WERRIS CREEK COAL MINE

2020 ANNUAL REVIEW

Table 1 - Annual Review Title Block

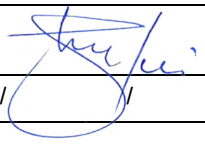
Name of Operation	Werris Creek No. 2 Coal Mine
Name of Operator	Werris Creek Coal Pty Limited
Development consent / Project Approval #	Project Approval 10_0059 Modification 2
Name of holder of development consent/project approval	Werris Creek Coal Pty Limited
Mining lease # (Leaseholder)	ML1563 (Creek Resources Pty Ltd & Betalpha Pty Ltd); ML1671, ML1672 (Werris Creek Coal Pty Limited)
Water Licence # (Licence Holder)	WAL29506 (Betalpha Pty Ltd); WAL32224 (Werris Creek Coal Pty Ltd)
MOP Commencement Date	14 January 2016
MOP Completion Date	30 November 2022
Annual Review Commencement Date	1 January 2020
Annual Review Completion Date	31 December 2020
I, Jaques duToit, certify that this audit report is a true and accurate record of the compliance status of Werris Creek Coal Mine for the period 1st January 2019 to 31st December 2020, and that I am authorised to make this statement on behalf of Werris Creek Coal Pty Ltd. Note. a) The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000. b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).	
Name of Authorised Reporting Officer	**Jacques du Toit**
Title of Authorised Reporting Officer	**General Manager – Open Cut Operations**
Signature	
Date	/ / . 29/03/2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 STATEMENT OF COMPLIANCE

This Annual Review has been prepared to provide a summary of the environmental performance of the Werris Creek Coal Mine (WCC) over the reporting period. The compliance status of the WCC against relevant approvals during the reporting period was assessed as at the end of the reporting period (i.e. 31 December 2020) and is summarised in **Table 1**.

Table 1 – Statement of Compliance

Were all the conditions of the relevant approvals complied with?	Yes/No
Project Approval 10_0059 Modification 3	Yes
Mining Operations Plan (MOP)	Yes
Mining Lease ML 1563	Yes
Mining Lease ML 1671	Yes
Mining Lease ML 1672	Yes
EPL12290	No
WAL29506	Yes
WAL32224	Yes

Any non-compliances during the reporting period are detailed in **Table 3** and ranked according to the compliance status key in **Table 2**. **Section 0** provides further details of any non-compliance and actions undertaken or proposed for the following reporting period to prevent re-occurrence and mitigate any potential adverse effects, as well as other compliance triggers that were investigated.

Table 2 – Compliance Status Key

Risk Level	Colour Code	Description
High	Non–compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non–compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non–compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur

Table 3 – Non-Compliances

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
EPL 12290	L2.2	Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified range.	Non-compliant	One exceedance reported for low pH 5.5 for discharge point EPL14	7.2.2 Environmental Performance

2 INTRODUCTION

This is the fourteenth Annual Review produced for the Werris Creek No. 2 Coal Mine (WCC) and has been prepared in accordance with the NSW Department of Planning, Industry and Environment's (DPIE) Integrated Mining Policy – Annual Review Guideline, October 2015. This document has been prepared to satisfy the following requirements:

- The Annual Review requirements of the DPIE under the Project Approval PA 10_0059 (Condition 3 Schedule 5);
- Environmental Management Report requirements of the Division of Mining, Exploration and Geoscience (DMEG)under the WCC Mining Leases; and
- The routine reporting expectations of DPI Water.

This report covers the period between 1st January 2020 to 31st December 2020.

2.1 PROJECT BACKGROUND

WCC is located approximately 4 km south of Werris Creek and 11 km north-northwest of Quirindi in northwest slopes and plains region of New South Wales (**Figure 1**) and lies within a 910 ha area covered by Mining Lease (ML) 1563, ML1671 and ML1672. The current Project Approval (PA) 10_0059 Modification 2 limits mining until 31st December 2032. The Mining Operations Plan (MOP) covers a 7-year period from the 14th January 2016 to the 30th November 2022. WCC has approval to mine in full the Werris Creek coal measures.

WCC is owned and operated by Werris Creek Coal Pty Limited (WCC), a wholly owned subsidiary of Whitehaven Coal Limited (WHC). The key operational personnel responsible for environmental management at WCC are listed in **Table 4**.

Table 4 – Key Personnel at WCC

Name	Title	Contact
Mr Matt Hollis	WCC Environmental Superintendant	02 6763 6000
Mr Craig Sullivan	WCC Operations Manager	02 6763 6000
Mr Jacques Du-toit	General Manager – Open Cut Operations	02 6741 9300

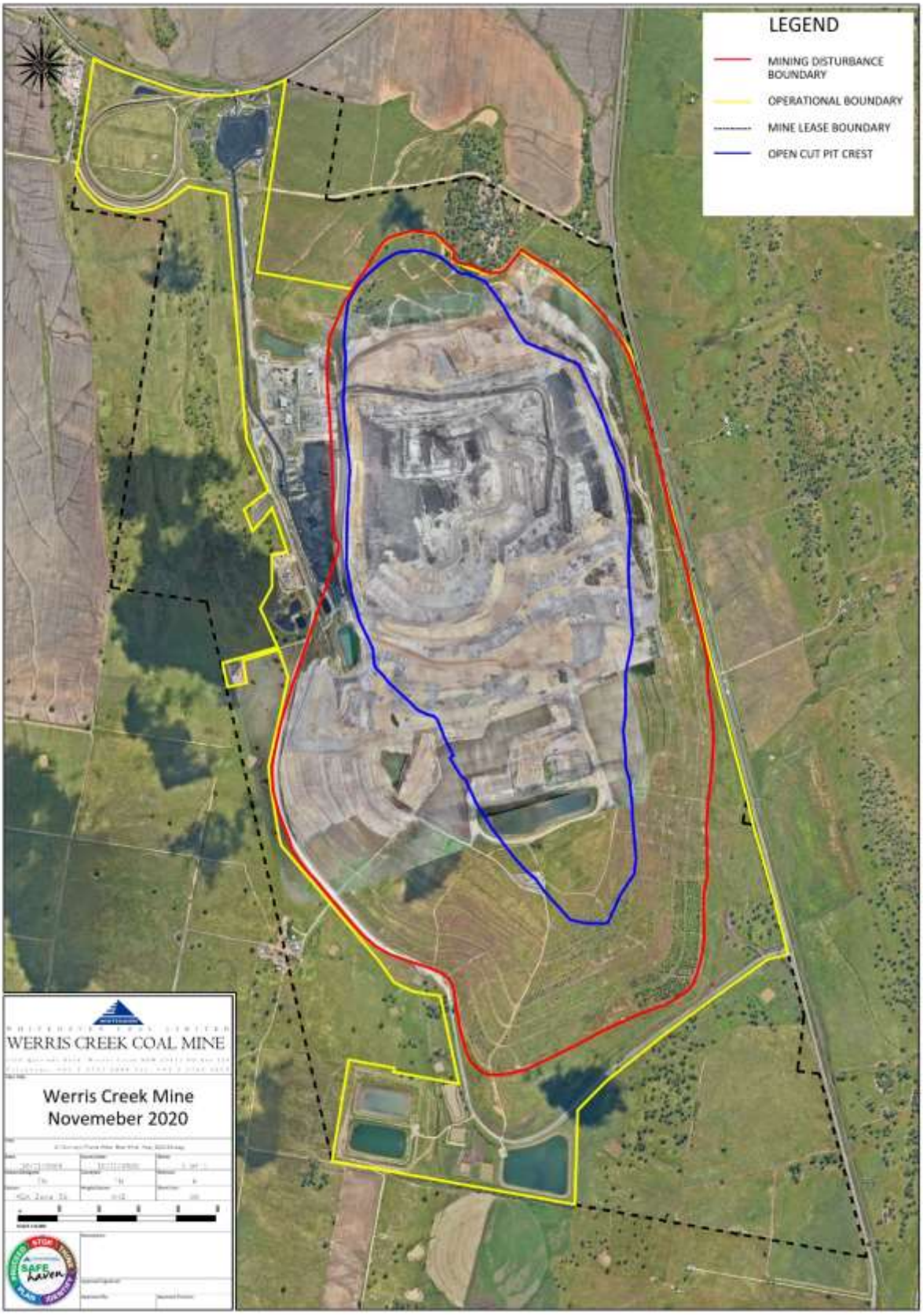


Figure 1: WCC Site Map

3 APPROVALS

Table 5 provides a summary of the key current licences, leases and approvals that have been obtained for the operation of WCC.

Table 5 – Licences, Leases and Approvals

Authority	Approval	Number	Issue	Expiry	Comments
Department of Planning Infrastructure & Environment (DPIE)	Project Approval	PA10_0059	25/10/2011	31/12/2032	Life of Mine Project allows northerly continuation for entire coal deposit mining up to 2.5Mtpa and 24 hours 7 days per week.
		PA10_0059 MOD1	30/08/2012	31/12/2032	Modification of Biodiversity Offset Area to allow for augmentation of VWD1 to 250ML.
		PA10_0059 MOD2	3/11/2015	31/12/2032	Modification of overburden emplacement design, enabling of a dry processing plant, and to allow void water for agricultural use.
Department of Regional NSW – Division of Mining, Exploration and Geoscience (DMEG)	Mining Lease	ML 1563	23/03/2005	23/03/2026	Mining Lease granted for 21 years.
		ML 1671	9/03/2012	9/03/2032	Mining Lease granted for 21 years.
		ML 1672	9/03/2012	9/03/2032	Mining Lease granted for 21 years.
	Mining Operations Plan	None	14/01/2016	30/11/2022	MOP approved on 14th January 2016
Environment Protection Authority	Environment Protection Licence	12290	18/04/2005	Anniversary date: 1 April Review Date: 23/06/2024	Last variation 16th January 2020
Department of Primary Industries – Water	Water Access Licence (Water Management Act 2000)	WAL29506	21/02/2013	Perpetuity	Aquifer – 50ML annual allocation. DPI-Water reference number 90AL822531. Formerly 90BL252588
		WAL32224	19/06/2013	Perpetuity	Aquifer – 211ML annual allocation. DPI-Water reference number 90AL828344. Formerly 90BL255087
	Water Works Approval	90WA822532	21/02/2013	15/01/2025	Linked to WAL29506. Bore. Formerly 90PT982801
		90WA828345	19/06/2013	25/06/2027	Linked to WAL32224. Excavation. Formerly 90PT982872
Australian Department of Agriculture, Water and the Environment	Environment Protection and Biodiversity Conservation Act Approval	2010/5571	21/12/2011	31/12/2032	Authorises impacts on EPBC listed threatened species and communities and listed migratory species
Dam Safety Committee	Prescribed Dams	Werris VWD1 Werris VWD3 Werris VWD4	18/10/2012 13/12/2012 13/12/2012	Perpetuity Perpetuity Perpetuity	Significant Sunny Day and Flood Consequence

4 OPERATIONS SUMMARY

4.1 EXPLORATION ACTIVITIES

The WCC drilling program during the half-year ending December 2020 achieved a total meterage of 5343m focused from Strip 20 to 25. Fifty-six open holes (chip holes) and eight cored holes were drilled for a total combined depth of 5343m. This depth includes redrills. All boreholes were geologically logged, and geophysically logged.

4.2 MINING OPERATIONS

Table 6 presents the production summary for the previous and current reporting periods and the anticipated production schedule for the next reporting period. ROM coal production is summarised by calendar year to align with PA_0059 conditions. All units are in tonnes unless otherwise stated.

