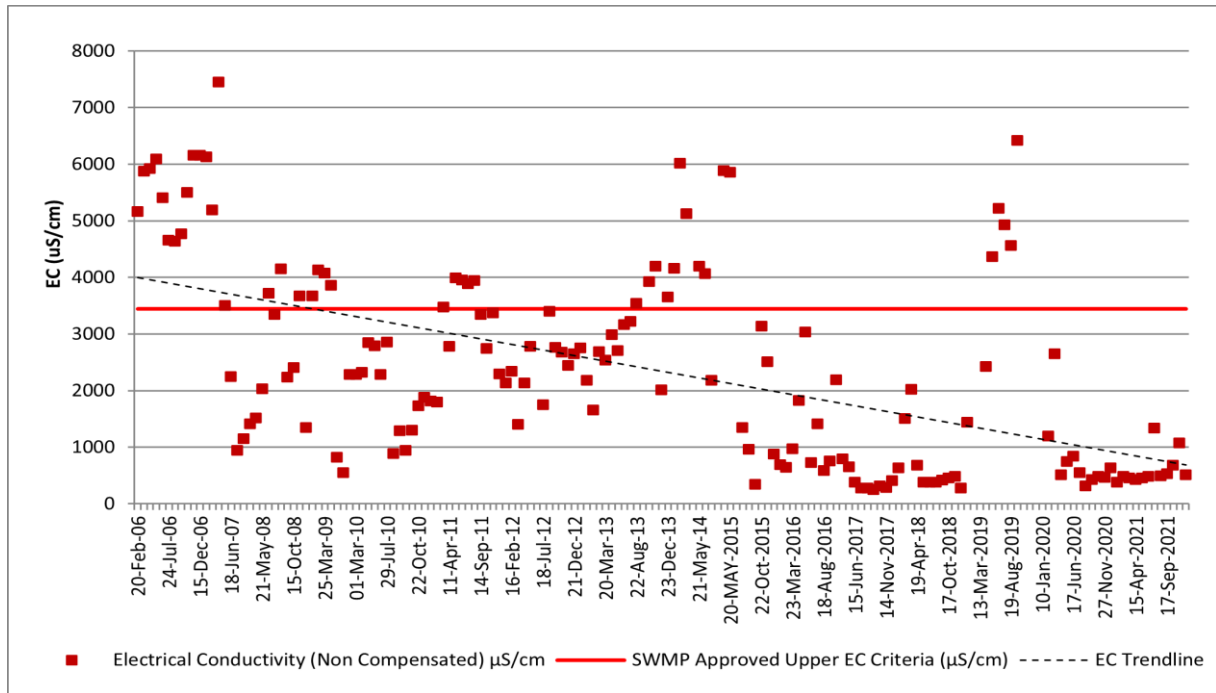
Graph 15 Long-term pH & NTU Water Quality Results at WIL\_D2



**Notes:** During 2021, turbidity observations at Wilpinjong Creek Downstream monitoring sites are generally below the 80th percentile baseline (28 NTU) and trigger level (24 NTU) with 4 outlier observations for WIL-NC and WIL-GS-D above the trigger level in 2021. Three consecutive readings were not observed above the trigger level at any site in 2021 (SLR, 2022).

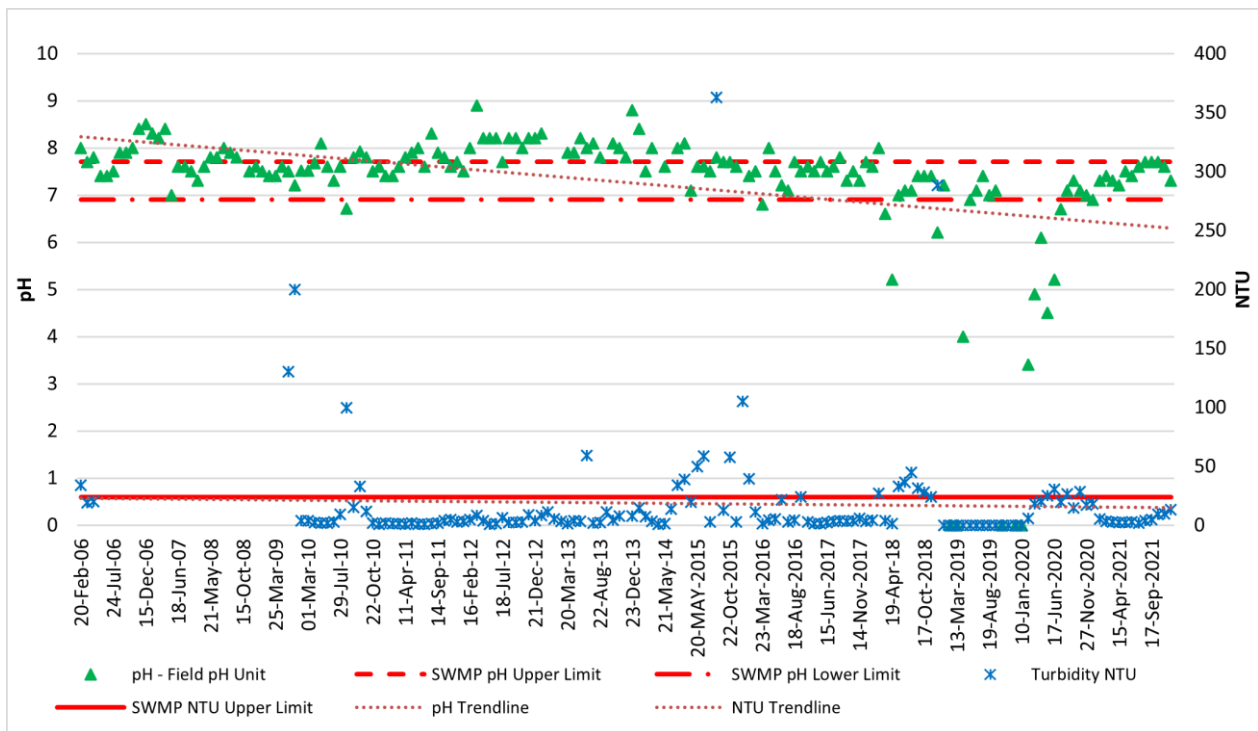
During 2021, pH observations at Wilpinjong Creek Downstream monitoring sites are within the trigger level bounds at the beginning of the year, before increasing to values above the upper trigger between June and October at both WIL-GS-D and WIL-D2 (four consecutive observations at each site). A similar trend was not observed at Wilpinjong Creek Upstream monitoring sites from June to October (Section 4.1.1.3), therefore breaching the upper pH trigger level as defined in the SWMP (SLR, 2022). No available water samples at WIL\_D2 during the 2019 reporting period were available for sampling due to the prolonged drought conditions.

Graph 16 Long-term EC Water Quality Results at WIL\_D



**Notes.** During the 2021 monitoring period, EC observations at the Wilpinjong Creek Downstream monitoring sites are well below the 80th percentile baseline as well as below the trigger level (3440 µS/cm). Overall, the observations seem to reach equilibrium at around 500 µS/cm as the rainfall trend increases in 2021 and the RO plant is discharged from more continuously (SLR, 2022).

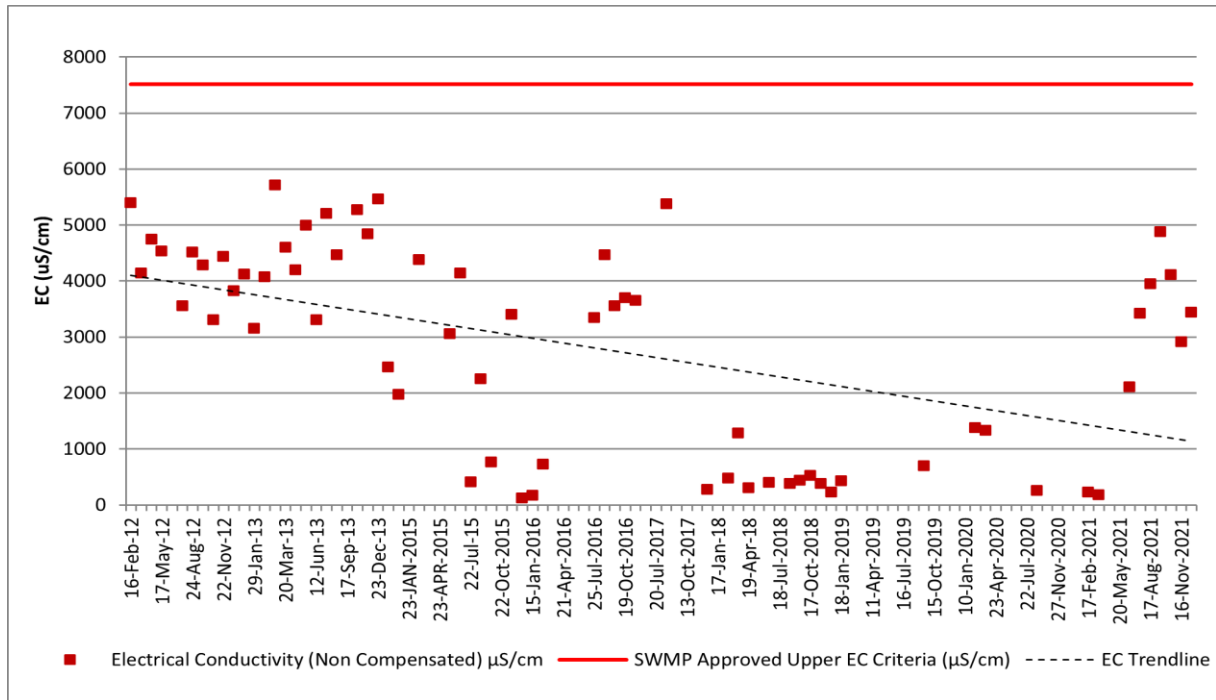
Graph 17 Long-term pH & NTU Water Quality Results at WIL\_D



**Notes:** Elevated pH results towards trigger values in July to October, however no exceedance of pH trigger in 2021.

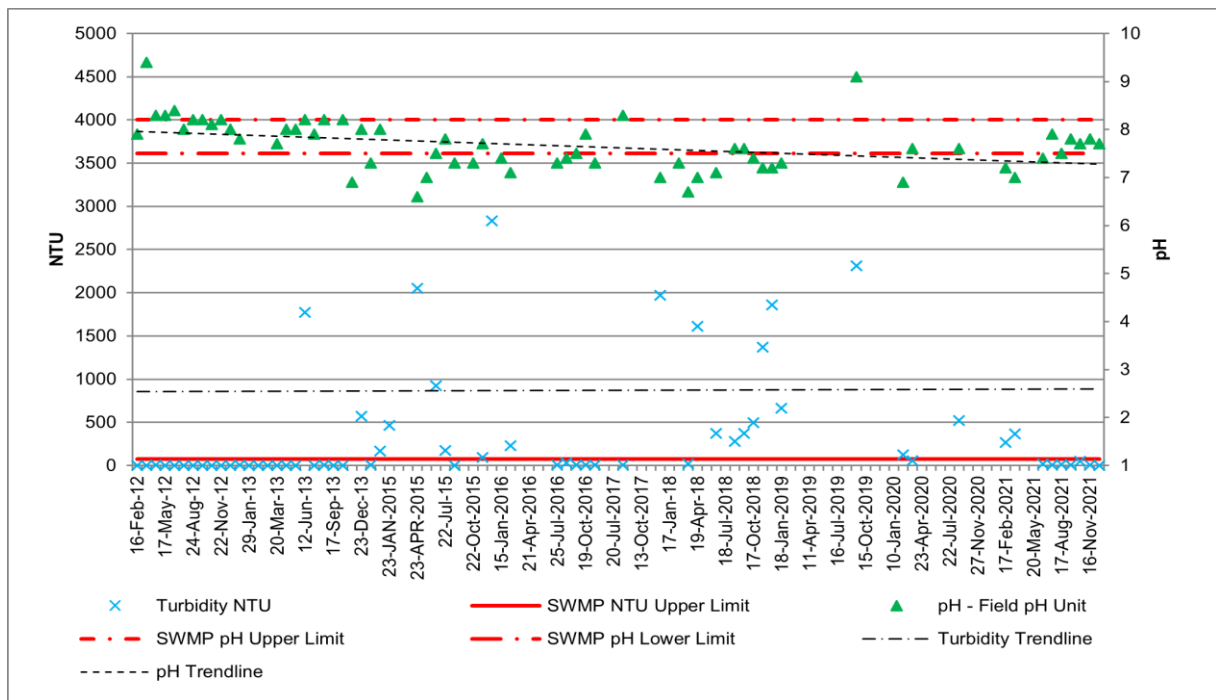
During 2021, turbidity observations at Wilpinjong Creek Downstream monitoring sites are generally below the 80th percentile baseline (28 NTU) and trigger level (24 NTU) with 4 outlier observations for WIL-NC and WIL-GS-D above the trigger level in 2021. Three consecutive readings were not observed above the trigger level at any site in 2021 (SLR, 2022).

Graph 18 Long-term EC Water Quality Results at CC\_1



**Notes:** During 2021, EC observations at Cumbo Creek Downstream monitoring sites are well below the trigger level (7510 µS/cm) with reading between <1000 and 5000 µS/cm (SLR, 2022).

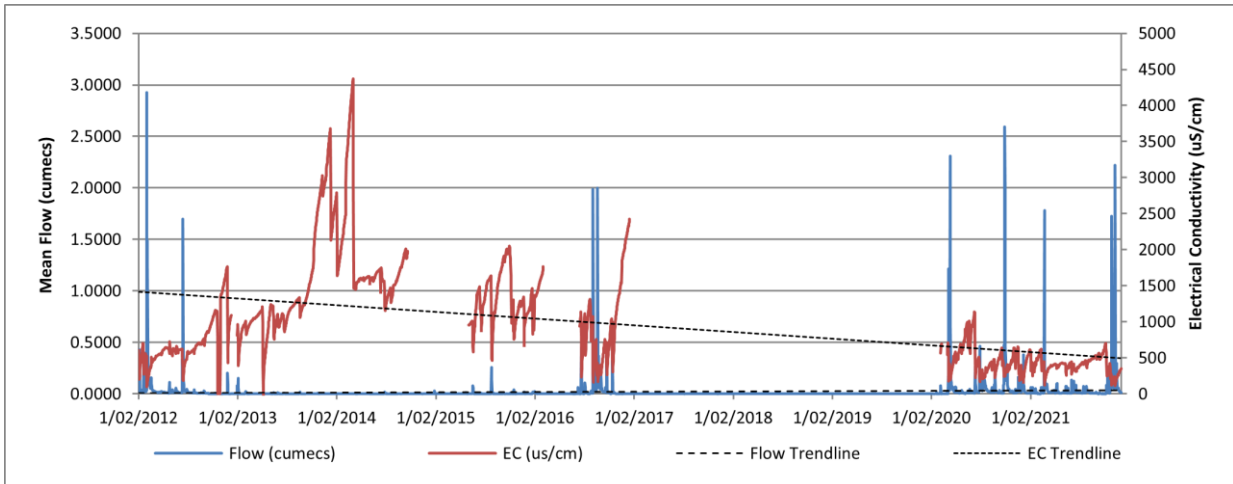
Graph 19 Long-term pH & NTU Water Quality Results at CC\_1



**Notes:** No exceedance of the trigger level was recorded during 2021 as three consecutive observations above the trigger level are required at CC-1. Both Wilpinjong Creek and Wollar Creek downstream sites were generally below 10 NTU during 2021 (SLR, 2022).

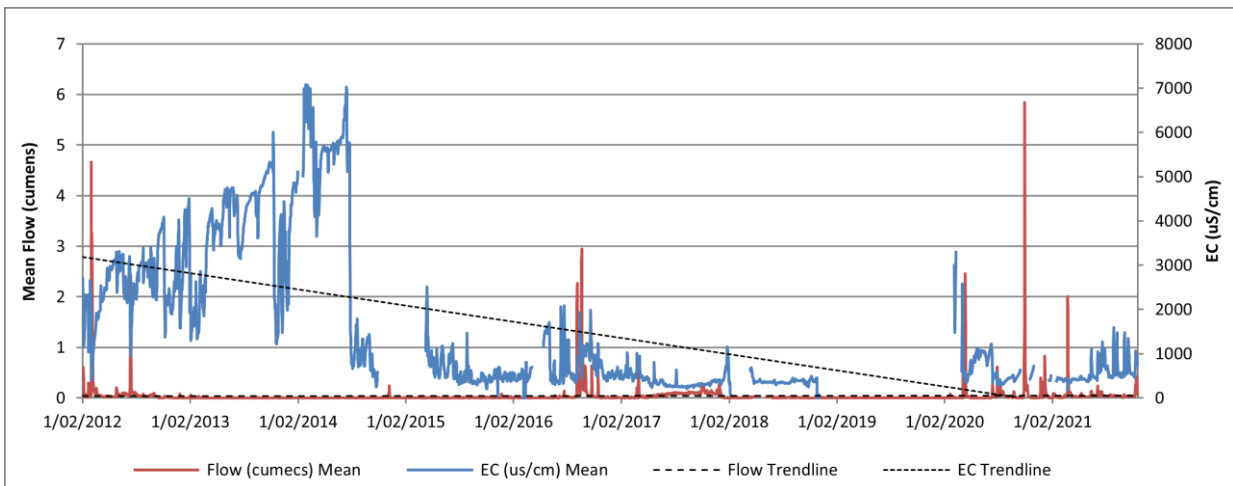
Early 2021 (to June) saw all monitoring sites CC-1, CC-1 (30m up) and CC-GS-D below the minimum trigger level at Cumbo Creek downstream sites, consistent with observations from 2014-2020 (approximately pH 7.25). Observations from June to December 2021 indicate an increase of approximately 0.5 pH units to pH 7.75, with a similar increase of approximately 0.5 pH units is observed at Cumbo Creek Upstream sites (from pH 7.75-8.2) from March to June 2021. A pH trigger exceedance was recorded in 2021 as more than three consecutive observations (Feb – June) were below the lower pH trigger level. Observations during this time were pH 7.1-7.4 (SLR, 2022).

Graph 20 Gauging Station Wilpinjong Creek Upstream Long Term Trends



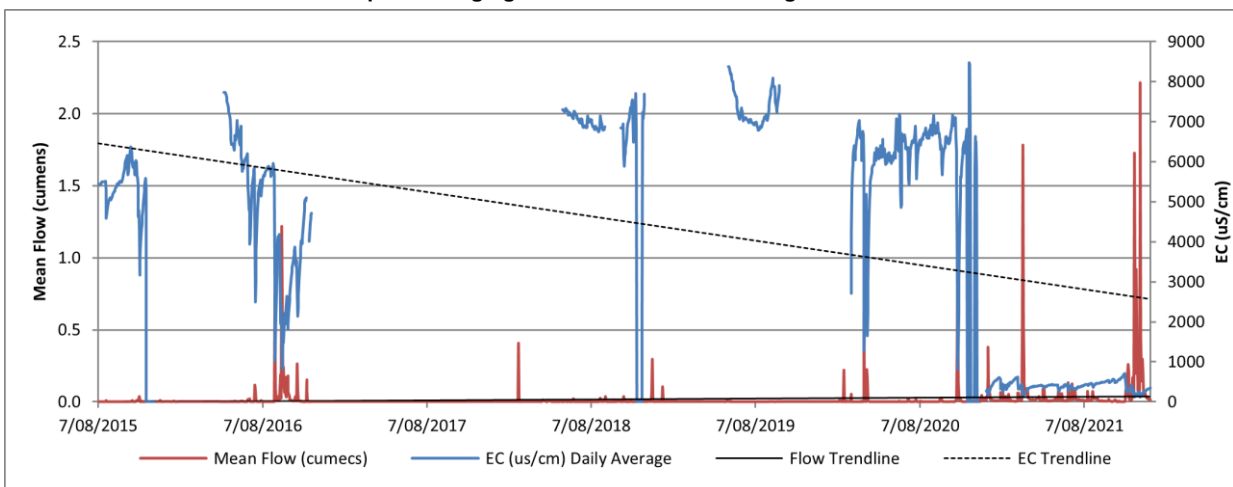
**Notes:** The flow trend is observed to decline for the period of below average rainfall from mid-2012 to mid-2015 as well as the period of below average flow from early 2017 through to the end of 2019. Response to rainfall events in 2021 is observed at WILGSU, with similar flow volumes and response to rainfall as events observed in 2012 and 2016 (SLR,2022).

Graph 21 Gauging Station Wilpinjong Creek Downstream Long Term Trends



**Notes:** Above average rainfall conditions and consistent discharge from the RO Plant in 2021 has resulted in consistent above average flow conditions at WILGSD (SLR,2022).

Graph 22 Gauging Station Cumbo Creek Long Term Trends



**Notes:** As identified in the initial flow review, CCGSU shows a good relationship with the rainfall trend for the entire period of record (2015 to 2021) (SLR,2022).



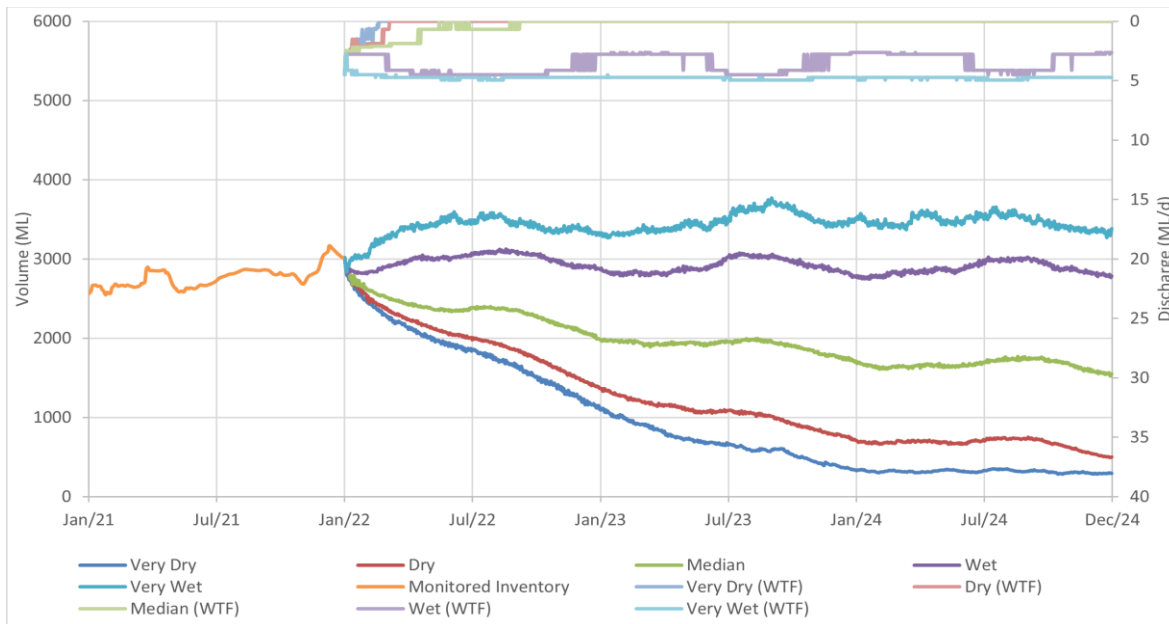
## 7.8 Site Water Balance

A Site Water Balance (SWB) (**Table 7**) has been prepared for the Mine. In June 2021 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 2021 Annual Review the SWB (Version 5) was still pending approval.

WCPL have developed and continue to maintain a water balance simulation model. 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.

WCPL engaged SLR to review and update WCPL's water balance model (WBM) to capture changes to the site water catchments and management system during 2021 and calibrate the WBM using monitoring data collected up to the end of December 2021. For further details refer to the complete report in **Appendix 3C**. Model simulated volumes have been forecast for the period 1 January 2022 to 31 December 2024. 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 2022 to 31 December 2024 through varying climatic conditions (SLR, 2022a).