Table 6 – Production Summary

Material	Approved limit	Previous reporting period (actual)	This reporting period (actual)	Next Reporting period (forecast)
Waste Rock / Overburden (bcm)	N/A	14,506,225	12,661,120	13,402,011
ROM Coal (t) (calendar year)	2,500,000 (PA 10_0059)	1,377,808	2,005,043	1,654,599
Coarse reject (t)	N/A	0	0	0
Fine reject (t)	N/A	0	0	0
Saleable Product (t)	5,000,000 (EPL12290)	1,640,075	1,659,528	1,700,000*

*Estimate

4.3 COAL HANDLING AND PROCESSING

During the reporting period, coal processing operated Monday to Friday 6:00am to 2:40am with an occasional weekend shift. Train loading operations occurred 24 hours per day, 7 days per week dependent on train scheduling. Coal is segregated at the ROM coal stockpile based on the expected ash content of the coal. The higher ash coal products are processed through the fixed plant crusher and subsequently processed through the secondary crusher. Low ash coal products are processed by the mobile crushers and then screened.

Product coal is transported by road trucks from the coal processing area to the product coal stockpile area at the train load out facility via the private coal haul road. The despatch of product coal from WCC is either railed to the Port of Newcastle or transported by road to domestic customers. Product movements by month for both rail and domestic road haulage can be found on the Whitehaven Coal website. WCC complied with Schedule 2, Conditions 7 and 8, of PA_0059. The maximum quantity of product coal stockpiled on site during the reporting period was 200,936 tonnes, which occurred during December 2020 and the total quantity of domestic coal transported from site on public roads was 1109 tonnes for the period.

4.4 OTHER OPERATIONS

4.4.1 Hours of Operation

Mining operations are permitted to be conducted up to 24 hours per day, 7 days per week, except for blasting, which is restricted to 9:00am – 5:00pm Monday to Saturday. During the reporting period, mining operations generally maintained reduced hours of 20.6 hours per day (6:00am – 2:40am) 5 days per week (Monday to Friday), and a 10.5 hour day shift on both Saturday and Sunday. Some extended hour

shifts were undertaken periodically via a earlier shift start of 5:00am as and when required to meet production demands.

Other ancillary tasks and maintenance activities continued up to 24 hours per day, 7 days per week.

4.5 NEXT REPORTING PERIOD

4.5.1 Exploration

No exploration drilling has been planned at WCC in the next reporting period, however may be undertaken if required.

4.5.2 Mine Operations

The mine production rates are planned to continue at much the same level as in the current reporting period, although the position in the strip and pit allow for more coal tonnes to be mined offset by lower overburden, as shown in **Table 6**. Vegetation clearing activities in mining areas over the next reporting period will be conducted in accordance with the approved Biodiversity Management Plan and MOP.

4.5.3 Rehabilitation progress

As per MOP commitments, WCC plans to undertake rehabilitation works on approximately 22 hectares of the overburden emplacement in the 2021 reporting period. The continued focus for the period will be on the finalisation of decommissioned areas, landform development and growth medium development. Maintenance works and supplementary planting will continue on existing rehabilitation areas to continue replacing any losses realised during the period of low rainfall between 2017- 2019.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

There were no outstanding actions carried over from the previous Annual Review.

6 ENVIRONMENTAL PERFORMANCE

6.1 NOISE

6.1.1 Environmental Management

During the reporting period various controls were implemented to reduce noise generation including:

- Annual testing of maximum sound power levels;
- Stage 1 or 2 noise attenuation fitted on all trucks;
- Use of enclosed conveyors; and
- Use of silent horns by excavator operators during the night periods.

WCC have implemented a number of mitigation strategies to minimise the effects of noise on the community, including:

- Property acquisitions;
- Private agreements;
- Installation and maintenance of an acoustic and visual amenity bund; and
- Installation and maintenance of a mine infrastructure area bund.

During the reporting period, a number of operational strategies were in place to respond to potential noise impacts from mining operations including:

- Continuous noise monitoring;
- Attended noise monitoring;
- Noise control operators engaged;
- Sound filtering and interpretation to isolate the masking effects of extraneous noise sources from birds, insects, and other environmental noise sources during monitoring.
- Modification of operations, including shutting down plant items, to reduce offsite impacts.
- Night time surface operations and dump locations planned to minimise noise where possible; and

Figure 2- identifies the monitoring locations for both continuous and attended noise monitoring locations**.**

Figure 2: Site Noise Monitoring Locations

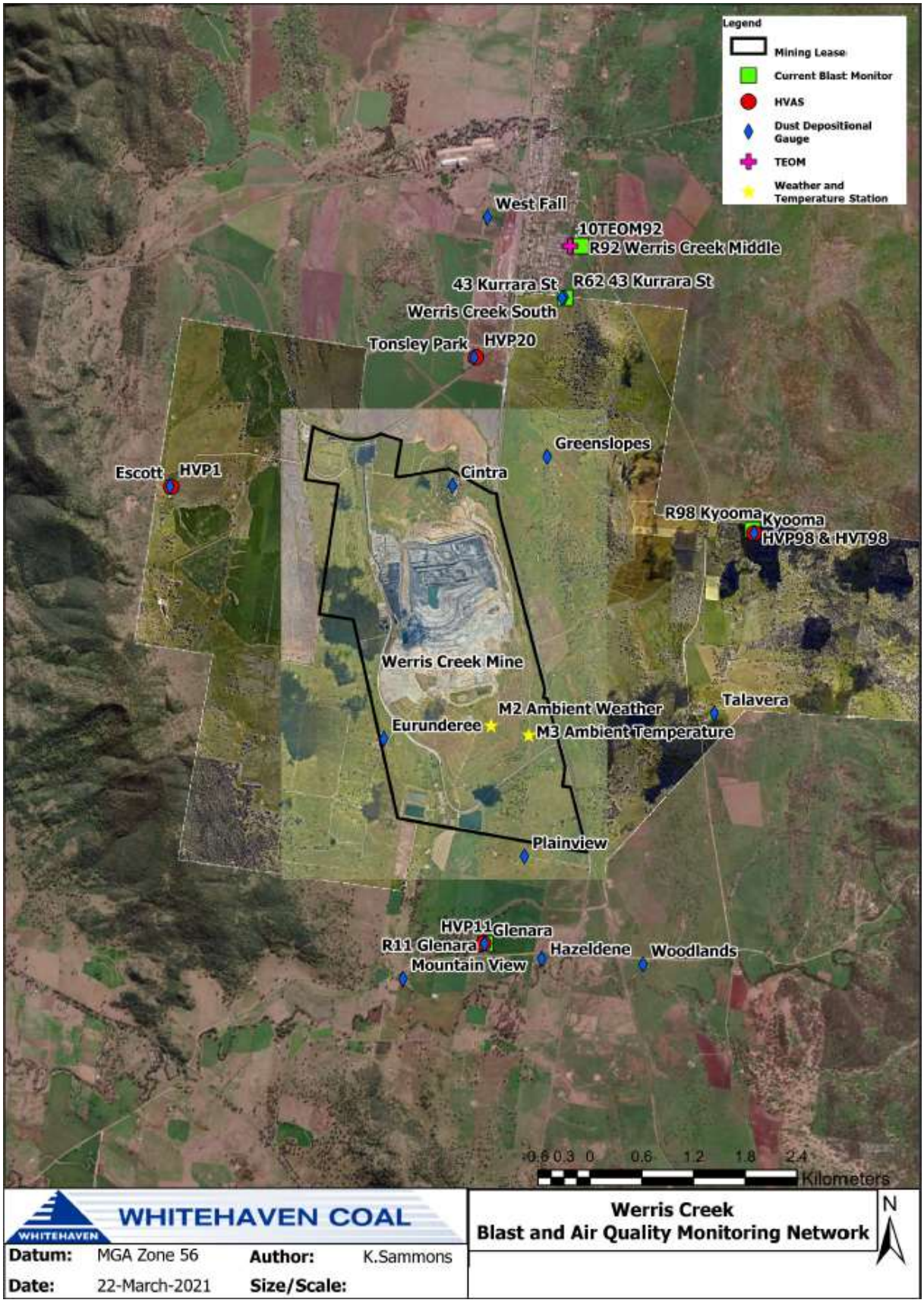


Figure 3: Blast Monitoring Sites and Air Quality Monitoring Network

6.1.2 Environmental Performance

Attended Monitoring

Attended monitoring is undertaken on a monthly basis by an independent consultant and is used to assess compliance with licence and approval limits for mine contributed noise. Attended noise monitoring identified no exceedances of the noise criteria during the reporting period (2020). As a comparison to previous years, no exceedance was reported in 2019.

Attended noise monitoring continued generally in accordance with EA predictions.

6.1.3 Proposed Improvement Measures

WCC completed the remainder of the northern visual and acoustic bund during early 2020.

6.2 BLASTING

6.2.1 Environmental Management

Best practice blast management measures are implemented at WCC to achieve acceptable outcomes in terms of blast overpressure and vibration, fume generation, and dust impacts.

During the reporting period a number of controls were applied and maintained to reduce the potential for impacts, including:

- buffer management through acquisition of a number of adjacent properties through private negotiation;
- blasts designed with consideration of the predicted vibration of the shot, geology, ground conditions, explosives selection, initiation sequence/timing, powder factor, history/experience, and the sleeping time of the shot;
- maintenance of the predicted blast vibration objective for Werris Creek of 0.8 mm/s;
- explosive product selection and loading, to reduce the risk of auto-ignition and/or blast fume generation;
- stemming height and quality monitored by, the shot-firer to minimise the risk of elevated air overpressure from rifling;
- initiation sequence strategies are used to minimise vibration and air overpressure impacts;
- sleeping shots minimised to avoid potential deterioration of product;
- WCC aims to fire all blasts in the middle of the day generally between 12:00pm and 2:00pm, when atmospheric mixing is generally highest;
- blast notification prior to every blast;
- pre-blast weather assessment conducted;
- road closures of the Werris Creek Road when proximity of blasts occurred within 200 metres;
- blast fume rating recorded; and
- structural inspections - In response to claims of property damage due to blasting operations.

Air blast overpressure and ground vibration monitoring are undertaken at four monitoring locations illustrated in **Figure 3**, with vibration and air overpressure also measured adjacent to a railway culvert for blasts within 500 metres of this structure. All blast monitors were operational during the reporting period.

6.2.2 Environmental Performance

There were 82 blasts undertaken during the reporting period. All blast events have been within the applicable airblast overpressure and ground vibration limits set out in PA 10_0059 MOD2.

6.3 AIR QUALITY

6.3.1 Environmental Management

The air quality criterion applicable to WCC is specified in Condition 16, Schedule 3 of PA10_0059 MOD2 and is managed through the implementation of the Air Quality and Greenhouse Gas Management Plan (AQGHGMP). During the reporting period, various controls were implemented to manage dust including:

- Use of water carts across the site with an additional contractor water cart also utilised during rehabilitation activities;
- Overburden, coal and soil loading activities are not undertaken during periods of adverse weather (high winds or dry conditions), with SMS triggers employed to provide a near-real time operational response;
- Blasting activities restricted to suitable weather conditions and include notification to key stakeholders and residents;
- All personnel are instructed that all vehicles must utilise existing tracks on-site and must be driven to the conditions to minimise trafficable dust generation;
- The extent of disturbed areas (pre-strip clearing and rehabilitation) are minimised to that required for mining operations, with these areas stabilised and revegetated as soon as practicable once no longer required for ongoing operations;
- Water sprays are used on the coal feed hopper, crusher and at all conveyor transfer and discharge points;
- A designated pump and sprinkler installed during the reporting period to minimise dust entrainment off the SAIL stockpile in adverse weather conditions;
- Water Sprinklers added to the TLO to aid in dust suppression;
- Modification of operations, including shutting down plant items, to reduce offsite impacts; and
- Installed bird deterrents were maintained on depositional dust gauges to reduce contamination.