**Figure 3 Forecast Water Inventory 2022-2024**



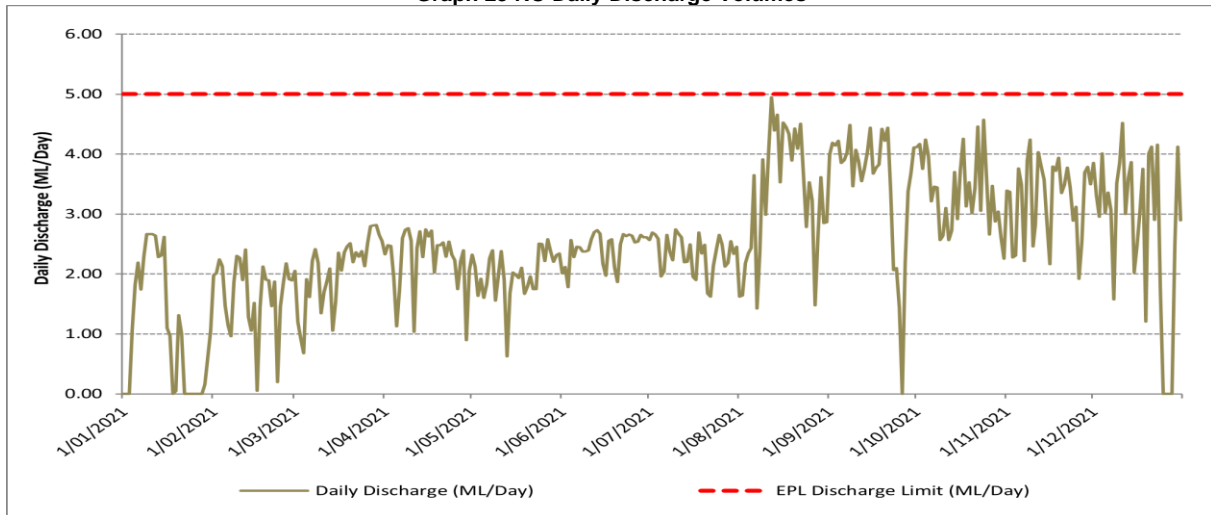
## 7.9 Water Treatment Facility

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

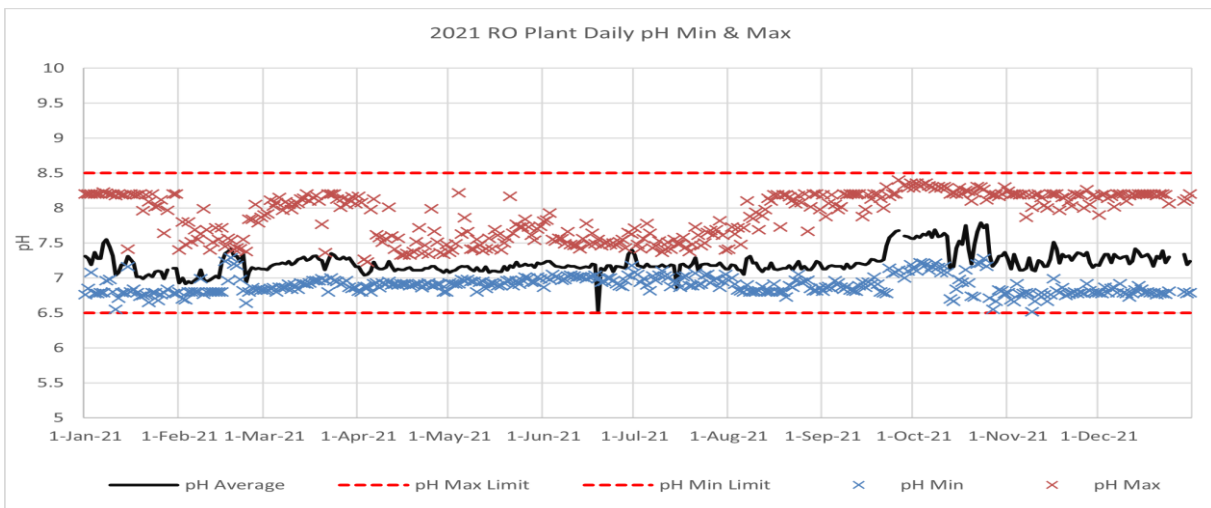
- Electrical conductivity (EC) not to exceed 500  $\mu\text{S}/\text{cm}$  (continuous monitoring);
- Oil and grease (O&G) not to exceed 10mg/L (grab sample weekly during any discharge);
- pH range of 6.5 to 8.5 (continuous monitoring); and
- Total suspended solids (TSS) not to exceed 50mg/L (grab sample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

During 2021 WCPL complied with EPL water quality and quantity limits for LDP24 (**Graphs 23 to 26**).

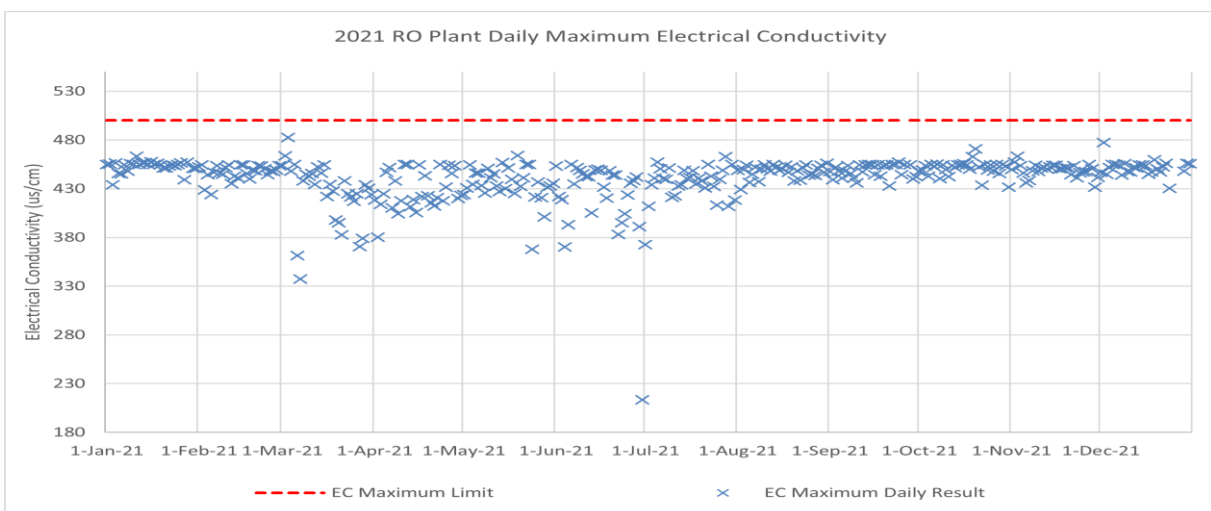
Graph 23 RO Daily Discharge Volumes



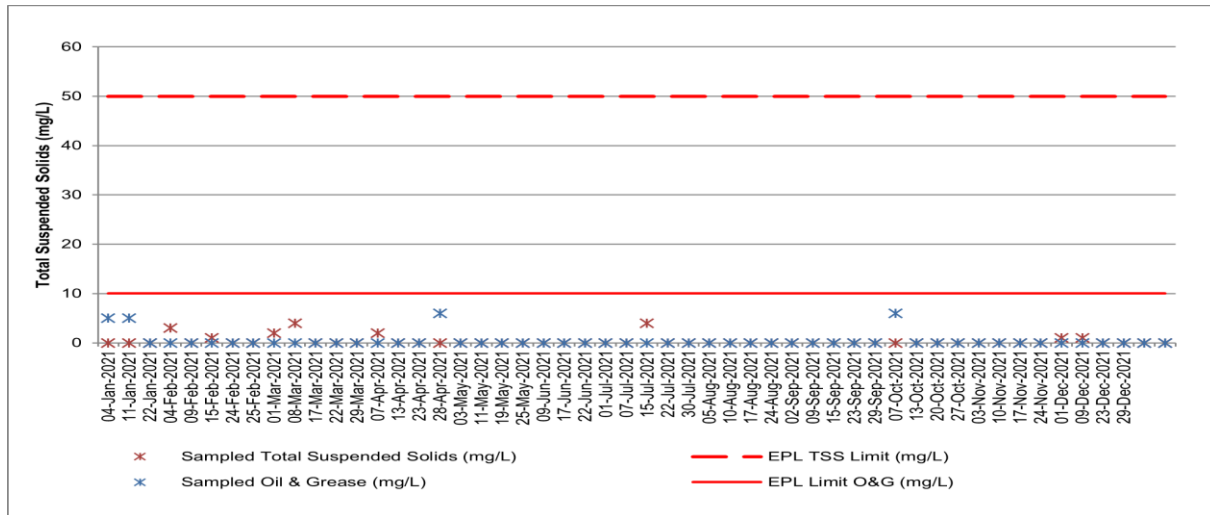
Graph 24 RO Daily pH



Graph 25 RO Daily EC



Graph 26 RO Daily TSS & Oil and Grease



## 7.10 Stream Health & Channel Stability Monitoring

### Channel Stability Monitoring

In accordance with the SWMMP, channel stability monitoring is undertaken along sections of Wilpinjong and Cumbo Creeks. Channel stability monitoring (CSM) was undertaken in 2021 by ELA (**Appendix 3C**) to provide an assessment of overall riparian stability and health within the Wilpinjong Coal Mine (WCM) and surrounds. Monitoring was undertaken across a total of 59 permanent monitoring locations – 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 2021 were largely improved or consistent with previous years, indicating the unchanged nature of the target creeks. For Wilpinjong Creek, BEHI ratings improved at 19 sites, remained unchanged at 28 sites and declined at two 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. An increase in vegetation cover was also observed in 2020, which was the main cause for improvement in BEHI scores at most sites.

Identified historical erosion points were monitored in 2021, with most sites experiencing minor active erosion in 2021. The 2021 CSM program was undertaken following above average rainfall in the preceding six to 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 were multiple rainfall events that exceeded the 1 in 5-year rainfall event generally accepted as likely to cause erosive scouring, including rainfall events on the 1 February and 7 November.

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 2021 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.

## Stream Health Monitoring

Stream health monitoring (SHM) was undertaken during spring 2021 by ELA (**Appendix 3C**), within the WCM surrounding catchments. A total of eleven (11) permanent sites were monitored along Wilpinjong, Wollar and Cumbo creeks, as well as two control sites located along Barigan Creek. 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 two years of above average rainfall. Most sites recorded mid-range scores, typical of catchments in the region.

Water quality results were recorded across various parameters and remain largely consistent with previous years. Parameters were outside Australian and New Zealand Environmental and Conservation Council (ANZECC) guidelines at most sites for dissolved oxygen (DO) and electrical conductivity (EC). 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 rather than mining operations are the primary influence on water quality in the catchments surrounding the WCM.

Across all monitoring sites, a total of 13 macroinvertebrate Orders and 62 Families were recorded. Stream invertebrate grade number average level (SIGNAL2) scores increased in 2021, showing continued improvement from 2020, 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 three sites, indicative of severely disturbed systems. The overall temporal and spatial consistency of these macroinvertebrate results indicate that historical disturbances 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 2021, the GWMP (Version 5) was updated to include disturbance footprint boundary in Pit 6, revised groundwater monitoring network Table 7 and Table 8, revised monitoring figure and revised TARPs. Approval of the revised GWMP (Version 5) was pending at the time of preparing the 2021 Annual Review.

A summary of the groundwater monitoring program is presented in **Table 27**. A summary of the groundwater monitoring results against applicable groundwater triggers is provided in **Table 28**. A summary of the groundwater monitoring results for 2021 review 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 27 Groundwater Monitoring Program**

	Monitoring Locations	Frequency	Parameters <sup>1,2</sup>
<b>Open Cut Operations</b>	Main pit sump(s)	Monthly	Volume of water extracted.
		Quarterly	pH, EC, TDS, Na, K, Mg, Ca, Cl, HCO <sub>3</sub> , CaCO <sub>3</sub> , SO <sub>4</sub> and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
<b>Water Supply Bores<sup>3</sup></b>	GWs10, GwS11, GWs12, GWs14, GWs15	Monthly (During Extraction)	Water level, field pH and EC. Volume of water extracted.
<b>Alluvial Bores</b>	GWa10, GWa11, GWa12, GWa14, GWa15, GWa16, GWa22, GWa32	12 Hr (logger)	Water level, Pressure, Temperature
	GWa1, GWa2, GWa3, GWa4, GWa5, GWa6, GWa7 <sup>5</sup> , GWa8 <sup>5</sup> , GWa9, GWa10, GWa11, GWa12, GWa14, GWa15, GWa16, GWa22, GWa32, GWa33 <sup>5</sup>	Monthly	Water level, temperature field pH and EC.
		Quarterly	TDS, Na, K, Mg, Ca, Cl, HCO <sub>3</sub> , CaCO <sub>3</sub> , SO <sub>4</sub> and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
<b>Coal Measures Bores</b>	GWc10, GWc11, GWc12, GWc14, GWc15, GWc16, GWc17, GWc18, GWc22, GWc23, GWc24, GWc25, GWc26, GWc27, GWc28, GWc29, GWc30, GWc31, GWc32 <sup>5</sup>	Daily (logger)	Water level, Pressure, Temperature
		Monthly	Water level, temperature, field pH and EC.

Monitoring Locations	Frequency	Parameters <sup>1,2</sup>
GWc1, GWc2, GWc3, GWc4 <sup>5</sup> , GWc5 <sup>5</sup> , GWc10, GWc11, GWc12, GWc14, GWc15, GWc16, GWc17, GWc18, GWc19, GWc20, GWc22, GWc23, GWc24, GWc25, GWc26, GWc27, GWc28, GWc29, GWc30, GWc31, GWc33, GWc32 <sup>5</sup> , GWc34, GWc35	Quarterly	TDS, Na, K, Mg, Ca, Cl, HCO <sub>3</sub> , CaCO <sub>3</sub> , SO <sub>4</sub> and Metals (Cu, Zn, Fe, Al, Ni, Mn, Ba, Sr, Pb, As and Se).
<b>Landholder bores, wells and waterholes<sup>4</sup></b>	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<sub>3</sub> = Bicarbonate, SO<sub>4</sub> = 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 2021 review 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 2021 review of key groundwater level and groundwater quality data (**Appendix 3D**) including:

- Provide commentary and demonstrate progress on actions developed in response to recommendations from the 2021 Independent Environmental Audit (IEA);
- 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.

In 2021, WCPL commissioned a number of groundwater investigations in response to actions from the 2021 IEA, relating to groundwater (**Appendix 9**) including:

- Periodic assessment of groundwater compliance against trigger levels (September and December 2021);
- Evaluating the groundwater source and recharge mechanism of select monitoring bores; and
- Completion of core testing for hydraulic conductivity.

Since the first quarter of 2020 and throughout 2021 the area has experienced significantly 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, and in some cases has enabled a clearer separation of climatic and mining effects (SLR, 2022c). The following assessment (**Table 28**) has been made with respect to compliance triggers.

## 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 2021 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 show a good correlation with the timing and magnitude of observed drawdown (SLR, 2022c).

As the last numerical model review was completed in early 2020 (SLR, 2020a), the high rainfall experienced in 2020/21 is not captured in the model used for this verification exercise. The observed responses to wetter climatic conditions during this time are therefore not reproduced by the groundwater model (SLR, 2022c).

Table 28 Groundwater Performance

Location		Approved Criteria		Performance During the Reporting Period			Trend/Key Management Implications	Implemented/ proposed Management Actions
Groundwater Monitoring (Alluvium)				Assessment of Triggers				
	Water Levels (mAHD)	EC (µS/cm)	pH (range)	Water Level (mAHD)	EC (µS/cm)	pH		
GWa1^	-	12,272	6.5 - 8	#	No data in 2021		<p>Alluvium bores GWa4, GWa5 and GWa14 have exceeded the lower depth-to-water trigger level during 2021 and indicate the possible impact of mining activity at WCM. However, a lack of bore construction and lithology information, and apparent inconsistencies in monitoring limit the reliability of the collected data (SLR, 2022c).</p> <p>Shallow alluvial bores GWa4, GWa5 and GWa7 have exceeded the EC trigger level during 2021. A reduction in inflow from Permian strata, caused by WCM operations, and ongoing evaporation/ evapotranspiration may be resulting in increased EC observations at these sites. A lack of construction and lithology information limits the ability to evaluate the groundwater source and the cause of the trigger exceedance at these sites (SLR, 2022c).</p> <p>Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2021. EC at GWc1 and GWc3 may be influenced by downwards seepage from overlying strata or lateral flow from backfilled open cuts, However, understanding correlation between water quality in overlying or adjacent strata compared with 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 (SLR, 2022).</p> <p>No pumping occurred from the WCPL supply borefield in 2021 and none of the cease-to-pump trigger levels were exceeded (SLR, 2022c).</p>	<p>WCPL will continue to implement the approved GWMP, monitor and evaluate the groundwater systems over the 2022 review period.</p> <p>In accordance with Condition 5, Schedule 5 of Development Consent SSD-6764, and the actions from the 2021 IEA, WCPL will review and revise the GWMP within three months of the submission of this Annual Review.</p> <p>During the review of the GWMP, WCPL will also consider the recommendations made by SLR (<b>Appendix 3D</b>) during their annual review of groundwater.</p>
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	Y	✓		
GWa5	372.8	13,926	6.5 - 8	Y	Y	✓		
GWa6	-	6,720	6.5 - 8	#	✓	✓		
GWa7	-	10,126	6.5 - 8	#	Y	✓		
GWa8	353.3	2,898	6.5 - 8	✓	✓	✓		
GWa10	367.1	#	#	✓	#	#		
GWa11	365.2	#	#	✓	#	#		
GWa12	362.3	#	#	✓	#	#		
GWa14^	358.0	#	#	Y^	#	#		
GWa15	355.0	#	#	✓	#	#		
<b>Groundwater Monitoring (Coal)</b>								
GWc1	#	2,844	6.5 - 8	#	Y	✓		
GWc2	#	1,290	6.5 - 8	#	✓	✓		
GWc3	#	3,304	6.5 - 8	#	Y	✓		
GWc4	#	2,412	6.5 - 8	#	Y	✓		
GWc5	#	4,798	6.5 - 8	#	Y	✓		
<b>Groundwater Production Bores</b>								
GWs10	346	#	#	**	#	#		
GWs11	348.5	#	#	**	#	#		
GWs12	332.5	#	#	**	#	#		
GWs14	319.5	#	#	**	#	#		
GWs15	314.5	#	#	**	#	#		

**Notes:** GWa1 and GWa7 both had 'dry' observations prior to mining. No effective trigger level could be developed for these bores. No trigger defined in GWMP for GWa6. ✓ Represent no trigger exceedance, # = Not applicable, Y= Yes (trigger exceedance recorded), ^ Bore was dry or near dry most of 2021, \*\*No Pumping from Bores in Water Year 2020/2021

## 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 6**) that are currently under pasture or considered not woodland, these landforms will be progressively upgraded with relevant woodland species to meet the BVT requirements.

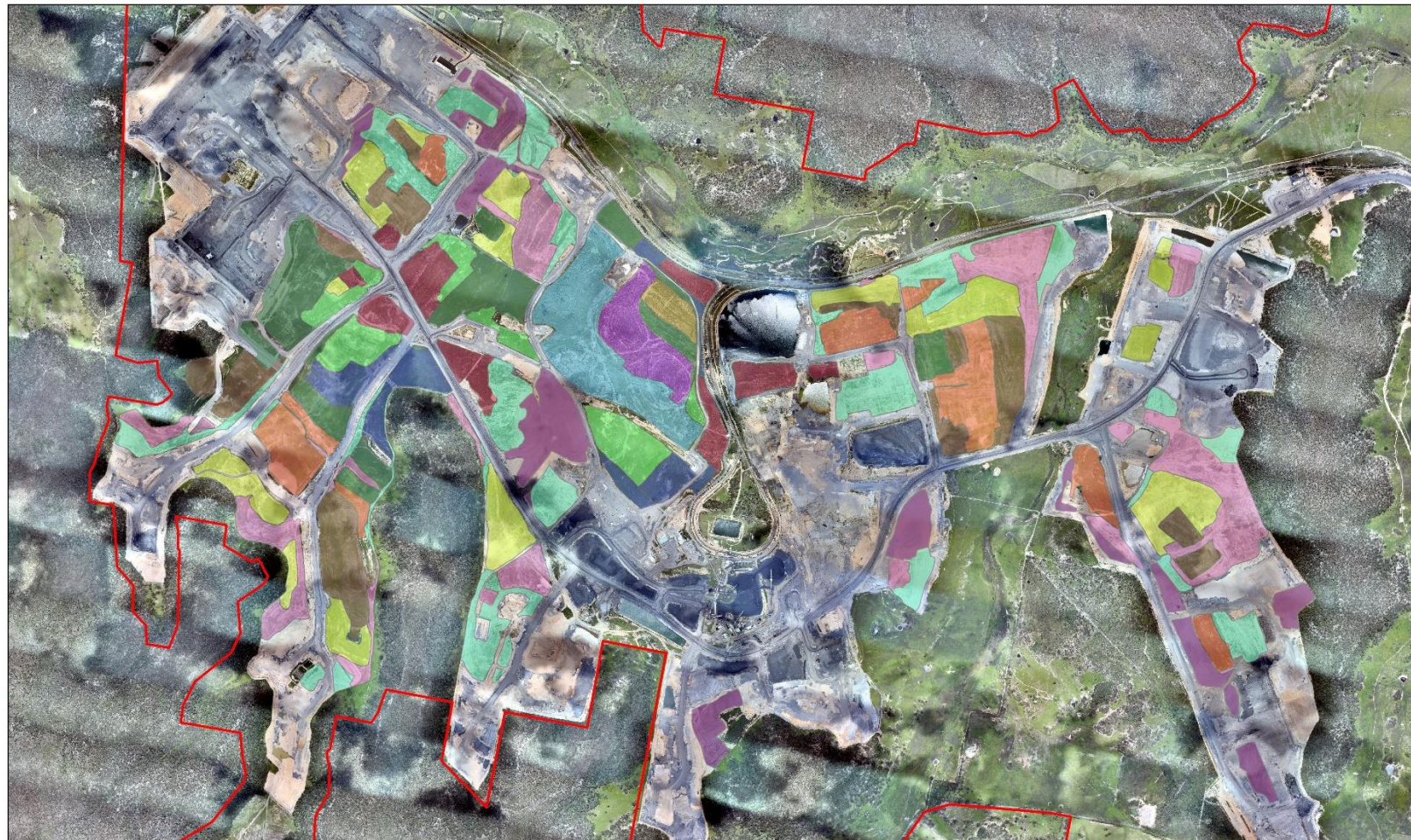
#### 8.1.1 Summary of Performance

A new MOP for 2021 to 2022 was approved by the DPIE-RR on the 20 January 2021. Mining and progressive rehabilitation activities over the term of this MOP are shown in Plans 3A to 3B. During the new MOP term, WCPL are scheduled to rehabilitate selected areas of waste rock emplacements areas (i.e., Domain 5) located in Pit 1, Pit 2, Pit 3, Pit 4, Pit 5, Pit 6, Pit 7.

**Table 29 Status of Proposed MOP Rehabilitation**

Year	MOP Proposed Rehabilitation	Status of Rehabilitation	Comments
Year 1: 2021	86ha	86ha	Rehabilitation of Overburden emplacement areas in Pit: 1, 2, 5, 6, 7,
Year 2: 2022	44ha	-	Proposed rehabilitation of overburden emplacement areas in Pit: 2, 6, 7

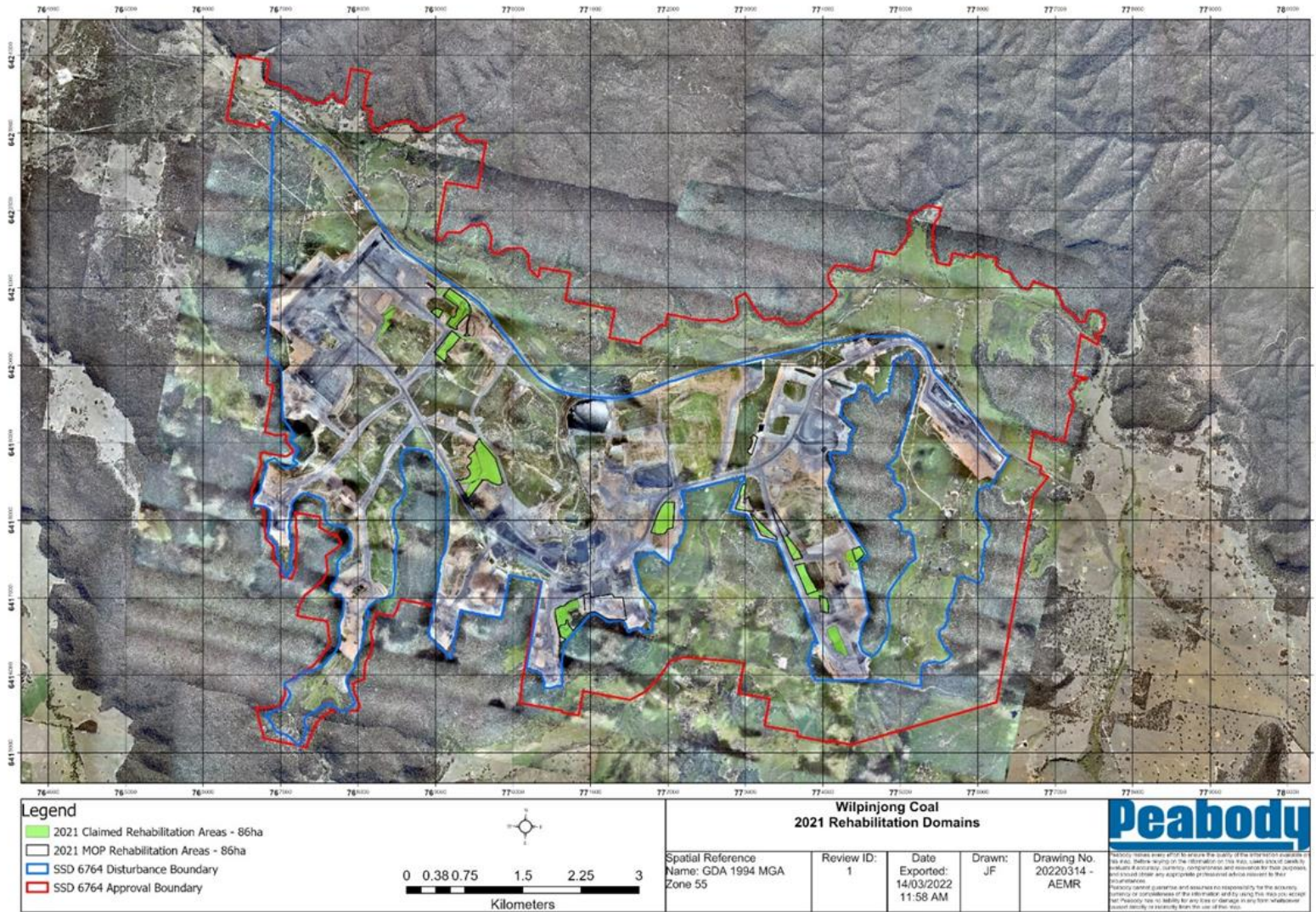
Figure 4 Annual Rehabilitation Status 2008-2021