The above management measures will continue to be maintained throughout the next reporting period to continually improve air quality performance.

The WCC Air Quality Monitoring network is illustrated in **Figure 3** and includes:

- Continuous monitoring of $PM_{2.5}$ and PM_{10} levels at the Werris Creek TEOM;
- PM_{10} levels are measured at four High Volume Air Samplers (HVAS) distributed across neighbouring properties surrounding WCC. The HVAS run for twenty-four hours every six days. Total Suspended Particulate Matter (TSP) is also measured at a separate HVAS unit located at Kyooma;
- A network of 20 dust deposition gauges surrounding WCC, measuring deposited dust and particulates collected monthly; and
- Six depositional dust gauges located in Quirindi to measure deposited dust adjacent to the railway line. The dust gauges are located in a linear fashion on either side of the railway line, in order to determine the contribution of coal dust to the overall reported quantity.

6.3.2 Environmental Performance

TEOM

Monitoring conducted at the Werris Creek TEOM indicates the PM_{10} annual average remained below the applicable criteria of 30 µg/m^3. The majority of 24-hour measurements of PM_{10} remained below the 24-hour average limit of 50 µg/m^3 with the exception of six results which exceeded the limit. The elevated

results were identified on the following dates during 2020: January 5th, 9th, 11th, 20th, 21st, February 19thand August 20th.

Notifications regarding the elevated results were provided to the DPIE following receipt of the monitoring results. Subsequent investigations demonstrated WCC was not the cause of the elevated PM_{10} levels on all occasions. High regional dust alerts for the local area (North West Slopes) were issued by the NSW Office of Environment and Heritage on all of the above-mentioned dates, advising of elevated PM_{10} levels present in the general area. An increase in region wide dust levels occurred in January triggering a multitude of High Regional Air Quality Alerts. This resulted in dust exceedances that were associated with bushfire smoke from neighbouring regions and frequent dust storms from drought conditions that were not attributed from site interactions. On all occasions, dust generation from mining operations was adequately controlled via extensive use of water carts or operational shutdown.

The dust exceedance event that occurred on the 20th August was attributed to a regional dust storm resulting from high winds in far western NSW that carried the dust into eastern NSW including Werris Creek. A high regional dust alert for the local area (North West Slopes) was issued by the NSW Office of Environment and Heritage for the event.

Figure 4 below shows continuous results for PM_{10} (24hr) and $PM_{2.5}$ (24hr) for the reporting period, as well as a running annual average throughout the reporting year.

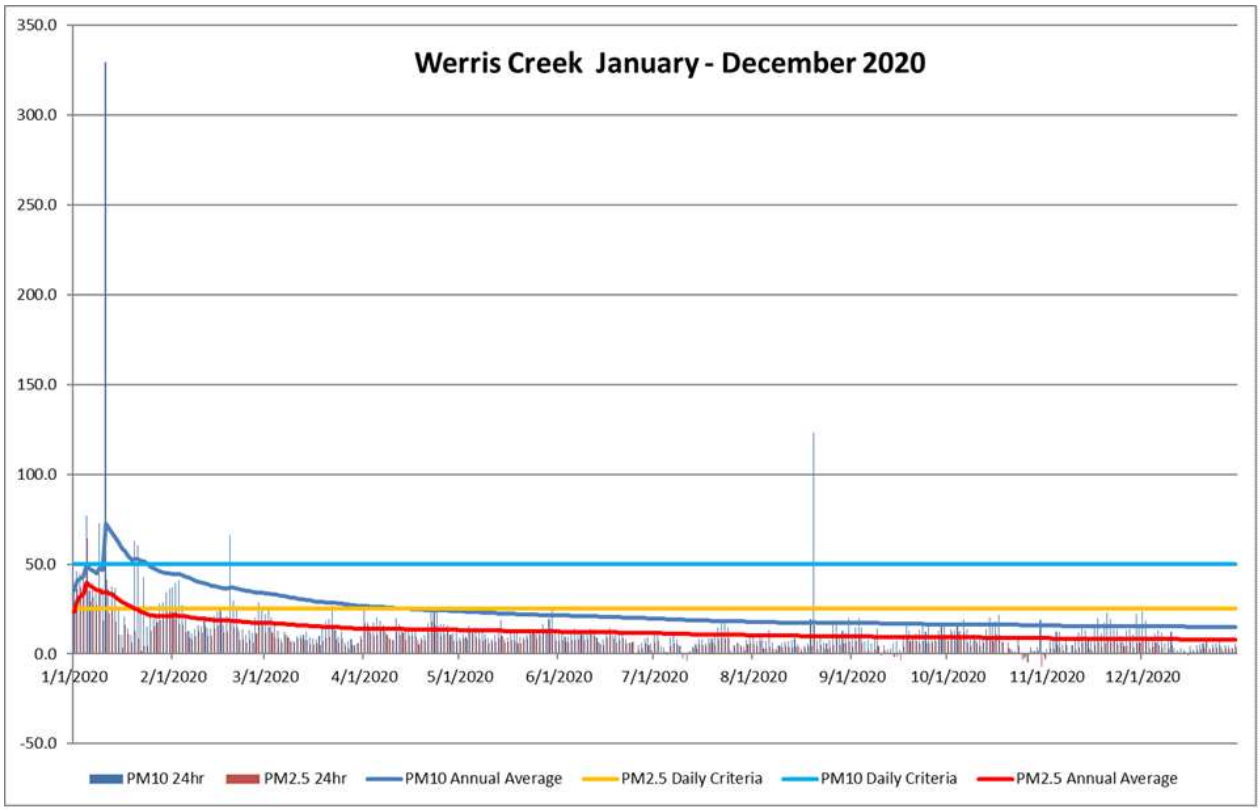


Figure 4: Werris Creek TEOM summary for January – December 2020

HVAS

Monitoring conducted across the HVAS PM_{10} network has shown the rolling annual average PM_{10} concentrations to be below the criteria of 30 µg/m3 at all monitoring stations across the network during the reporting period. See **Figure 3** and

Table 7**.**

The majority of 24-hour measurements of PM_{10} remained below the daily criteria of 50 µg/m^3 with the exception of eleven monitoring results. The exceedances occurred at the following sites;

- Tonsley Park on January 3rd, 9th and 21st.
- Kyooma on January 9th and 21st.
- Escott on January 9th and 21st.
- Glenara on January 21st.

Notifications regarding the elevated results were provided to the DPIE following receipt of the monitoring results. Notifications regarding the elevated results have been provided to the DPIE following receipt of the monitoring results. Subsequent investigations demonstrated WCC was not the cause of the elevated PM_{10} levels on all occasions. High regional dust alerts for the local area (North West Slopes) were issued by the NSW Office of Environment and Heritage on all of the above-mentioned dates, advising of elevated PM_{10} levels were present in the general area. An increase in region wide dust levels occurred in January triggering a multitude of High Regional Air Quality Alerts. This resulted in dust exceedances that were associated with bushfire smoke from neighbouring regions and frequent dust storms from drought conditions. On all occasions, dust generation from mining operations was adequately controlled via extensive use of water carts or operational shutdown.

All other PM_{10} measurements were within criteria as shown in **Figure 5.**

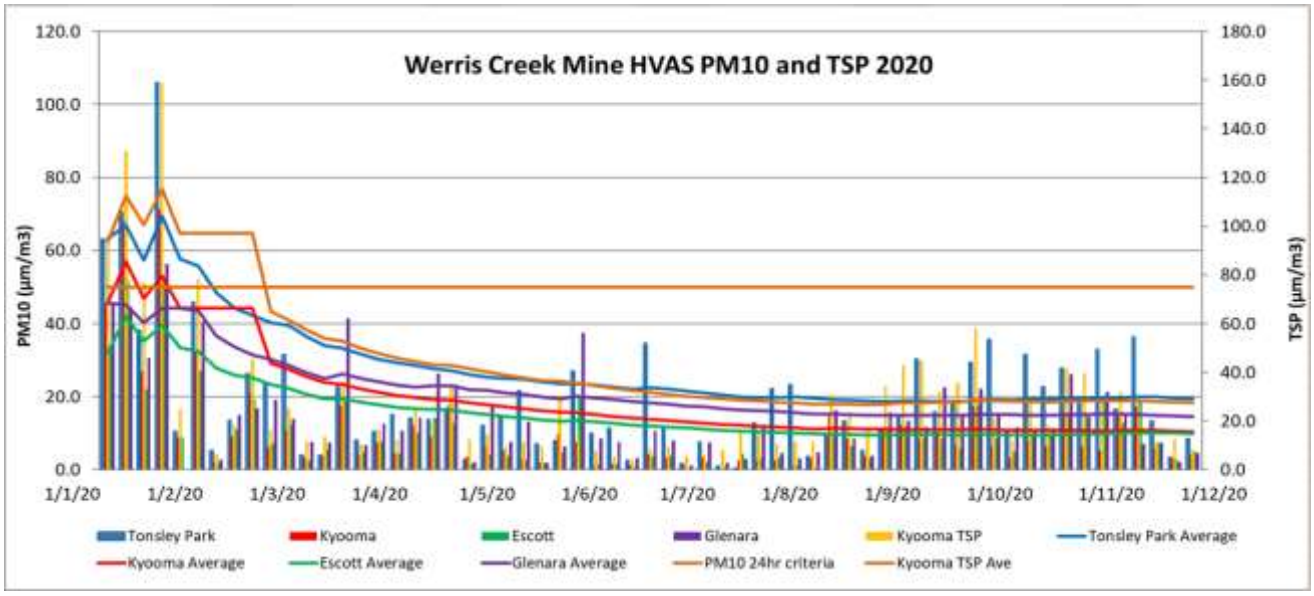


Figure 5: Werris Creek Mine HVAS PM10 and TSP results for January – December 2020

A summary of current and historical HVAS and TEOM data is presented in

Table 7

Table 7- TEOM and HVAS Averages

Location	2018	2019	2020
	µg/m^3		
10TEOM92 – Werris Creek	16.1	27.0	**14.7**
HVP20 – Tonsley Park	20.6	33.0	**19.4**
HVP98 – Kyooma	14.9	25.0	**10.5**
HVP1 – Escott	13.7	22.0	**9.9**
HVP11 – Glenara	23.4	32.3	**14.5**

Deposited Dust

Analysis of January – December 2020 monitoring results from depositional dust gauges shows the majority of monitoring sites met compliance criteria, with the exception of DG2 (Cintra) and DG9 (Marengo) which was above the annual average criteria for the 2020 reporting period which is presented in **Table 8**. DG2 (Cintra) had consistently high dust levels through the first half of the year with a slight reduction through the later part of the year. The dust is consistent with the activities of the nearby mining activity immediately adjacent to the dust gauge – DG2 is located within the Mining Lease Boundary. DG9 (Marengo) had an anomalous high dust result in January 2020.When considering the low deposited dust levels at other nearby isolated gauges to the DG9 gauge, it is apparent a localised source of dust, unrelated to activities at Werris Creek Coal Mine has contributed to the anomalous result.

Of the five sites with elevated monthly dust measurements, sites (Railway View, Plain View, Woodlands, 8 Kurrara Street and Werris Creek South) all recorded annual depositional dust averages below the criteria.

An investigation of the results at dust gauge site DG34 (8 Kurrara street) and DG17 (Woodlands) with elevated measurements during the reporting period showed elevated results and low deposited dust levels at nearby gauges, indicating a localised source of dust generation or contamination at both sites, unrelated to activities at WCC. A summary of deposited dust monitoring results is presented in **Table 8** below.