<b>Legend</b> SSD 6764 Approval Boundary Rehab DateComplete 2008 2009		2010 2011 2012 2014 2015 2016	2017 2018 2019 2020 2021			<b>Wilpinjong Coal Rehabilitation to Date</b>			
Spatial Reference Name: GDA 1994 MGA Zone 55		Review ID: 1	Date Exported: 14/03/2022 11:47 AM	Drawn: JF	Drawing No. 20220314	<small>Peabody strives every effort to ensure the quality of the information available on this map. Before relying on the information on this map, users should carefully evaluate the accuracy, currency, completeness and relevance for their purposes, and should obtain any appropriate professional advice relevant to their requirements. Peabody cannot guarantee and assumes no responsibility for the accuracy, currency or completeness of the information and by using this map you accept that Peabody has no liability for any loss or damage in any form whatsoever caused directly or indirectly from the use of this map.</small>			



Figure 5 Rehabilitation Forecast Vs Actual 2021



There were only minor changes to rehabilitation areas completed in 2021, as proposed in Year 1 (Plan 3A) of the MOP (2020). 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 MOP (**Figure 7**) and considered generally consistent with the rehabilitation scheduled and targets proposed in the MOP for Year 1 (Plan 3A). WCPL consider the approved rehabilitation program proposed in the 2020-2021 approved MOP has been achieved for Year 1.

As displayed in **Table 30**, approximately 901ha of completed landforms have been rehabilitated as of the 31 December 2021 (Figure 6). No rehabilitated landforms are yet considered ready for formal sign off by the DRG in terms of meeting the relevant completion criteria as provided in the MOP. 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 30 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)	Next Reporting Period (Forecast)
<b>A. Total Mining Lease footprint (ha)</b>	2857.34	2857.34	2857.34	2857.34	3725.30*	3725.30*	3725.30*	3725.30*
<b>B. Total active disturbance (ha)</b>	1478	1562	1686	1840	2013	2190	2324	2394
<b>C. Land being prepared for rehabilitation (ha)</b>	43	70	82	98	121	138	86	44
<b>D. Land under active rehabilitation (ha)</b>	304	374	456	556	677	815	901	945
<b>E. Completed rehabilitation (ha)</b>	0	0	0	0	0	0	0	0

**Notes:** \* Increase in total mine footprint now incorporates the additional hectares in ML1779 and ML1795

Other rehabilitation commitments in the MOP term included:

- Construction of the Elevated Waste Dump in Pit 2 to RL450m then back down to RL430m; and
- Temporarily vegetating a number of selected batters for several long term mine waste rock emplacement areas including Duffy Dump, Mega Dump and Pit C Dump.

Due to changes in the long term mine plan, construction of Elevated Waste Dump in Pit 2 to RL450m then back down to RL430m is still unlikely to occur during this MOP term. However Elevated Waste Dump in Pit 2 will continue to receive lower than predicted volumes of overburden material during the MOP term.

Other commitments undertaken included temporarily vegetating a number of selected batters for several long term mine waste rock emplacement areas which were effectively seeded with a diverse species mix of natives using drone seeding technology

### 8.1.2 Summary of Rehabilitation Activities During the Reporting Period

The MOP describes the proposed rehabilitation phases within Primary Domains during the MOP term. In accordance with the MOP, landform establishment, growth medium development, ecosystem establishment was undertaken during 2021 in Domain 5 (i.e., Waste Rock Emplacement Areas).

Previously, photos of rehabilitation activities during the reporting period were provided in **Appendix 7** and provided an historical account of the performance of primarily cover crops, 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. WCPL are in the process of establishing new photographic monitoring points in select rehabilitated areas of the mine. The result of the new photographic monitoring will be provided in the 2022 Annual Review.

Ecosystem Development in the form of monitoring and minor maintenance activities were completed in Domain 8 and Domain 9. The following rehabilitation phases during 2021 within Domains 5 and 6 included:

#### **8.1.2.1 Decommissioning**

There was no decommissioning of mining related infrastructure activities undertaken at the Mine in 2021.

#### **8.1.2.2 Landform Establishment**

All 2021 rehabilitation landforms were designed in accordance with the approved MOP. 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 2021 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 2021, a combination of approximately 86ha across Domain 5 and Domain 6 of final landforms were completed in preparation for topsoil placement, ripping and seeding.

#### **8.1.2.3 Growth Medium Development**

Topsoil placement involved utilising scrapers, dozers and graders to spread to the desired depth. Direct placement was undertaken where possible and conducted by scrapers 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.

In consideration for soil ameliorates required for rehabilitation areas, topsoil sampling was undertaken across all proposed rehabilitation area with results indicating the requirement for ameliorates in all areas.

Soil testing was conducted in 2020 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;
- Gypsum 3t/ha; and
- Organic matter 3-5t/ha.

#### **8.1.2.4 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. Areas rehabilitated in 2021 were directly seeded with specific native seed species aligning to particular BVTs. These BVT mixes did include a small ratio of cover crops (cereals) to provide quick germination, soil stability and structure.

Of the 86ha rehabilitated in 2021, a total of 3 BVT's were established onsite with specific BVT seed mixes, these included;

- HU697 – Mugga Ironbark – Black Cypress Pine Shrub/Grass Open Forest – 14ha
- HU732 – Yellow Box Grassy Woodland – 15ha
- HU824 – White Box – Black Cypress Pine Shrubby Woodland – 57ha

256 hectares of existing rehabilitation was reworked in 2021 to convert from cover crops and improved pasture species to a specific BVT aligning with WCPLs Performance and Completion Criteria. 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 31 Typical BVT Seed Mix Rates**

Pasture Species	Average Rates (kg/ha)
HU697	23kg
HU732	30kg
HU824	25kg

#### 8.1.2.5 Ecosystem Sustainability

During 2021, Ecosystem Sustainability activities occurred across Domain 8 (i.e. Rehabilitation Areas Pre-MOP) 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.

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

#### Landscape Function Analysis (LFA)

During 2021, 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.

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.

Comparative annual results have been colour-coded to provide a visual indicator, with green reaching or exceeding the incremental increase of five or more, and red showing an increase of less than 5% (or in some cases, a reduction from the previous year). Red 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 increase or decrease from previous monitoring.

Four LFA monitoring sites located within Rehabilitation Areas were monitored in 2021. The LOI and SSA results for the sites are presented in **Table 32**. The results are presented as a comparison to 2020 monitoring data to provide an assessment against the LFA completion criteria

Spring 2021 monitoring results demonstrate that R9 and R13 have remained stable since 2020 monitoring, whilst R6 has seen a significant increase in LOI. The LOI is heavily driven by climatic conditions and the associated generation of litter and plant cover. As such, the increase in LOI is likely a result of good seasonal conditions experienced throughout 2021.

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 32 LOI and SSA results for Rehabilitation Area Transects**

Site	Monitoring Season	Landscape Organisation Index (%)	Soil Surface Assessment		
			Stability	Infiltration	Nutrient cycling
R5	Spring 2021	0.86	51.4	29.6	26.1
	Spring 2021	0.84	49.3	22.4	14.7
R6	Spring 2020	0.69	51.7	27.5	24.3
	Annual incremental increase		-2.4	-5.1	-9.6
R9	Spring 2021	0.98	50.3	29.5	23.9
	Spring 2020	0.98	48.1	26.2	22.7
	Annual incremental increase		2.2	3.3	1.2
R13	Spring 2021	0.95	48	30.7	25.5
	Spring 2020	0.95	52.5	30.1	27.8
	Annual incremental increase		-4.5	0.6	-2.3

### Assessment against Rehabilitation BVT Benchmarks

Vegetation monitoring results for the Rehabilitation Areas were assessed against the WCPL Rehabilitation Performance Criteria and the OEH BVT Benchmarks. 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.

**Tables 33 & 34** present the individual site attribute and site value scores for each 2021 rehabilitation monitoring site. **Tables 33 & 34** presents both comparison of sites against the approved WCPL BVT Performance Criteria and presents comparison of sites against OEH BVT Benchmarks (taken from OEH 2017). A colour coding system has been applied to all site attribute results:

- **GREEN** indicates site attributes that have met the relevant PTs (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 33: 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 – Medium	51	16	6	2	0	0	4	48	0	0.25	0
	Spring	R6	Mod to Good – Medium	46	20	2.3	0.5	6	0	4	50	0	0.25	0
	Autumn	R9	High – Benchmark	79	16	8	3	12	2	6	38	0	0	26
	Spring	R9	High - Benchmark	95	23	11.3	10	28	10	4	22	0	1	25
Unclassified	Spring	R5 <sup>7</sup>		29	12.7	0.71	12	6	6	30	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

**Table 34: Assessment against OEH 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 – Medium	35	16	6	2	0	0	4	48	0	0.25	0
	Spring	R6	Mod to Good – Medium	30	20	2.3	0.5	6	0	4	50	0	0.25	0
	Autumn	R9	High – Benchmark	42	16	8	3	12	2	6	38	0	0	26
	Spring	R9	High - Benchmark	48	23	11.3	10	28	10	4	22	0	1	25
Unclassified	Spring	R5 <sup>8</sup>		29	12.7	0.71	12	6	6	30	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.

BioMetric monitoring was undertaken within all Management Domains and selected Reference sites prescribed by the BMP during 2021. BOAs, ECAs and Regeneration Areas continued to be monitored, however they were not compared to the BMP Performance and Completion Criteria as these are specific to Rehabilitation Areas. Rehabilitation Areas were assessed under different Completion Criteria in 2020 (criteria which was superseded in 2021), and therefore are not comparable to 2021 results (ELA, 2022a).

<sup>7</sup> Site R5 has no specified BVT and cannot be compared to any performance criteria

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, four out of five sites were at the Moderate to Good SVS. The remaining site (R6) recorded low NOC, NMC, and high exotic cover (50%) (ELA, 2022a).

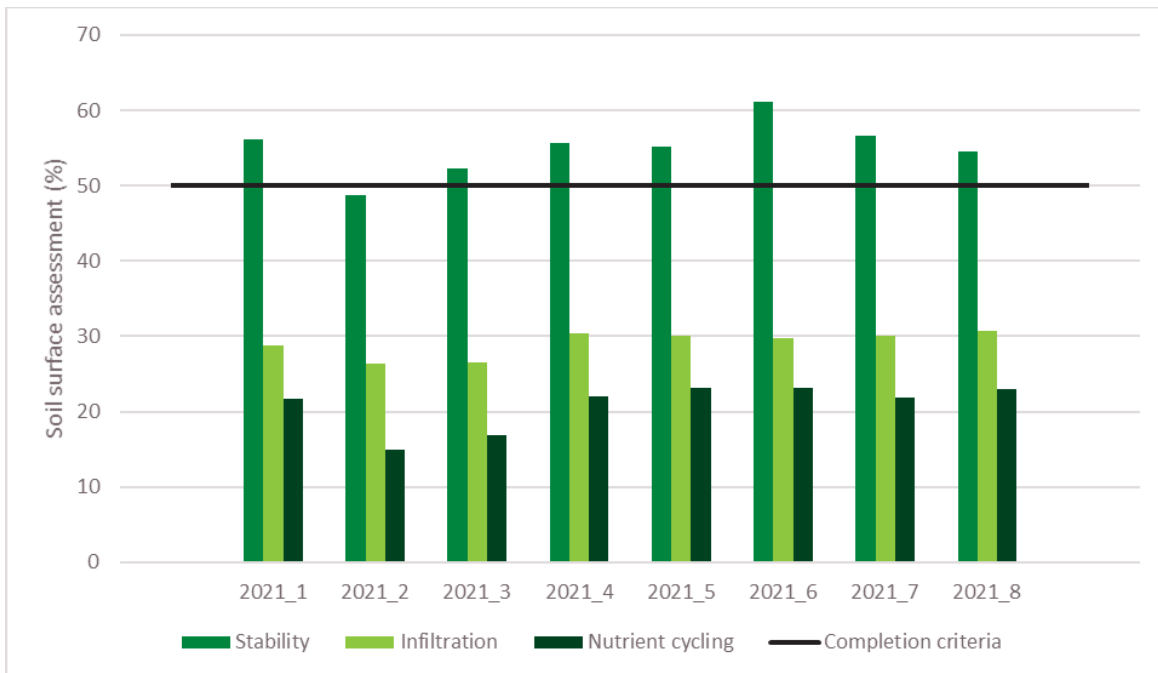
BioMetric monitoring was undertaken within the ECAs and Regeneration Areas during autumn 2021. These sites were discontinued following the approval of the BMP (WCPL 2021), and were therefore not monitored during spring 2021, nor will they be included in the annual monitoring program going forward (ELA, 2022a).

To further support to the focus of the WCPL rehabilitation BVTs and their respective Reference sites in providing habitat for Regent Honeyeater, it is proposed that additional data for mistletoe and eucalypt presence, flowering and budding is collected during BioMetric monitoring (ELA, 2022a).

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 – surplus to rehabilitation and offset requirements. Sites 2021\_1 to 2021\_8 are sites which have been native seeded specific to BVT communities which conform to SSD6764 and are applicable to the BMP WEP SSD6764 Performance and Completion Criteria (**Graph 27**).

**Graph 27 Newly established rehabilitation sites LFA scores**



**8.1.3 Summary of Rehabilitation Activities Next Reporting Period**

WCPL are scheduled to complete and rehabilitate a total of 43ha of mine waste rock emplacements during 2022 (Year 2) (Domain 5) within Pit 2, Pit 6, Pit 7 (**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.

The rehabilitation progress against the MOP will provided in the next Annual Review.

## 8.2 Other Rehabilitation Activities

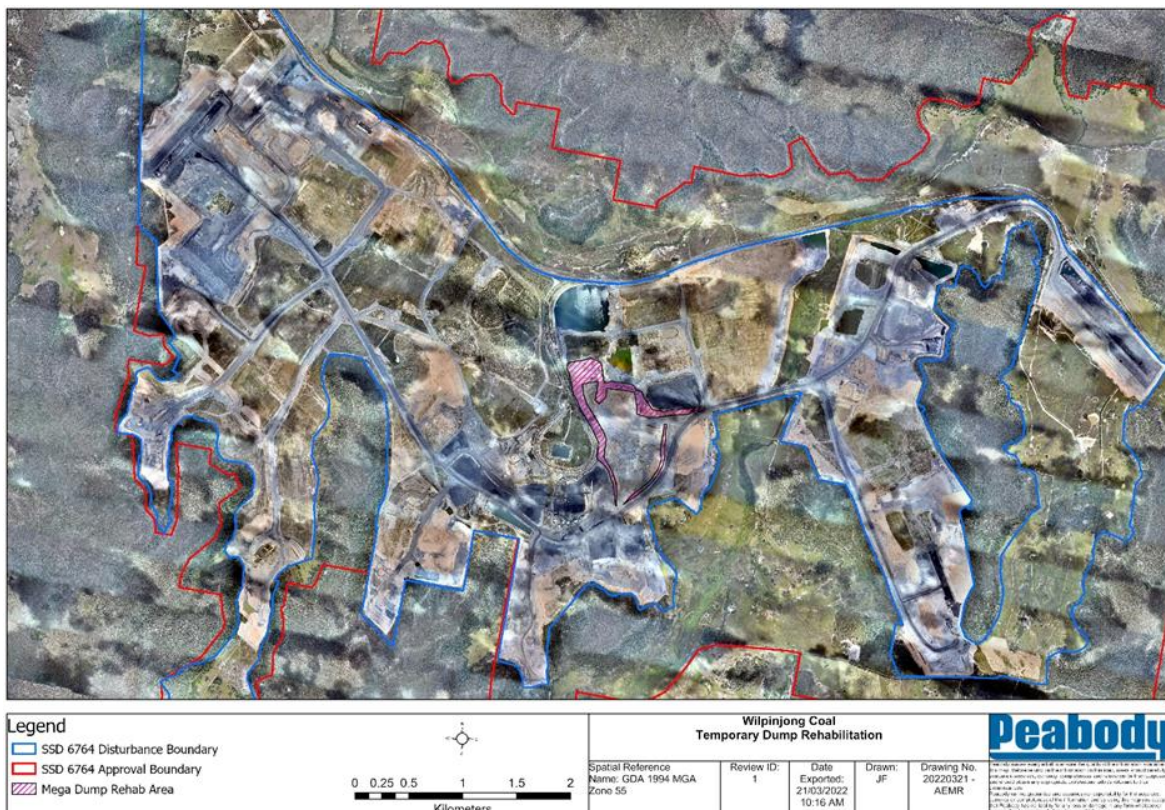
### Temporary Rehabilitation of Elevated Dump

WCPL conducted aerial native seeding via drone on an elevated dump in September 2021 (Figure 6). The revegetation works were undertaken to assist in the dumps stabilisation and enhance visual amenity. Approximately 25ha of steep slopes were drone seeded with an array of acacia species. These species were nominally selected due to local availability, quick germination, and establishment with high generation of surface organic matter.

Photo 2 Drone Seeding Dump Batters



Figure 6 Location of Dump Batter Drone Seeding





### ***Ozothamnus tessellatus***

WCPL commenced undertaking a seed collection campaign in late 2018 to harvest *Ozothamnus tessellatus* seed from areas within WCPL owned land. *Ozothamnus tessellatus* is listed as ‘Vulnerable’ under both the TSC Act and EPBC Act. Seeds of the threatened *Ozothamnus tessellatus* will be collected and propagated for use in the Rehabilitation and Regeneration Areas in accordance with the BMP.

WCPL also collaborated with the University of Wollongong (UoW) to assist with seed collection and research on this data deficient species. UoW was contracted by the Australian Botanic Gardens to assist with seed collection of this species and to undertake scientific research on the species such as propagation trials and viability testing. WCPL will continue to assist UoW in this study. Propagation trials commenced in 2019 by WCPL in germination trays with various soils and treatments. As this species produces thistle-type seeds, tube stock is anticipated to be the most appropriate method for propagation. In summary:

- 3 grams of *Ozothamnus tessellatus* seeds were harvested in 2019;
- 1 gram of *Ozothamnus tessellatus* seeds were sown to grow seedlings in 2019 (**Photo 3**);
- On 26 September 2019, 30 *Ozothamnus tessellatus* seedlings were planted in ECA\_C;
- Grazing pressure from native/feral animals and the ongoing drought resulted in 100% mortality; and
- Seed Collection in 2020 did not occur due to the source plants not flowering or producing a nondetrimental harvestable quantity. Harvesting the small available seed would have been detrimental to the local seed source and such a practice would have been against industry standard and FloraBank guidelines.
- Seed collected in 2019 was stored for propagation and planting trials commenced in 2021
- ~500 grams of *Ozothamnus tessellatus* seeds were harvested in 2021.

**Photo 3 *Ozothamnus tessellatus* propagated seedlings 2019**



### ***Microbes***

WCPL is investigating the use of microbes within areas which have had green manure crops and pasture species established. WCPL believes this is a natural beneficial process in assisting to break down newly created organic matter leading to building an improved soil structure. Initial testing has been completed with results indicating levels of initial rehabilitation and activity, in response to recent disturbance

### ***Organic Soil Amelioration***

Recent soil tests indicate low organic matter and nutrient cycling, to address this WCPL incorporated Vermicasts and Vermi-liquids into the soil amelioration program to enhance and stimulate soil biology and soil structure. The importation of composts were also used and spread across rehabilitation areas to inoculate and increase soil organic matter. The concept of incorporating these products aims to ameliorate the soil and expedite soil system performance and encourage native seed germination and long-term soil stability and structure.

Photo 4 Compost Delivered for Soil Amelioration



### **Tree Planting**

Throughout 2021 a total of 3,629 tubestock were planted across various land management domains (new and replacement), specifically Enhancement and Conservation Areas (ECA) ECA B & Regeneration Area 1. Within and adjacent to ECA B, Wilpinjong Creek stabilisation works occurred in 2021 with re-battering of the creek bank and rock armoring to reduce erosion and cut bank erosion. To complement the physical and mechanical works, tubestock planting and mulching was conducted to enhance the sites ecological, soil and landscape stability and resilience. A total of 500 tubestock were planted in this area (**Photo 5**).

Tubestock were planted adjacent to Wilpinjong Creek in Regeneration Area 1 to enhance landscape stability and to enhance ecological resilience. A collective total of 1.8kms (or 19ha) of creek bank was rehabilitated subsequent to these works throughout 2021(**Figure 7**) & (**Photo 5**). Planting locations aligned with the three-year management schedule as documented within Appendix 6 of the WCPL Biodiversity Management Plan (BMP). Species planted in 2021 included:

- *Acacia decora*
- *Acacia implexa*,
- *Allocasuarina luehmannii*,
- *Angophora floribunda*,
- *Casuarina cunninghamiana*,
- *Eucalyptus blakelyi*,
- *Eucalyptus melliodora*,
- *Lomandra longifolia*

Photo 5 Wilpinjong Creek Stabilisation – Tubestock Planting in 2021



Photo 6 Regeneration Area 1 – Tubestock Planting in 2021



Figure 7 2021 Tubestock Planting Locations



<b>Legend</b> ■ Regeneration Areas_WEP ■ ECAs ■ SSD 6764 Disturbance Boundary ■ SSD 6764 Approval Boundary ■ Tubestock Plantings 2021				<b>Wilpinjong Coal Tubestock Planting Locations 2021</b>			
Spatial Reference Name: GDA 1994 MGA Zone 55		Review ID: 1	Date Exported: 21/03/2022 8:23 AM	Drawn: JF	Drawing No. 20220321 - AEMR	<small>Peabody makes every effort to ensure the quality of the information available on this map. Relying on the information on this map, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes, and should obtain an appropriate professional advice relevant to their circumstances. Peabody cannot guarantee and assumes no responsibility for the accuracy, currency or completeness of the information and by using this map you accept that Peabody has no liability for any loss or damage in any form whatsoever caused directly or indirectly from this use of this map.</small>	

### ***Habitat Augmentation***

To meet the requirements of the BMP, WCPL continued with the relocation of surplus trees removed from the mining footprint for mine site rehabilitation and re-establishment as log habitat. Logs were also imported to site sourced from the Mid-Western Regional Council (MWRC) Wollar /Munghorn Gap Road Upgrade Project.

**Photo 7 Log Stockpiles on Site**



**Photo 8 Logs spread on Rehabilitation**



### ***Drone Seeding Trial***

A total of 10ha initially aerially seeded by drone with HU732 (Yellowbox Grassy Woodland) understory and grass species were oversown with canopy species in September 2021. Similar to the 2020 drone seeding, the seeds were coated to allow efficient flowability and distribution across the site. The concept of staggered seeding between stratum species was to encourage grass and shrub establishment with reduced competition from canopy species.

Photo 9 Drone Seeding Trial



Photo 10 Seed Coated



### ***Native Seed Collection and Propagation***

During the 2021 reporting period WCPL collected a variety of BVT species (where available) including:

- *Dodonaea viscosa*,
- *Acacia implexa*,
- *Acacia decora*,
- *Acacia ixiophylla*,
- *Dodonaea cuneata*
- *Ozothamnus tessellatus*
- *Dodonaea triangularis*
- *Daviesia genistifolia*
- *Pultenaea cinerascens*
- *Acacia ausfeldii*
- *Daviesia genistifolia*
- *Acacia verniciflua*
- *Lotus australis*
- *Gahnia aspera*
- *Callistemon pinifolius*
- *Dianella longifolia*

### 8.3 Land Management Activities

#### Pest and Weed Management

WCPL completed pest management works on WCPL owned properties during 2021. 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 an extensive weed spraying program throughout 2021 (**Figure 9**) of which incorporated and targeted species and locations identified from the 2020 monitoring program, regular internal inspections and annual MWRC inspections using selective herbicides. Control areas of 2021 were similar to that of 2020 areas. Target weed species included Sweet Briar, Blue Heliotrope, African Boxthorn, Prickly Pear, Paterson’s Curse, Noogoora Burr, St John’s Wort, Tree of Heaven and Blackberry.