Table 8 – Deposited Dust Summary for 2020

EPL# 12290	ID	Property	Annual Average	Average - Excluded	Minimum	Maximum	AQGHGMP Criteria	# Results Excluded
-	DG1	Escott^	1.4	-	0.4	3.1	4.0	0
-	DG2	Cintra^	**5.4**	-	2.6	11.4	4.0	2
-	DG3	Eurunderee^	1.7	-	0.6	4.0	4.0	0
-	DG5	Railway View^	1.6	-	0.7	4.4	4.0	0
-	DG9	Marengo^	**8.4**	-	0.6	82.8	4.0	0
#29	DG11	Glenara	1.3	-	0.4	3.0	4.0	0
-	DG14	Greenslopes^	1.0	-	0.5	2.1	4.0	0
-	DG15	Plain View^	1.5	-	0.5	4.1	4.0	0
-	DG17	Woodlands	2.0	-	0.5	6.4	4.0	0
-	DG20	Tonsley Park^	2.1	-	1.2	3.2	4.0	0
-	DG22	Mountain View	1.4	-	0.3	3.7	4.0	0
-	DG24	Hazeldene	1.6	-	0.8	3.5	4.0	1
-	DG34	8 Kurrara Street	2.7	-	0.6	15.7	4.0	0
-	DG62	Werris Creek South	1.2	-	0.4	5.2	4.0	0
#30	DG92	Werris Creek Centre	0.9	-	0.4	2.1	4.0	0
-	DG96	Talavera+	-	-	-	-	4.0	-
#28	DG98	Kyooma	1.3	-	0.2	3.8	4.0	0
-	DG101	Westfall	1.7	-	0.8	3.5	4.0	0
-	DG103	West Street	1.5	-	0.7	3.1	4.0	0

^ Properties owned by Werris Creek Coal;

*Sample contaminated with organic matter from non-mining source (i.e. bird droppings and insects)

@ Sample contaminated from local dust source non-mining related (i.e. fire, farming activities)

Bold = elevated result

NS = Not Sampled

+ = Dust gauge removed temporarily by landowner

6.4 BIODIVERSITY

6.4.1 Environmental Management

Biodiversity was managed in accordance with:

- Schedule 3 Conditions 28 of the PA 10_0059;
- EPBC 2010 / 5571 Condition 1; and
- The WCC Biodiversity Offset Management Plan (BOMP).

6.4.2 Environmental Performance

WCC Biodiversity Offset Management Plan (BOMP) was approved by DPIE on 30th August 2013. The WCC Biodiversity Offset Strategy is required to offset 1317ha of native woodland to achieve a 'like for like or better' biodiversity outcome across six Offset properties (Biodiversity Offset Areas – BOAs) adjacent to the WCC for the purpose of restoring vegetated corridors across WCC land holdings and Quipolly Creek Catchment linking with sub-regional habitat corridors.

Offset Security Management

The WCC BOA has previously been secured using NSW Conveyancing Act 1919 Section 88E Instruments which were registered on 20th July 2018 and 2nd August 2018 finalising compliance with PA 10_0059 Schedule 3 Condition 27 and EPBC Act Approval 2010/5571 Condition 1.

Infrastructure Management

During the reporting period, the condition of the BOA fences, gates and signage were maintained to continue restricting unauthorised access and minimise livestock incursion with no new boundary fencing constructed. Hazardous material and infrastructure assessments identified 33 redundant and derelict assets/infrastructure associated with the former agricultural land use across the WCC BOA during 2020; of which 25 items (troughs, farm machinery, pig sheds, concrete pipes, fencing material etc.) were removed. Remaining waste and infrastructure items on Marengo, Greenslopes and Eurunderee will continue to be assessed, removed and remediated as required. All waste items were disposed offsite or recycled at the Quirindi Waste Management Facility.

Seed Management

Routine seed assessments completed for the WCC BOA identified a turnaround in climatic conditions across the region due to the above average rainfall in 2020. The routine seed assessments aim to identify on a seasonal basis the life cycle stage and development of native plants to identify what, where, when and how to target appropriate resources to collect seed for future revegetation programs. A total of 12 species were collected resulting in 2,220kg of local provident seed from the Eurunderee Offset property. As part of the WHC group wide revegetation planning, the onsite collected seed was supplemented with commercially sourced local and regional provident seed by reputable seed collectors. A local revegetation provider was engaged to propagate the seed to produce Box Gum and non-EEC/CEEC Woodland over storey species seedlings required for the 2020 revegetation program completed as well as planning for the 2021 revegetation program for the MCCM BOA.

Revegetation Management

The BOMP revegetation strategy focuses on restoration and revegetation of previously cleared derived native grasslands and assisting natural regeneration in better quality woodland areas. During the reporting period, revegetation ground preparation utilised tractors and excavators augering holes (to a depth >0.3m) to relieve compaction, improve permeability and infiltration to increase sub-surface soil moisture for planting as part of the 2020 revegetation program on the Eurunderee and Marengo Offset properties. There was no understorey revegetation carried out during the reporting period. The over storey revegetation program was undertaken between May and July 2020 respectively across the Eurunderee and Marengo BOAs with more than 9,800 hiko seedlings of *Eucalyptus albens*, *Eucalyptus*

blakelyi, *Eucalyptus melliodora and Angophora floribunda* planted over 210ha. Combined with good seasonal conditions, routine tree watering and maintenance activities post planting have been successful to ensure that over 90% survival has been achieved for the WCC BOA which is commensurate with the target Woodland vegetation structure.

Heritage Management

During the reporting period, heritage site and fencing inspections were completed of the 2 known Aboriginal cultural heritage sites within the WCC BOA. Each site is maintained with protective fencing around the heritage site perimeter and signage to mitigate access and disturbance.

Habitat Management

During the reporting period, no specific habitat management works were undertaken.

Weed Management

WHC coordinated routine formal weed monitoring/inspections undertaken across WCC BOA in February, May, September and November 2020. The priority weeds identified included legacy noxious weeds inherited from previous owners' management regimes such as Johnston's Grass, African Box Thorn, St Johns Wort and Common Prickly Pear as well as a range of broadleaf weeds within revegetation areas. The weed monitoring/inspections ensure that timely and prioritised weed control is undertaken on a seasonal basis with the spatial information directly given to spraying contractors to identify what, where, when and how to target appropriate resources across the WCC BOA for weed control.

During the reporting period, WHC implemented a weed control program across the WCC BOA and Rehab including 903.9ha and 59.1ha respectively treated between February and November 2020 targeting Johnston's Grass, St John's Wort and broadleaf weeds within revegetation areas. Only appropriately qualified and experienced weed contractors (AQF3 accreditation or higher for use of herbicide) were engaged to undertake weed control works for WHC.

Feral Animals Management

WHC coordinated routine formal feral animal monitoring across WCC BOAs in February, May, September and November 2020. The adoption of a "monitor, measure and manage" approach to feral animal management will allow WHC to implement adaptive management in response to changes being measured through monitoring in feral animal abundance specific to the different geographical regions of the WCC BOAs. Feral animal monitoring utilises the relevant methodologies for specific feral animals generally in accordance with the NSW DPI *Monitoring Techniques for Vertebrate Pests* so that a range of methods can be used such as transects/spotlighting and cameras traps where practicable and relevant to specific offset areas/properties. Monitoring demonstrated that certain animals like Eastern Grey Kangaroos can be high, Foxes, Hares, Deer and Feral Pigs can be medium in abundance seasonally with all other feral animal species recorded as scarce to low abundance levels across 2020. The feral animal monitoring ensures that timely and prioritised feral animal control is undertaken on a seasonal basis identifying what, where, when and how to target appropriate resources across the WCC BOAs for feral animal management.

During the reporting period, WHC implemented a comprehensive feral animal control program across the WCC BOAs with routine 1080 baiting and pig trapping programs undertaken in June (38 Foxes removed from 225 baits presented), September (36 Foxes and 4 Feral Pigs removed from 225 baits presented and 3 Feral Pigs trapped) and December 2019 (44 Foxes removed from 225 baits presented). A total of 675 baits were presented on WCC BOA with 18% taken by feral animals. Night time open range shooting programs were implemented in conjunction with the other routine control programs resulting in an additional 5 Rabbits, 8 Hares, 3 Pigs and 3 Foxes were controlled in 2020. Only appropriately qualified and experienced feral animal contractors (appropriate feral animal management qualifications, NSW fire arm licence and pesticide accreditation where relevant) were engaged to undertake feral animal control works for WHC.

Soil & Erosion Management

Soil Testing

Annual inspections were undertaken including unsealed tracks and associated drainage structures across the WCC BOA to review appropriate erosion and sediment control measures required in accordance with the Blue Book (Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004)). Due to the above average rainfall during the reporting period, additional targeted maintenance was identified for six sites within WCC BOA to mitigate further erosion and sediment issues. The remaining sites and tracks/drainage structures can be continue to be maintained during routine WHC Biodiversity firebreak track maintenance program.

Grazing Management

WCC BOA has been destocked since 2012 and continued to be destocked and no strategic grazing occurring during the reporting period. There was no stock incursion recorded in the WCC BOA during the reporting period.

Bushfire Management

In accordance with the BMP, annual fuel load monitoring was undertaken in December 2020 as part of planning and assessment of bushfire hazard and ecological burn strategy in 2021. During the reporting period, the average grass load measured and fire risk for the WCC BOA ranged between 3.6t/ha to 4.1t/ha (moderate) and moderate fire risk. Other fire management implemented by WHC during the reporting period included spatial data collection for 76.2km of firebreak tracks with maintenance carried out as required to a zero fuel barrier standard at WCC BOA. WHC also completed a 40ha ecological burn of the Railway View Offset property in August 2020. WHC maintains regular communications throughout the reporting period with the Liverpool Range Zone RFS team around planning of other WHC BOA site ecological burn programs as well as providing WHC emergency contacts. WHC maintains a specialist firefighting contractor for an on call engagement during the fire season to respond in the event of a bushfire on WHC BOAs and non-mining lands.

Monitoring Program

During the reporting period, the ecological monitoring program of the WCC BOA included winter bird surveys that were undertaken in August 2020; annual spring flora monitoring of 23 sites undertaken during October 2020 and annual spring fauna monitoring of 18 general fauna monitoring sites and 27 bird survey sites during October and November 2020. During the winter bird surveys, no threatened species were recorded. During spring flora monitoring, native plant species richness (NPS) increased from nine sites last year to 11 out of 23 meeting or exceeding the completion criteria (80% native species richness benchmark for relevant biometric vegetation communities). Native overstorey cover (NOS) increased from 7 sites last year to 8 out of the 23 sites meeting or exceeding the completion criteria (minimum overstorey cover benchmark for relevant biometric vegetation communities). Native midstorey cover (NMS) was consistent with the previous year with 23 out of the 23 sites meeting or exceeding the completion criteria (minimum midstorey cover benchmark for relevant biometric vegetation communities). Native ground cover grass (NGCG) increased from 11 sites last year to 14 out of the 23 sites meeting or exceeding the completion criteria (minimum groundcover grass benchmark for relevant biometric vegetation communities). During spring fauna monitoring, 82 bird species were recorded during standardised bird surveys across 27 sites. Species richness values ranged from 5 to 35. This was a decrease from the 2019 species richness of 91 (range 8 to 33). Split by habitat, 59 species of bird were detected in 8 woodland sites (average = 21.8, range 14 to 35), 45 in 11 revegetation/rehabilitation sites (average = 11.9; range 5 to 16), and 37 in 8 regenerated sites (average

= 12.6; range 8 to 23). Eight species of reptile (average = 2.1; range 1 to 4) and 2 species of frog (average = 0.2; range 0 to 1) were detected during diurnal herpetofauna surveys of 18 sites. This represents a decline in reptile richness compared with 2019 surveys, when 21 species were detected (range 0 to 6). General spotlighting surveys at 18 sites detected 33 species of vertebrate taxa (average = 6.4; range 3 to 9). Microbat results from Anabat monitoring recorded 11 species positively identified with another 3 potential species that were identified as potentially present. This is comparable to the 2019 result of 14 confirmed species with site based species richness estimates ranging from 1 to 11.

6.4.3 Proposed Improvement Measures

Monitoring programs such as quarterly weed inspections and quarterly seed assessments will continue to be implemented into the next period.

6.5 HERITAGE

6.5.1 Environmental Management

The LOM Environmental Assessment determined that the project would not result in any future adverse impacts on Aboriginal cultural heritage. The impact associated with the removal of the remnant features of the former Werris Creek Colliery is considered to be minor, as the historic sites do not meet the NSW Heritage Office (2001) criteria for high significance sites (even at a local level) (Landskape, 2010). WCC previously undertook quarterly inspections of the only known significant Aboriginal heritage item onsite – the “Narrawolga” Axe Grinding Grooves prior to their relocation in consultation with stakeholders, to the Willow Tree Visitor Information Centre in 2015.

The Heritage Management Plan outlines additional heritage management actions related to items associated with the former underground and these have been completed. The mining of the former underground workings were finalised during the first half of 2020. No items of heritage significance were located.

6.5.2 Environmental Performance

No previously unknown sites or artefacts were discovered during the period.

6.6 WASTE

6.6.1 Environmental Management

WCC continued to engage a total waste management service provider during 2020. This practice has ensured WCC is positioned to maintain regulatory compliance with regard to offsite disposal at licenced facilities and on-site storage requirements.

6.6.2 Environmental Performance

The engaged waste management service provider records waste generation quantities at the point of either disposal or collection. The quantities of each generated waste type have been summarised in **Table 9** for the 2020 period. The current reporting period demonstrates benefits in total levels of resource recovery seen from improvements to waste management practices at WCC originally implemented in late 2014. These improvements have led to reduction in general waste volumes, while seeing a general increase in recycling / resource recovery overall. 2020 saw improvements in waste tracking via increased accuracy in recording of waste quantities being generated and disposed from site. These waste tracking improvements provide for an enhanced degree of measurability of the success for all resource recovery initiatives undertaken going forward.

Table 9 – Approximate Quantities of Waste Generated for 2020

Waste Stream	2017	2018	2019	2020
Waste Oil (kL)	103.8	194.4	162.3	214.5
Scrap Metal (tons)	76.2	33.5	33.0	36.5
General Waste (tons)	*1,051 m^3	*1,456 m^3	*1302 m^3	163.8
Co-Mingled Recycling (tons)	*159m^3	*161m^3	*170m^3	6.25
Timber (tons)	N/A	N/A	N/A	6.76
Liquid Waste – J120 / Septic (L)	0	4000	4000	22,500
Empty IBCs (tons)	2.0	1.98	N/A	4.4
Hydraulic Hoses + Filters (tons)	34.1	21.1	20.5	17.2
Batteries (tons)	2.94	4.48	N/A	4.9

***** Previously recorded / reported as cubic meters (m^3) only.

6.7 ENVIRONMENTAL PERFORMANCE SUMMARY

An environmental performance summary is presented in **Table 10** below.

Table 10 – Environmental Performance

Aspect	Approval Criteria / EIS Prediction	Performance during the reporting period	Trend / Key Management Implications	Implemented / proposed management actions
Noise	Refer s6.1	Approval criteria has been met	NA	NA
Blasting	Refer s6.2	Approval criteria has been met	NA	NA
Air Quality	Refer s6.3	Eight (8) exceedances of dust criteria at HVAS occurred at the following sites; • Tonsley Park PM10 on January 3rd, 9th and 21st. • Kyooma PM10 on January 9th and 21st. • Escott PM10 on January 9th and 21st. • Glenara PM10 on January 21st. Seven (7) exceedances of dust criteria at TEOM on the January 5th, 9th, 11th, 20th, 21st, February 19th and August 20th.	Monthly HVAS sampling identified the daily maximum criteria of 50 µg/m3 was exceeded on eight occasions Daily TEOM sampling identified the daily maximum criteria of 50 µg/m^3 was exceeded on seven occasions	Notifications regarding the elevated results were provided to the Department of Planning, Industry and Environment following receipt of the monitoring results. Subsequent investigations demonstrated that WCC was not the cause of the elevated PM10 levels on all occasions.
Biodiversity	Refer s6.4	Approval criteria has been met	NA	NA
Heritage	Refer s6.5	Approval criteria has been met	NA	NA

7 WATER MANAGEMENT

7.1 WATER TAKE

WCC currently holds two Water Access Licences, with the water taken under these licences for the 2020 reporting year summarised in **Table 11.**

Table 11 - Water Take 2020 January - December (ML)

Water Licence #	Water Sharing Plan	Water Source and Management Zone	Entitlement	Passive Take / Inflows	Active Pumping by WCC	Total
WAL 32224	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah – Oxley Basin Mdb Groundwater Source	211	42	0	42
WAL 29506	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah – Oxley Basin Mdb Groundwater Source	50	0	0	0

7.2 SURFACE WATER MANAGEMENT

7.2.1 Environmental Management

The management of surface water aims to prevent surface water pollution both within onsite dams and offsite watercourses. The overall water management strategy is to segregate different water streams onsite based on the potential pollutant in each stream.

- Void Water – the void water catchment area is comprised of the active mining area and overburden emplacement which collects both rainfall runoff and groundwater in the base of the open cut void and needs to be dewatered by pumping to the surface to allow mining of the basal coal seam;
- Dirty Water – the dirty water catchment area is comprised of areas previously disturbed by mining such as rehabilitation and soil stockpile areas, with the focus on the reduction of suspended solids and subsequent discharge of treated water;
- Clean Water – the clean water catchment area is undisturbed by mining activities and allowed to flow offsite without active management; and
- Contaminated Water – includes potentially hydrocarbon contaminated water runoff from the workshop and fuel farm areas which is treated through an oil-water separator, as well as water from ablutions which is treated through a septic system onsite.

Void Water Management

Void Water is stored in one of six designated void water dams (VWD's) comprising the void water management system at WCC. VWD's 1,2, 3, 4 and 7 are long term water storage structures, while VWD 8 is a temporary structure, designed for the transfer of void water for use around the project or short term out of pit storage of out of surplus void water. The operational functions of the current VWD2 will be replaced by VWD7 which was constructed in 2018 and is scheduled to be commissioned for full time operational use in 2021. VWD2 will be decommissioned shortly thereafter. This will allow for the northern advancement of the dump formation over the current location of VWD2 in line with the MOP. An annual inspection of the prescribed dams (VWD's 1, 3 and 4) was undertaken by an external structural engineer. The annual inspection identified that all prescribed dams were being managed appropriately.

Void water is predominantly used for dust suppression purposes on site. Water carts engaged in watering haul roads and other areas of the mining excavation are the predominant user of water for dust

suppression purposes, with water also used to control dust at conveyor loading points and on coal stockpiles. Void water use is monitored and calculated monthly using water meters on key pipelines and water fill points, supplemented by surveyed volumes of water stored in dams and the void on site. This data is used to update the Water Balance Model for site.

Dirty Water Management and Erosion and Sediment Control Measures

During the period, dirty water dams remained in place to capture surface runoff from disturbed areas of the mine site. There was a total of twenty two discharge events during the reporting period from these dams. Nine of those events were uncontrolled and thirteen were controlled discharge events.

Extensive maintenance of stormwater management infrastructure were undertaken during the reporting period to repair erosion and prevent sediment transport at WCC. Maintenance of existing sediment dams SB18 and SB17 occurred during the period, requiring de-silting, maintenance of flow paths and minor erosion control. All site drains and contours were inspected and maintained as required during 2020 to remove of any accumulated sediment and maintain design flow capacity. Regular checks of the dirty water management system were undertaken as required dependent on rainfall volume.

Contaminated Water Management

WCC undertook regular maintenance of the key contaminated water infrastructure during the reporting period, with the servicing of both the workshop sump and the oil water separator occurring as required throughout the reporting period. Waste from these facilities is transported either offsite (liquid waste to licensed waste facility) or to the onsite bioremediation area (solids) for treatment / disposal of residual hydrocarbons within the material.

7.2.2 Environmental Performance

Surface Water Quality – Routine Quarterly Monitoring

Quarterly sampling of water stored within the clean, dirty and void water dams and within Quipolly and Werris Creeks' (**Figure 6**) was undertaken by WCC.

Table 12 presents the average results recorded for routine quarterly monitoring at each location for the 2020 reporting period.

The quarterly water quality shown in **Table 12** was generally consistent with the previous reporting period, showing a slight decrease in levels for all of the water quality parameters. This was attributed to consistent rainfall for the majority of the reporting period, therefore decreasing recorded EC levels. Water quality monitoring was generally consistent with EA predictions for each analyte.

Table 12 – Quarterly Surface Water Quality for Dams and Offsite Creeks'

Dam/ Creek	Monitoring Site (EPA No)	Number of Samples	Value	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil & Grease (mg/L)
VWD1	16	3	Ave	8.2	1123	23	<5
			Max	8.6	1180	23	<5
VWD2	27	3	Ave	8.0	1038	26	<5
			Max	8.0	1340	43	<5
VWD3	-	2*	Ave	8.2	1335	<5	<5
			Max	8.2	1380	<5	<5
VWD4	-	2*	Ave	7.6	974	20	<5
			Max	8.1	1330	24	<5
SB2	10	3	Ave	8.0	372	56	<5
			Max	8.5	462	102	<5
SB9	12	3	Ave	7.5	448	52	29
			Max	7.9	482	84	29
SB10	14	1*	Ave	7.6	158	9	<5
			Max	7.6	158	9	<5
SB18	32	2*	Ave	7.5	235	54	<5
			Max	7.8	252	54	<5
QCU	25	1*	Ave	7.3	180	319	<5
			Max	7.3	180	319	<5
QCD	26	3	Ave	7.5	481	211	<5
			Max	7.6	940	574	<5
WCU	23	3	Ave	7.9	513	14	<5
			Max	8.1	667	21	<5
WCD	24	3	Ave	7.9	781	51	<5
			Max	8.2	1200	106	<5

* Sample location was dry during some or all of the quarterly monitoring periods.

Surface Water Quality – Discharge Monitoring

Sampling of water discharged via the Licensed Discharge Points and within Quipolly and Werris Creeks' (**Figure 6**) was undertaken by WCC during each offsite discharge event (Controlled / Uncontrolled). There was a total of twenty two (22) discharge events during the reporting period from these discharge points. Nine of those events were uncontrolled and thirteen were controlled discharge events.

Table 13 presents the average results recorded for routine quarterly monitoring at each location for the 2020 reporting period.

Table 13 – Discharge Water Quality for LDP's and Offsite Creeks'

Licensed Discharge Point/ Creek	Monitoring Site (EPA No)	Number of Samples	Value	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Oil & Grease (mg/L)
SB2	10	10	Ave	8.0	446	2125	<5
			Min	7.3	215	5	<5
			Max	8.4	810	**18300**	<5
SB9	12	4	Ave	7.7	459	28	<5
			Min	6.9	266	2	<5
			Max	8.4	590	**83**	<5
SB10	14	6	Ave	7.2	203	234	<5
			Min	5.5	120	32	<5
			Max	7.7	430	**900**	<5
SB18	32	1	Ave	7.5	204	1793	<5
			Min	7.4	178	**3580**	<5
			Max	7.5	230	**3580**	<5
QCU	25	5*	Ave	7.9	196	375	<5
			Min	7.5	71	10	<5
			Max	8.4	330	1430	<5
QCD	26	5*	Ave	7.8	211	1033	8
			Min	7.4	71	10	<5
			Max	8.4	340	4610	8
WCU	23	6	Ave	8.2	320	453	<5
			Min	7.6	198	119	<5
			Max	8.7	680	1360	<5
WCD	24	6	Ave	8.1	440	1000	<5
			Min	7.6	210	13	<5
			Max	8.5	930	3060	<5

* Sample location was dry during some of the discharge monitoring events.