Figure 8 2021 Weed Control Areas



## 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 in local newspapers, via the Wilpinjong Community Newsletter, via the Wilpinjong Community Consultative Committee and on the Peabody website:

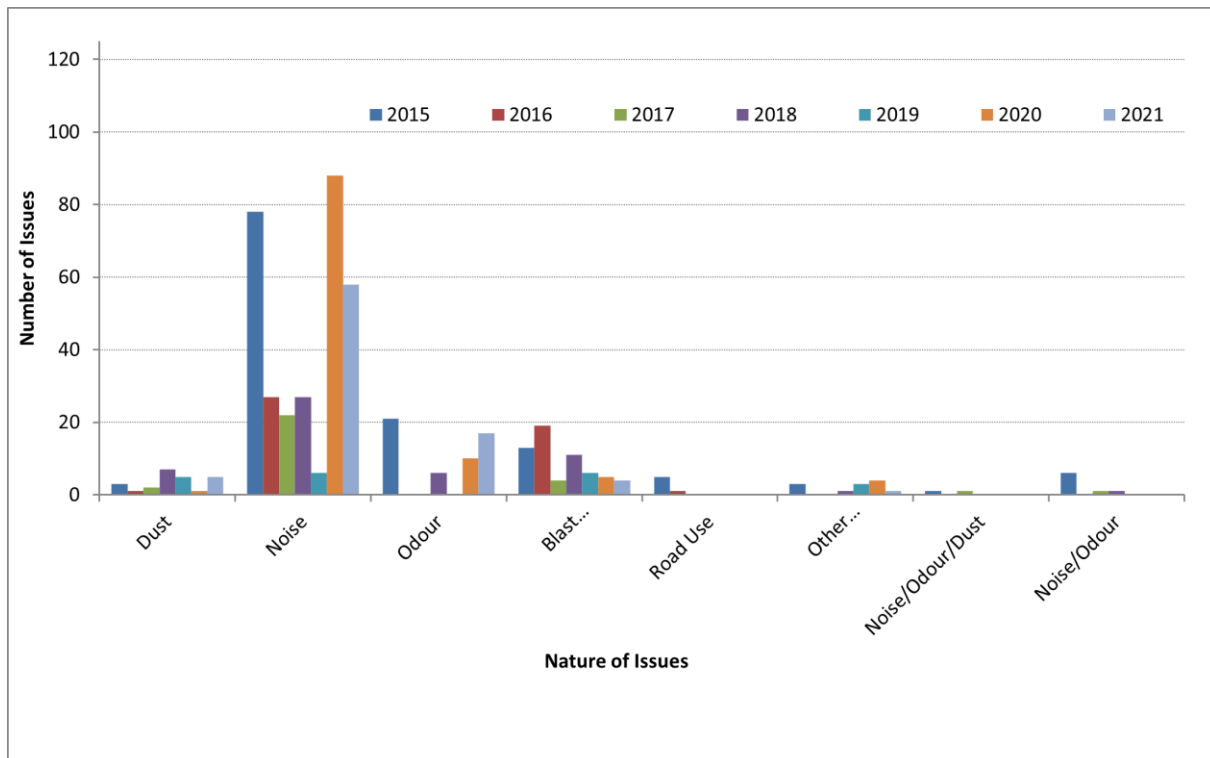
<https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wilpinjong-Mine>

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.

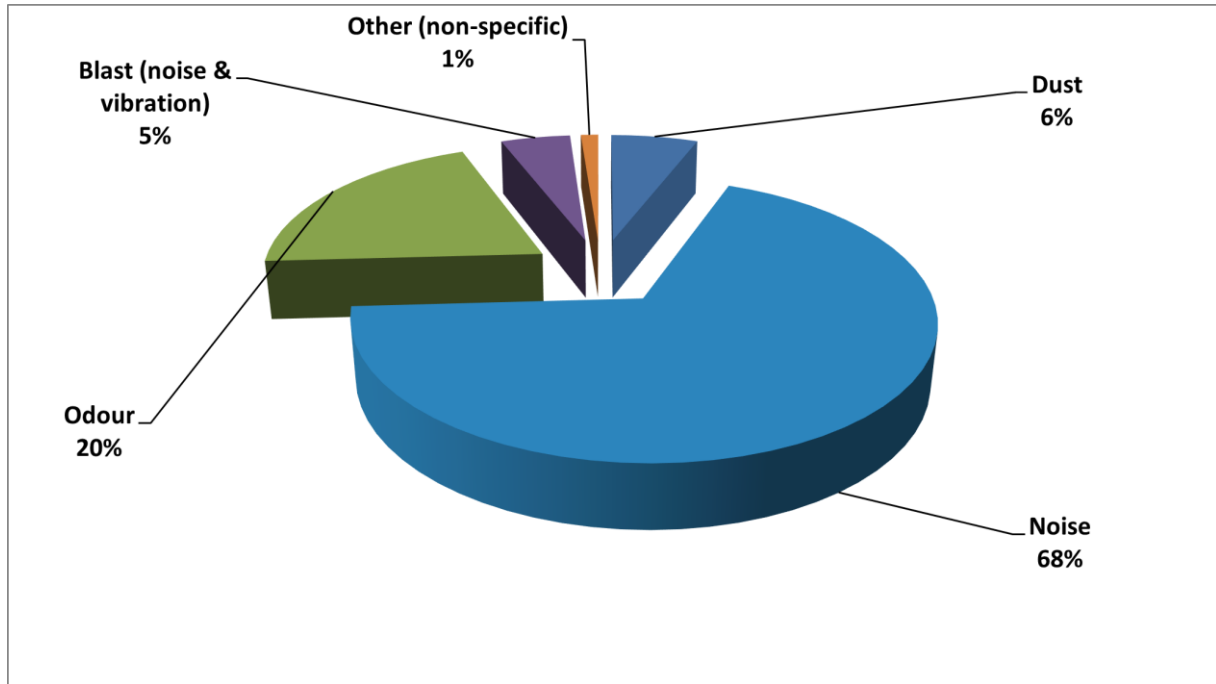
During the 2021 review period, 85 community complaints were received by WCPL (**Appendix 6**) as opposed to 108 community complaints in 2020. **Graph 23** presents a comparison of the environmental complaints received by WCPL over the period 2015 to 2021.

**Graph 28 Summary of Community Complaints and Issues Raised by Complainants 2015 – 2021**

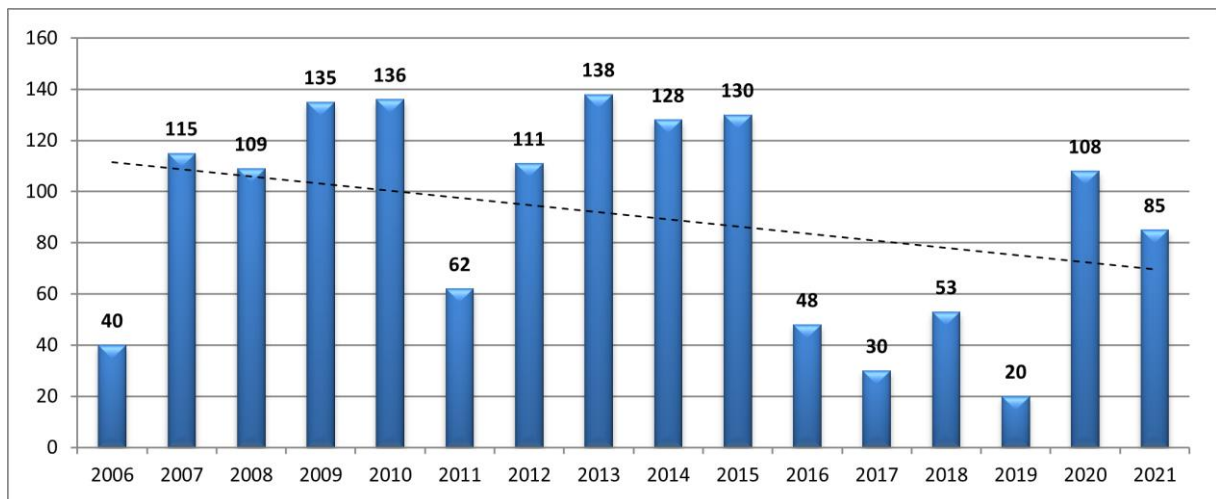




Graph 29 Percentage Breakdown of Community Complaints in 2021



Graph 30 Total Annual Complaints 2006 - 2021



**Community Consultative Committee**

In accordance with Condition 7, Schedule 5 of SSD-6764, the Community Consultative Committee (CCC), as of December 2021, (**Table 34**) continued to meet during the 2021 review 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, October and December 2021. An extraordinary CCC meeting was held on the 6 July 2021 to discuss Australia Post services in and around Wollar Village for when the Wollar General Store ceases operation on 31 December 2021. 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 35** provides a summary of the CCC meetings held during the 2021 review period.

Table 35 CCC Members for the 2021

Name	Organisation
Des Kennedy	Mid Western Regional Council
Lisa Andrews	CCC Independent Chair Person
Colin Faulkner	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 36 Summary of CCC Meetings in 2021

Date	Key Outcomes
8 March	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2020/21 exploration program, rehabilitation update, MOP update, Proposed Water Supply Modification, Wollar Store, House Demolition in Wollar, animal and weed control programs, community donations and support update, summary of complaints.
7 June	Environmental monitoring results, reviewed complaints since last CCC, water event update, operational downtime, 2020/21 exploration program, rehabilitation update, Pit 6 disturbance boundary modification, property management, Wollar Resource Area Application, proposed house demolition in Wollar, community donations and support update, summary of complaints.
27 October	Environmental monitoring results, reviewed complaints since last CCC, management plan update, operational downtime, 2021 exploration program, rehabilitation update, Environmental Management Plan Update, Preparation of the forthcoming Rehabilitation Management Plan (RMP), Wollar Resource Area Application, SIMP Community Event Postponed, Regent Honeyeater Recovery Program, property management, proposed demolition of derelict structures in Wollar, Wollar Store Closure, community donations and support update, summary of complaints.
13 December	Environmental monitoring results, reviewed complaints since last CCC, management plan update, operational downtime, 2021 exploration program, rehabilitation update, Environmental Management Plan Update, Wollar Resource Area Application, SIMP Community Event Postponed, Regent Honeyeater Recovery Program, property management, proposed demolition of derelict structures in Wollar, Wollar Store Closure & Alternate Mail options, community donations and support update, summary of complaints.

### Community Support Program

During the 2021 reporting period, WCPL continued its support of local community groups and sporting associations, schools and charitable organisations (total amount in 2021 was approximately \$75,560.00), 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](http://www.peabodyenergy.com)

### Employment Status

At the end of the 2021 reporting period there were 482 full time equivalent employees at WCPL, 82 staff and 100 full time equivalent contractors.

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## 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 DPIE, 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 (**Appendix 9**) within 3 months of the IEA on the 22 December 2021.

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.

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 2021 review period.

### 11.2 Non-Compliances

There were a total of sixteen non-compliances as identified in **Table 36** against SSD-6764, identified during the 2021 review period<sup>8</sup>. **Table 37** includes non-compliances identified against EPL 12425.