Bold – indicates results outside criteria due to 5 day rain trigger >39.2mm.

The water quality shown in

Surface *Water Quality – Discharge Monitoring*

Sampling of water discharged via the Licensed Discharge Points and within Quipolly and Werris Creeks' (**Figure 6**) was undertaken by WCC during each offsite discharge event (Controlled / Uncontrolled). There was a total of twenty two (22) discharge events during the reporting period from these discharge points. Nine of those events were uncontrolled and thirteen were controlled discharge events.

Table 13 presents the average results recorded for routine quarterly monitoring at each location for the 2020 reporting period.

Table 13 was compliant with EPL 12290 criteria on all occasions with the exception of a single discharge event. The non-compliant discharge related to the uncontrolled discharge of stormwater via Licensed Discharge Point (LDP) EPA14 on the 18th February 2020. The stormwater discharged during the event was analysed as having a result of 5.45 pH units. The resulting non-compliance was self-reported to the NSW EPA Pollution reporting line following detection of the non-compliance. The WCC Pollution Incident Response Management Plan (PIRMP) was activated as required and incident reporting was undertaken with reports submitted to both the NSW Environment Protection Agency and NSW Dept. of Planning, Industry and Environment (DPIE).

Surface Water Quality – Void Water Discharge - Irrigation

During the 2020 period, 44.2 ML of void water was utilised for beneficial reuse through irrigation for agriculture purposes. **Table 14** outlines the water quality results taken prior to discharge. All results were within water quality criteria.

Table 14 – Surface Water Quality for Irrigation discharges in 2020

Dam/ Creek	Monitoring Site (EPA No)		pH	Electrical Conductivity (µS/cm)
EPL 100% Limit			**9**	**2000**
VWD1	33	Min Value	8	1190
		Max Value	8.5	1520

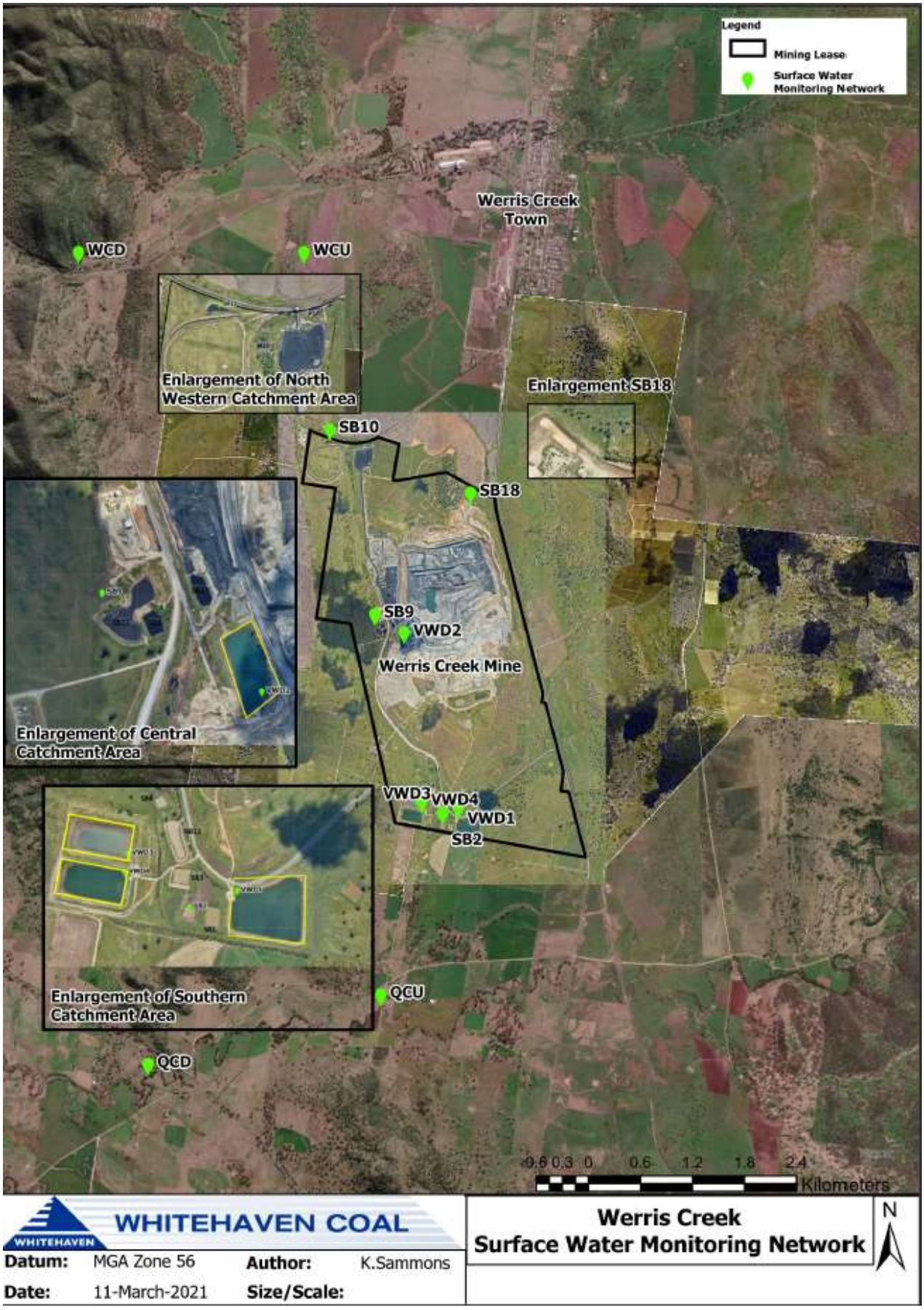


Figure 6: Surface Water Monitoring Network

7.3 GROUNDWATER MANAGEMENT

7.3.1 Environmental Management

The management of groundwater at WCC is undertaken to achieve two goals, namely:

- Monitoring and measuring potential impacts from mining operations on adjacent aquifers and privately owned bores: and
- Dewatering and use of void water (rainfall runoff and groundwater) that is intercepted by mining operations.

WCC currently monitors 43 groundwater bores, located on the mine site and neighbouring properties, to measure potential impacts on groundwater quality and groundwater availability.

WCC monitors groundwater quality and levels across a range of bores as shown in **Table 15** and **Figure 7.** Monitoring bores in the Werrie Basalt are separated into those close to WCC and those further away, with select bores in both the Werrie Basalt and Quipolly Alluvium nominated as background monitoring bores, due to their location far upstream from WCC when considering the dominant groundwater flow contours. In addition, ten bores also contain logging piezometers, providing a higher resolution water level dataset to enhance the understanding gained from the bimonthly groundwater level sampling of the monitoring network. These piezometers have been placed to target certain zones, including the Werrie Basalt northwest, south and east of WCC, and the upper, middle and lower reaches of the Quipolly Alluvium aquifer in the vicinity of WCC.

Table 15 – WCC Groundwater Monitoring Program

Precinct	Bores
Werrie Basalt near WCC	MW1, MW2, MW3, MW4B*, MW5, MW6, MW27, MW36A, MW36B*
Werrie Basalt	MW8#*, MW10, MW14, MW17B, MW19A, MW20, MW38A, MW38B, MW38C, MW38E, MW41* and MW43*
Quipolly Alluvium	MW7^, MW12, MW13, MW13B, MW13D, MW15, MW16, MW17A, MW18A, MW21A, MW22A*, MW22B, MW23A, MW23B, MW26B, MW28A#, MW32, MW40* and MW42*
Others	MW24A, MW29 (both Werrie Basalt in the Black Soil Gully valley) MW34 (minor alluvium associated with Werris Creek)
Monitoring Frequency	**Parameters**
Bimonthly	Standing Water Level
6 Monthly +	Total Nitrogen, Nitrate, Total Phosphorus, Reactive Phosphorus, Electrical Conductivity, pH
Annually	Chloride, Sulfate, Alkalinity, Calcium, Magnesium, Sodium, Potassium, Arsenic, Barium, Beryllium, Cadmium, Cobalt, Chromium, Copper, Manganese, Nickel, Lead, Vanadium, Zinc, Mercury, Ammonium, Nitrite, Nitrite+Nitrate, TKN, Anions, Cations, Ion Balance, TPH
# Regional monitoring bore * Groundwater logger installed in bore. +Applies to MW1, MW2, MW3, MW4B, MW5, MW6 in conjunction with bimontly depth monitoring ^ Access to MW7 Is not available due to landholder restricting access for monitotring	

The Water Balance Model for WCC was updated as part of this Annual Review, with this model used to verify model assumptions in relation to groundwater interception in the mining void. A CUSUM statistical analysis was undertaken on all monitoring bores at the end of the reporting period to assess whether any bores show changes in water level outside of natural variability.

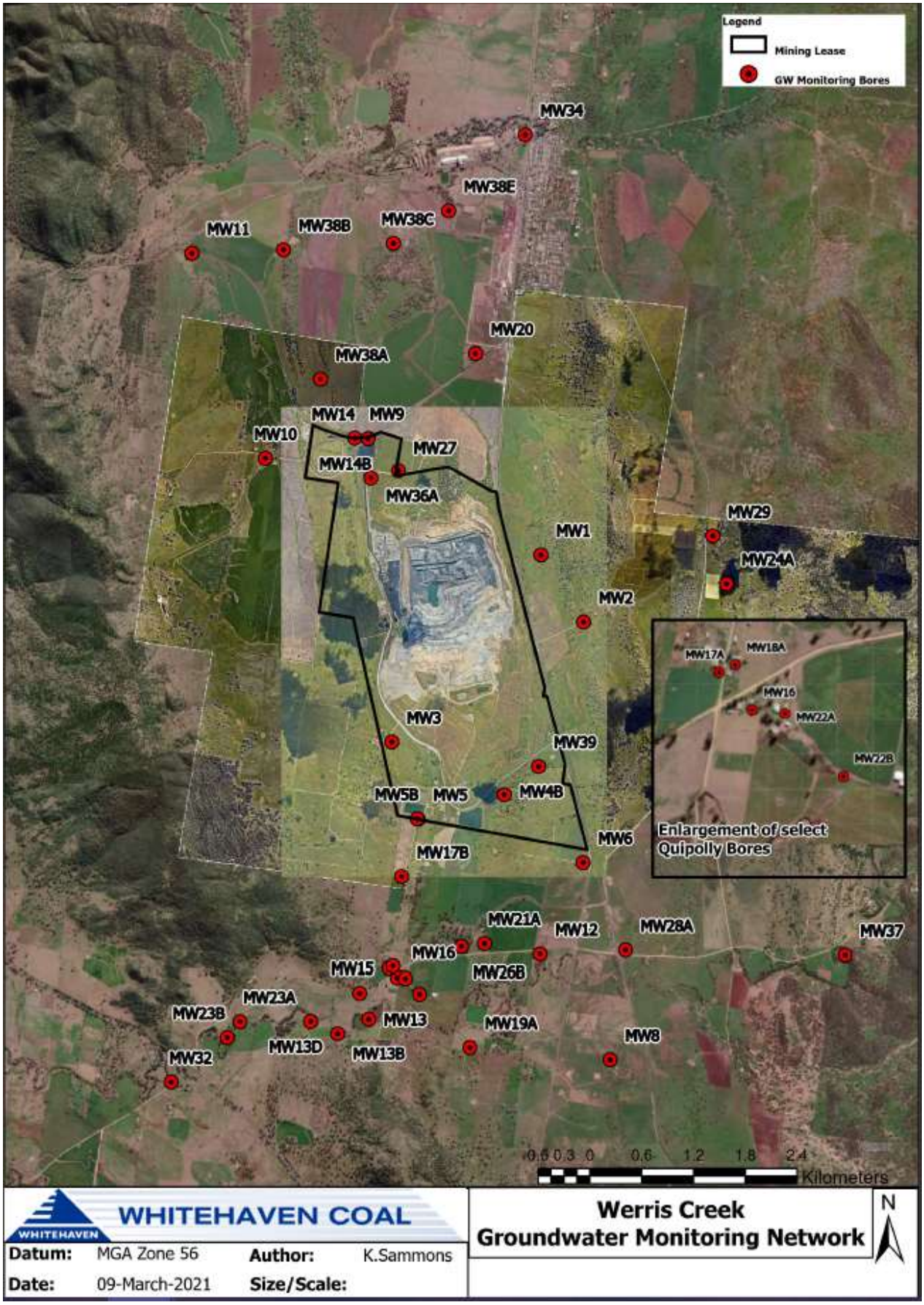


Figure 7: Groundwater Monitoring Network

7.3.2 Environmental Performance

Performance with respect to groundwater management, the prevention of pollution and the assessment of impacts on groundwater availability to other surrounding users, has been assessed through groundwater level and chemistry monitoring. Monitoring focuses on the Werrie Basalt and Quipolly Alluvium aquifers.

Table 16 presents the groundwater level monitoring data for January to December in the Werrie Basalt and Quipolly Alluvium aquifers. For Quipolly Creek Alluvium, MW28A and MW23A are representative of upstream and downstream aquifer conditions respectively. For Werrie Basalt, MW5 and MW14 are representative of aquifer conditions either side of the watershed between Quipolly Creek in the south and Werris Creek in the north. All groundwater sampling and analyses were undertaken by a NATA accredited laboratory.

Table 16 – Groundwater Monitoring Bore Level Summary – January to December 2020

		January-20		March-20		May-20		July-20		September-20		November-20	
Site		mbgl	%	mbgl	%	mbgl	%	mbgl	%	mbgl	%	mbgl	%
Werrie Basalt Near WCC	MW1	Dry		Dry		Dry		Dry		Dry		Dry	
	MW2	57.64	1%	57.69	0%	53.20	8%	57.34	-7%	56.52	1%	55.32	2%
	MW3	21.05	-1%	21.05	0%	21.16	-1%	21.17	0%	21.08	0%	20.93	1%
	MW4B	19.75	-1%	19.97	8%	20.05	8%	20.16	-1%	20.21	0%	20.17	0%
	MW5	14.04	-1%	13.93	1%	14.11	-1%	14.16	0%	13.95	2%	13.30	5%
	MW6	16.28	0%	16.27	0%	16.29	0%	16.30	0%	16.30	0%	16.32	0%
	MW27*	55.76		54.39	3%	53.20	2%	52.75	1%	53.39	-1%	55.29	-3%
	MW36A	24.61	-3%	19.00	30%	17.71	7%	15.78	12%	16.64	-5%	17.30	-4%
	MW36B	24.60	-3%	19.05	29%	17.70	8%	15.79	12%	16.65	-5%	17.31	-4%
Werrie Basalt	MW8*	21.36	0%	20.68	3%	20.82	-1%	21.18	-2%	17.97	18%	17.82	1%
	MW10	14.54	0%	14.38	1%	12.78	13%	12.45	3%	11.87	5%	11.90	0%
	MW14	21.42	-4%	18.54	16%	13.80	34%	11.85	16%	12.85	-8%	13.83	-7%
	MW17B*	17.05	-2%	14.77	15%	14.75	0%	14.83	-1%	14.65	1%	13.74	7%
	MW19A*	No access		Pump over bore		Pump over bore		Pump over bore		Pump over bore		Pump over bore	
	MW20*	23.26	0%	23.22	0%	23.48	-1%	23.54	0%	23.55	0%	23.52	0%
	MW38A	15.78	-9%	12.45	27%	11.48	8%	10.42	10%	9.75	7%	9.68	1%
	MW38B*	10.64	-1%	10.49	1%	10.17	3%	9.78	4%	9.64	1%	7.42	30%
	MW38C*	24.69	1%	23.85	4%	23.46	2%	23.82	-2%	22.98	4%	22.82	1%
	MW38E*	12.28	-2%	No access		No access		11.13	10%	10.82	3%	No access	
	MW41	10.91	-2%	10.46	4%	10.40	1%	10.48	-1%	9.90	6%	9.18	8%
	MW43	9.66	-2%	8.99	7%	8.99	7%	9.07	-1%	8.47	8%	7.50	13%
#[1]	MW24A*	18.43	-1%	17.20	7%	16.64	3%	16.39	2%	16.40	0%	15.10	9%
	MW29*	15.05	-1%	12.24	23%	11.63	5%	11.38	2%	11.53	-1%	10.85	6%
Quipolly Alluvium	MW12*	Dry		Dry		Dry		Dry		Dry		Dry	
	MW13*	Dry		Dry		Dry		Dry		Dry		5.73	36%
	MW13B*	7.30	-3%	5.90	24%	6.00	-2%	6.09	-1%	5.19	17%	4.14	25%
	MW13D*	Dry		5.52	20%	6.06	-9%	6.18	-2%	5.66	9%	4.97	14%
	MW15*	No access		No access		No access		No access		No access		No access	
	MW16*	Dry		Dry		Dry		Dry		Dry		7.83	-3%

	MW17A*	8.82	-2%	8.20	8%	8.27	-1%	8.36	-1%	7.76	8%	7.28	7%
	MW18A*	Dry		Dry		Dry		Dry		Dry		Dry	
	MW21A*	Dry		Dry		Dry		Dry		Dry		11.01	5%
	MW22A*	Dry		Dry		Dry		Dry		Dry		8.15	4%
	MW22B*	Dry		Dry		Dry		Dry		Dry		Dry	
	MW23A*	5.23	-4%	4.39	19%	4.56	-4%	4.40	4%	4.27	3%	3.93	9%
	MW23B*	5.06	-4%	4.36	16%	4.35	0%	No access		No access		No access	
	MW26B*	11.31	-2%	10.98	3%	10.76	2%	10.83	-1%	10.28	5%	9.55	8%
	MW28A*	Dry		Dry		Dry		17.71	-1%	15.27	16%	14.41	6%
	MW32*	Pump over bore		Pump over bore		Pump over bore		Pump over bore		Pump over bore		Pump over bore	
	MW40	10.94	-2%	10.49	4%	10.48	0%	10.51	0%	9.92	6%	9.20	8%
	MW42	9.56	-2%	8.88	8%	8.96	-1%	9.04	-1%	8.26	9%	7.39	12%
#[2]	MW34*	12.85	-2%	10.67	20%	10.57	1%	10.79	-2%	10.42	4%	10.12	3%

mbgl – meters below ground level, the distance from top of bore to groundwater surface.

Bold –lowest recorded groundwater level measured during the reporting period.

Orange – Change decrease

Green – Change increase or no change

* - Bore is used for water extraction unrelated to WCC (i.e. stock and domestic or irrigation).

#[1] – Werrie Basalt in the Black Soil Gully valley to east of Werris Creek Mine.

#[2] - Werris Creek Alluvium.

The groundwater level monitoring results have shown generally higher water levels throughout the 2020 annual reporting period year with a historically wet year, with over 40% more rainfall than average due to the influence of a La Niña event in the Pacific Ocean, which is representative of higher than average rainfall. Cumulative residual rainfall is presented in **Figure 8.**

A specialist groundwater consultant (SLR 2021) undertook the annual groundwater review for 2020, identifying the following findings. All monitoring wells (MW) were reviewed using a CUSUM statistical analysis.

Of the twenty-one (21) bores monitored in the Quipolly Alluvium, four (4) triggered the CUSUM assessment trigger levels for the 2020 reporting period. Bores triggering the CUSUM assessment due to sustained low water levels during the early phase of the reporting period were bores MW32, MW34, MW40 and MW42. Of the twenty-seven (27) bores monitored in the Basalt Aquifer, fifteen (15) bores triggered the CUMSUM assessment trigger levels for the 2020 reporting period. Bores triggering the CUSUM assessment due to sustained low water levels for the earlier portion of the 2020 reporting period were bores MW1, MW2, MW3, MW4B, MW5, MW5B, MW6, MW8, MW14, MW17B, MW20, MW24A, MW29, MW38C and MW38E. It is concluded that these exceedances in the CUSUM trigger levels are linked to the previous sustained drought conditions into very early 2020 followed by significantly increased rainfall and the natural variation in groundwater levels experienced during prolonged, low rainfall events and subsequent recovery wet years.

SLR (2021) found declining water level trends in the triggered MW's were similar to water level trends in the background monitoring well (MW8) and were consistent with residual rainfall patterns, which indicate lower than average rainfall between March 2017 and early 2020.

Quipolly Alluvium Aquifer

In aquifer systems that are recharged by rainfall, groundwater levels closely follow the cumulative residual rainfall patterns. The Quipolly alluvial aquifer is a system reliant on rainfall recharge and flooding and it is expected that this correlation would be apparent in wells monitoring the Quipolly alluvium. Groundwater level data from wells within the Quipolly alluvium aquifer system has been compared to cumulative residual rainfall and presented in **Figure 8**: Cumulative residual rainfall and groundwater levels within the basalt aquifer. SLR (2021) have identified that the main influences on the decline in groundwater levels in the Quipolly Alluvium from 2017 to early 2020 were a result of the prevalent climatic conditions. Similarly, groundwater level increases correlate with periods of high rainfall during the remainder of the 2020 reporting period. Since the start of the 2020 wet year, there has been an increase in groundwater levels within the alluvium, with some bores (MW13B, MW13D, and MW23A in **Figure 8** reaching maximum, or near maximum, recorded groundwater conditions.

Groundwater levels show a higher variability in upstream bores along Quipolly Creek. In **Figure 8**, the furthest upstream monitoring bore MW28A shows the greatest fluctuations in alluvial groundwater levels whilst MW32, the furthest downstream monitoring bore, shows the least. This is attributed to the upstream bores being located close to the head of the alluvium. Streamflow from the nearby Quipolly Dam and runoff from the less permeable weathered basalt occurring from the east results in recharge points to the Quipolly alluvium within the upstream portions of the alluvium. These upstream portions of alluvium are more responsive to antecedent rainfall conditions. It is noted that this groundwater regime has not changed since mining began in 2005, with greater recoveries in 2020 groundwater levels still being observed in upstream bores within the Quipolly alluvium.