**Table 37 Non-compliance SSD-6764**

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
Con 2, Sch 2	23 September 2021	(IEA, 2021): The development has been carried out in general accordance with the EIS. A number of non-conformances of the conditions of this consent have been identified during the audit period (refer to 2021 IEA).	Refer to summary of audit findings in the 2021 IEA ( <b>Attachment 9</b> ).	Refer to recommendation made against each Condition of Consent below, and time table to implement proposed actions against each Condition of Consent identified in the 2021 IEA as a non-compliance ( <b>Attachment 9</b> )
Con 10, Sch 2	23 September 2021	(IEA, 2021): Construction of the Pit 3 Pre-Start Facility occurred during the audit period.	WCPL was unable to produce the BCA certificate to the auditors.	For all future developments that require a BCA (or equivalent), WCPL will update its Mine Operations Plan to detail requirements for new and modified infrastructure on site which will include consideration of Building Certificates (BCs) or Occupation Certificates (OCs) if applicable. If applicable, OCs and BCs must be provided to the WCPL Environmental Department.
Con 12(a) Sch 3	30 January 2022	During the preparation of the 2021 Annual Review regarding the blast monitoring analysis for the Ulan-Wollar Road/Culvert opposite (Pit 6), it was identified that some of the required blasting data for the reporting period was not available	Reported to the DPIE and MWRC on the 30 March 2022. Pending further investigation. Outcomes from investigation causing the non-compliance will be reported in the next Annual Review.	Pending further investigation. Outcomes from investigation to address the noncompliance will be reported in the next Annual Review.  Initial inspections of the culvert by an engineer have been arranged.
Con 14(b) Sch 3	30 January 2022	As Above	As Above	As Above
Con 16, Sch 3	23 September 2021	(IEA, 2021): At the time of the Audit site inspection odours were noted beyond the boundary of the mine at 08:00 23 September 2021.	As described in the SCMP there are areas of the mine prone to spontaneous combustions events. During 2021 there was a continued effort in managing those areas prone to an outbreak of spontaneous combustion. At the time of the IEA WCPL were monitoring and managing isolated outbreaks of spontaneous combustion at the mine.	The IEA proposed several recommendations for the SCMP. WCPL propose to review the Spontaneous Combustion Management Plan (SCMP) - Appendix 3 of the Air Quality Management Plan (AQMP) after the submission of the Annual Review to address the recommendations from the 2021 IEA as summarised in <b>Section 6.2</b> .

<sup>8</sup> **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**.

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
Con 17, Sch 3	23 September 2021	(IEA, 2021): Observations on site during the Audit site inspection identified regular occurrences where substantial vehicle generated dust emissions were evident.	It was not evident that regular or timely response to these instances was made to reduce the potential for dust generation. The use of watercarts on site during the site inspection did not appear to be sufficient to adequately mitigate vehicle generated dust generation	To address the NCs regarding vehicle generated dust emissions and the use of water carts on site, WCPL has implemented: <ul style="list-style-type: none"> <li>Applicable operational personnel have received training (November 2021) regarding dust management requirements and measures including adhering to applicable speed limits in the mine, reassessment of dust generation throughout the shift, report dust issues as they arise and response to instructions; and WCPL proposes to implement: <ul style="list-style-type: none"> <li>Review Daily production meeting to consider availability of water carts in respect of forecast adverse weather.</li> </ul> </li> </ul>
Con 19, Sch 3	23 September 2021	(IEA, 2021): As indicated above for conditions C16 and C17, observations on site during the Audit site inspection identified situations where odour was evident outside the site boundaries, and where vehicle generated dust emissions were evident without sufficient controls in place to minimise these emissions	As above for Condition 16 and Condition 17.	To address the NC regarding odour and dust emissions, refer to Condition 16 and Condition 17 (above). To address the Audit finding of establishing a trigger level to assist in mitigating dust impacts associated with adverse weather conditions, WCPL propose to: <ul style="list-style-type: none"> <li>Engage its air quality specialist to review the use of available real time meteorological data and the opportunity to establish triggers to assist in mitigating dust impacts associated with adverse weather conditions; and</li> <li>Subject to the findings of WCPL's air quality specialist review, update the AQMP accordingly.</li> </ul>
Con 21 Sch 3	23 September 2021	(IEA, 2021): While the above aspects of the AQMP were implemented, a number of areas have been identified where there are opportunities for improvement, as indicated above for the following conditions: Schedule 3, Condition 16 Schedule3, Condition 17 Schedule 3, Condition 19	As above for Condition 16, Condition 17 and Condition 19.	To address the NC regarding odour and dust emissions, refer to Condition 16 and Condition 17 (above).  To address the Audit finding of establishing triggers to assist in mitigating dust impacts associated with adverse weather conditions, refer to Condition 19 (above).
Con 29 Sch 3	23 September 2021	Refer to IEA 2021 (Con 58 Sch 3) – not complying with Table 6 Water Management Performance Measures (Chemical and hydrocarbon storage)	As below for Con 58 Sch 3	As below for Con 58 Sch 3
Con 30(d)(iii) Sch 3	2021 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	There were 3 or more consecutive pH (upper) breaches recorded at downstream stream monitoring	WCPL commenced an investigation into the trigger exceedences with the results provided in the 2021 Annual Review. SLR completed the investigation ( <b>Appendix 3C</b> ) to

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
		exceedance of the surface water trigger levels had occurred.	<p>sites in Wilpinjong Creek during 2021.</p> <p>There were 3 or more consecutive pH (lower) breaches recorded at downstream stream monitoring sites in Cumbo Creek during 2021.</p>	<p>verify if the exceedances were mining related.</p> <p>To address the Surface Water Quality TARP was reviewed in June 2021 and updated in the June 2021 review of the SWMP (Version 5) (see below);</p> <p>Upon verification of a mining related trigger exceedance, <i>notify DPIE, EPA, DPI Water and other relevant agencies as soon as practicable (within 24 hours of data being made available) that an exceedance of the trigger level has occurred and investigation will be undertaken.</i></p>
Con 30(d)(iv), Sch 3	2021 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, GWa5 and GWa14 have exceeded the lower depth-to-water trigger level during 2021. The groundwater assessment is carried out annually by WCPL's specialist groundwater consultants (refer to Appendix 3D).	<p>Supplementary / replacement bores are recommended for installation near GWa4, GWa14 and GWa5. These sites appear to show impacts associated with WCM operations.</p> <p>Quarterly reviews to identify earlier trends and exceedances. Update TARP and the GWMP as required.</p>
Con 30(d)(iv), Sch 3	2021 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.	Shallow alluvial bores GWa4, GWa5 and GWa7 have exceeded the EC trigger level during 2021. Coal measures bores GWc1, GWc3 and GWc5 have exceeded the EC trigger level during 2021. The groundwater assessment is carried out annually by WCPL's specialist groundwater consultants (refer to Appendix 3D).	<p>GWc1, GWc3, and GWc5 undergo further investigation to evaluate the groundwater source and recharge mechanism at each site.</p> <p>Quarterly reviews to identify earlier trends and exceedances. Update TARP and the GWMP as required.</p>
Con 57 Sch 3	23 September 2021	(IEA, 2021): Pit 3 pre-start area was completed during the Audit period with evidence unable to be provided showing that external lighting associated with the development is complying with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.	WCPL had not completed external lighting assessment associated with Pit 3 pre start area during the IEA audit period.	<p>To address the NC regarding minimise visual lighting impacts, WCPL has:</p> <p>Engaged a suitably quality person to undertake an audit of Wilpinjong Coal inclusive of the Pit 3 pre-start area determining compliance with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting; noting the audit was undertaken 3 December 2021.</p>
Con 58 Sch 3	23 September 2021	(IEA, 2021): It was also noted during the site inspection that a number of IBCs and fuel pods/drums were located on non hardstand areas, non-bunded areas, however these were contained within the mines dirty water system.	During the 2021 IEA, IBCs and fuel pods/drums were located on non hardstand areas, non-bunded areas,	<p>To address the Audit recommendations regarding the waste management, WCPL propose the following:</p> <ul style="list-style-type: none"> <li>Update Table 4 of the Environmental Management Strategy (EMS) to include reference to recording non-reportable and reportable environmental incidents in SAP</li> </ul>

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
				to document and provide evidence the matter is closed.  Tool Box Talk (TBT) regarding waste and hydrocarbon management requirements and measures to be provided to applicable WCPL employees and staff.
Con. 61, Sch 3	2021 Reporting Period	The Rehabilitation Strategy was not finalised.	Ongoing consultation with departments in 2021. 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.
Con 4, Sch 5	31 March 2021	2020 Annual Review was not received by the DPIE by the 31 March 2021.	Although the 2020 Annual Review was submitted via the NSW Planning Portal on the 31 March 2021, the DPIE did not receive the 2020 Annual Review by the due date of the 31 March 2021, therefore was noted as a late submission.	In discussions with the DPIE, WCPL to upload and lodge all future Annual Reviews via the NSW Planning Portal twice, i.e., upload Annual Review for consultation to all stakeholders and upload Annual Review directly to the DPIE.

Table 38 Details of Non-Compliances (EPL12425)

Relevant Approval	Date of	Details of Non-Compliance	Cause of Non-Compliance	Action to Address Non-Compliance
M2.2	9 Jan 2021	The high-volume air sampler (HV1) did not operate due to planned/unplanned power outages	The high-volume air sampler (HV1) did not operate due to planned/unplanned power outages	HV1 checked after every sample date and following power outages
M2.2	July 2021	One (1) particulate deposition sample was not collected and analysed at Monitoring Point 9 (DG11)	Glass bottle and funnel were broken by unknow person	Glass bottle and funnel immediately replaced
M2.2	3 Feb 2021	One (1) PM10 dust sample was not collected and analysed at Monitoring Point 20 (HV4).	The high-volume air sampler (HV4) operated for 22:26 (h:mm), which is outside the required run-time (AS/NZS 3580.9.3 and 3580.9.6). A power outage to HV4 is believed to have caused the non-compliant sample run-time	HV4 checked after every sample date and following power outage and/or instrument fault
M2.2	From March 2021	For the reporting period 1.8% of the continuous PM10 dust monitoring did not occur at Monitoring Point 25 (TEOM 3).	Instrument fault requiring offsite or onsite rectification work	TEOM3 checked: each month, remotely each day and following power outage and/or repair work
M2.2	Within Feb, May & Nov 21	For the reporting period 0.7% of the continuous PM10 dust monitoring did not occur at Monitoring Point 28 (TEOM 4).	Instrument fault requiring offsite or onsite rectification work.	TEOM4 checked: each month, remotely each day and following power outage and/or repair work.
M2.2	2021	For the reporting period 1.8% of the continuous PM2.5 dust monitoring did not occur at Monitoring Point 29 (TEOM 2.5).	Instrument fault requiring offsite or onsite rectification work.	TEOM2.5 checked: each month, remotely each day and following power outage and/or repair work
M4.2	Within Sept to Nov 21	For the reporting period the percentage of continuous monitoring that did not occur for: (i) air temperature, and (ii) wind speed/direction, lapse rate, rainfall and humidity, was 0.5%.	Instrument fault requiring offsite or onsite rectification work	Meteorological equipment checked remotely each day, following any repair work and during annual inspection.

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

## 12.0 ACTIVITIES FOR NEXT REPORTING PERIOD

Activities proposed to be carried out by WCPL at the Mine during the 2022 review period (i.e. 1 January 2022 to 31 December 2022) include the following:

- Construction of the remaining WEP related infrastructure (Pit 6 Pre-Start Facility);
- Finalise Rehabilitation Strategy;
- Revise the BMP accordingly, subject to finalisation of the Rehabilitation Strategy;
- Transfer of the WEP Biodiversity Areas;
- Carry out the actions from Independent Environmental Audit (IEA) in 2021 and update application management plans as required by SSD-6764;
- 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 44ha of rehabilitation in 2022 – in accordance with approved Mine Operations Plan.
- Prepare a new Rehabilitation Management Plan (RMP) to replace the MOP;
- 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.



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## 13.0 REFERENCES

- *2021 Annual Biodiversity Monitoring Report*, Eco Logical Australia Pty Ltd (March, 2022a)
- *Wilpinjong Coal 2021 Stream Health Monitoring Report*, Eco Logical Australia Pty Ltd (March 2022c)
- *Wilpinjong Coal 2021 Channel Stability Monitoring Report*, Eco Logical Australia Pty Ltd (March 2022b)
- *Monitoring of Microbats at Slate Gully Adit (Pit 8), Wilpinjong Coal Mine*, Biodiversity Monitoring Services (March 2022).
- *Environmental Noise Monitoring* (January 2021 to December 2021), Global Acoustics Pty Ltd
- *Air Quality Monitoring Data Review Wilpinjong 2021*, Todoroski Air Sciences (March, 2022)
- *2021 Annual Environmental Monitoring Review – Surface Water, SLR* (March, 2022b)
- *Annual Environmental Monitoring Groundwater Review – Groundwater Compliance 2021*, SLR (March 2022c)
- *Water Balance Model Update 2022 – Model Update & Calibration Report*, SLR (March, 2022a)

## **Appendices**

<b>Appendix 1</b>	<b>Rail Haulage</b>
<b>Appendix 2</b>	<b>Exploration</b>
<b>Appendix 3</b>	<b>Environmental Performance</b>
	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
<b>Appendix 4</b>	<b>Heritage</b>
<b>Appendix 5</b>	<b>Biodiversity</b>
<b>Appendix 6</b>	<b>Community</b>
<b>Appendix 7</b>	<b>Land Management</b>
<b>Appendix 8</b>	<b>Plans</b>
<b>Appendix 9</b>	<b>2021 IEA</b>