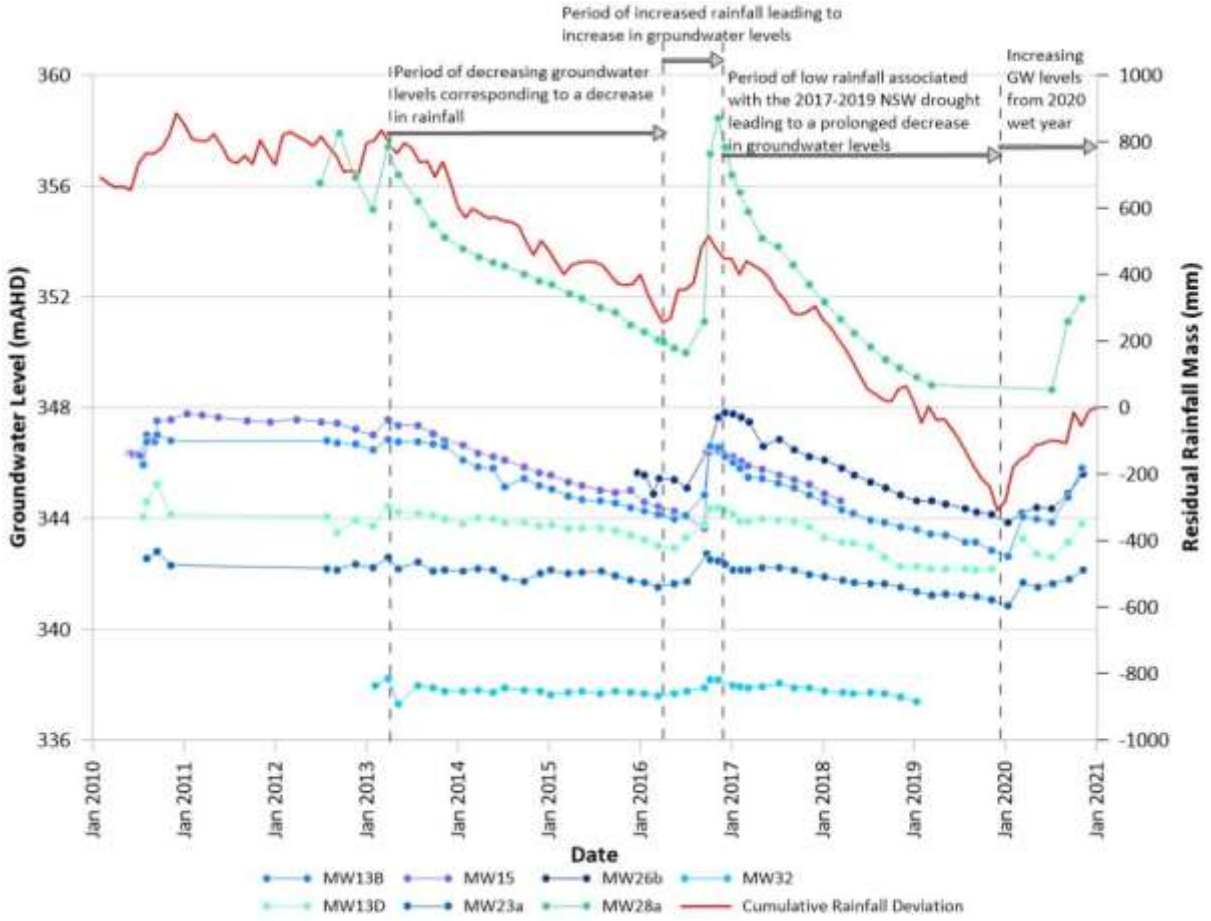


Figure 8: Cumulative residual rainfall and groundwater levels within the Quipolly Alluvium

Werrie Basalt Aquifer

Wells monitored within the Werrie Basalt are known to be in an area of low permeability overlying clays, resulting in less noticeable recharge due to cumulative rainfall.

The Werrie Basalt aquifer is regularly monitored on all sides of the mine workings. Monitoring location MW8, located remotely to the south of the site and to the south of Quipolly Creek, is considered a representative background well for comparison of groundwater levels around the south of the site. MW8 is showing a greater response to rainfall events than those bores closer to the mine. **Figure 9** presents a comparison of observed groundwater levels in MW8 and Werrie Basalt aquifer monitoring wells, with cumulative residual rainfall. Some correlation to cumulative residual rainfall is observed, however locations directly south of the mine do not demonstrate a response of the same magnitude as the background well MW8. Historically, a notable increase in water levels in MW8 in early 2017 was more muted in wells MW4B and MW6 following a lag time suggesting a recovery of these wells may still occur.

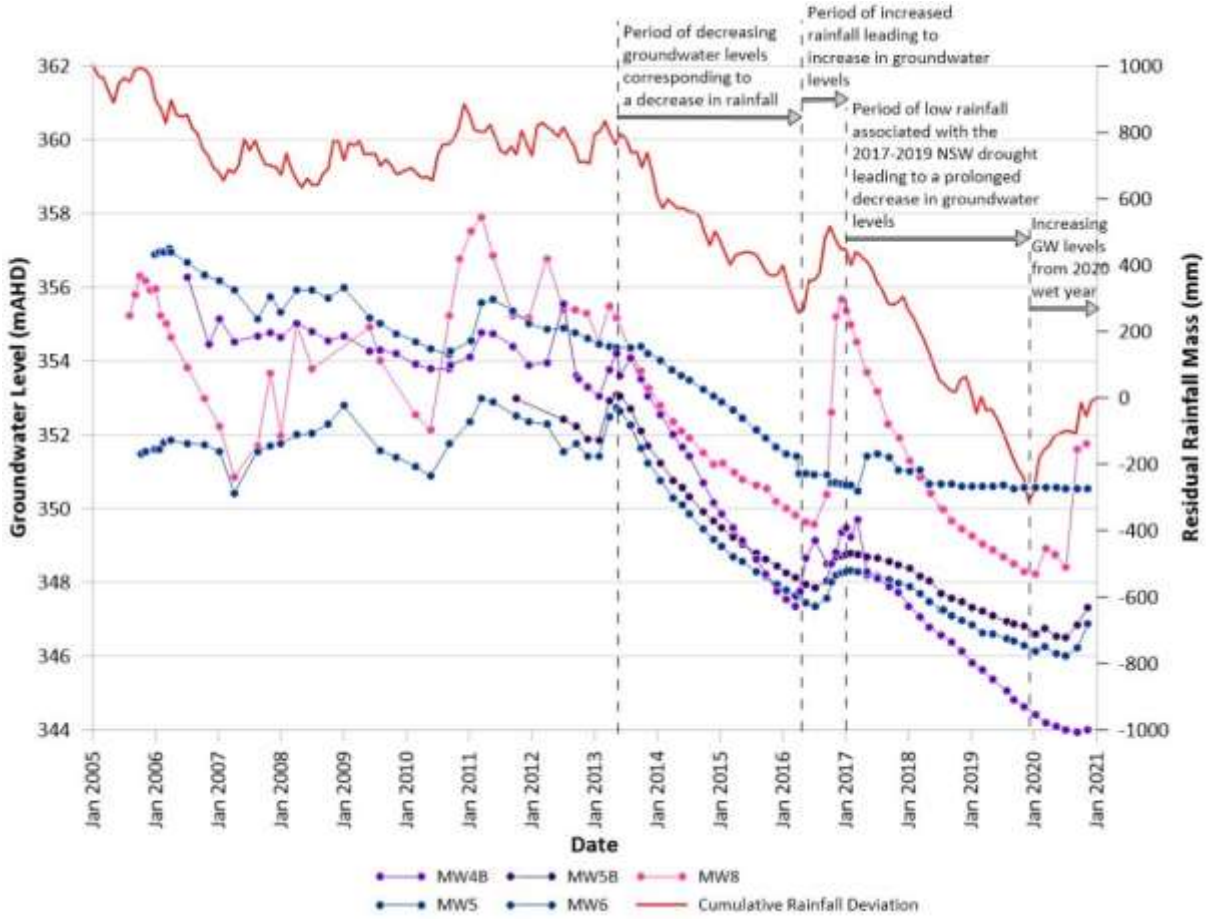


Figure 9: Cumulative residual rainfall and groundwater levels within the basalt aquifer.

SLR, 2021, conducted an assessment of groundwater flow directions and rates, which indicated that rates are consistent with pre-mining conditions and show flow to be directed towards the southwest with consistent hydraulic gradients.

SLR, 2021, undertook a review of water quality data within both the Quipolly and Werrie Aquifers, in line with requirements outlined in

Table 12**.**

Groundwater Quality

Monitoring of groundwater quality during the period identified the majority of MW performed within the historical ranges captured during 2004-2010. Outlying results were identified in MW13B, MW13D, and MW21B. These stock and domestic bores have shown slight increases in pH and electrical conductivity. None of the bores in the Werris Basalt have exceeded the upper water quality trigger limits for any of the water quality parameters in the 2020 reporting period. In addition, the increased EC around MW13B and MW13D over the last few years at these Quipolly Alluvial monitoring bores could be correlated to the prolonged dry conditions and the cumulation of long-term high evaporation rates over the 2017 to early 2020 NSW drought period. A number of bores associated with agricultural land have continued to display generally high total phosphorus and total nitrogen levels. These levels have been consistent with historic monitoring and are considered a reflection of the agricultural land use and fertiliser inputs rather than impacts from mining operations.

7.3.3 Proposed Improvement Measures

The groundwater monitoring program described above will continue to be implemented during the next reporting period. An alterative nearby monitoring location will be sought to replace MW32 that is no longer accessible for monitoring to installation of a pump on the well preventing access.

7.4 SITE WATER BALANCE MODEL VALIDATION

The WCC Water Balance Model is focused on accounting for all water entering and leaving the open cut pit to allow a verification of groundwater interception during the reporting year (**Table 17**). The key inputs to the water balance model are:

- Direct rainfall and runoff – Generally the largest input due to the large pit catchment, this item relates to rainfall that falls directly in the void water catchment. During any rainfall event, runoff is significant due to the large catchment and hard, compacted surfaces.
- Recharge from underground workings – Considerable volumes of water are used to manage spontaneous combustion within the former underground workings at WCC. Sprinklers and other drenching sprays are used to reduce the heating of coal that can lead to underground fires, with the majority of this water returning to and collecting in the void.
- Evaporators recharge – Evaporator sprays have been installed at WCC to reduce the volume of void water stored on site. A portion of this water will not evaporate, but instead percolate through the accumulated spoil until it collects in the void.
- Dust Suppression – To minimise the generation of dust from vehicle movements, water is applied directly to haul roads and dumps. Furthermore, water may be applied to excavator loading faces and production drills to minimise the generation of dust at these points.
- Groundwater – Located within the Coal Measures sequence, the enclosed basin contains various small-scale water bearing zones generally associated with the coal seam. In addition, water is also stored in the former workings of the previous underground colliery and is also present in the overburden spoil. A small proportion of groundwater may also be derived from the Werrie Basalt aquifer.

The key outputs to the model include:

- Pit dewatering – Includes all water pumped from the pit during the year, which is the principle pathway for water leaving the void.
- Irrigation – Includes void water tested and approved for offsite irrigation from VWD 1 onto cropping land.
- Direct evaporation – Includes the volume of water directly evaporated from the pit and other locations within the void water cycle.

Table 17– Water Balance Inputs and Outputs.

	Description	Year 2020 (ML/year)
Water Source (Inputs)	Total runoff and direct rain	1,743
	Groundwater (aquifer) inflow	42[a]
	Total Input	**1,785**
Water Losses and Usage (Outputs)	Evaporation (from water storage)	264
	Haul road and ROM pad dust suppression	243
	Irrigation loss	52
	Evaporator net loss[b]	64
	Workshop water use	10
	TLO water use	13
	Crushing plant water use	2
	Sprinkler loss	43
	Sediment dam spills	581
	Total Output	**1,272**
Water Surplus/Deficit	**Total Input-Total Output**	**513**

[a] This value represents the groundwater inflows from the aquifer and does not include spoil seepage. The derivation of this value is discussed in the following section.

[b] Based on field studies (Minetek, 2017), an average efficiency of 45% was adopted for the evaporators is 45%. Water that is not destroyed is returned the Mine Void.

As presented in

Table 17, once inputs, outputs and the observed change in water in the void have been accounted for, the model reflects a net decrease in water from within the void of 513 ML.

The results of the open cut WBM for January 2020 to December 2020, using water management data from the site confirm reported site conditions, were found to correlate with the hydrogeological model predictions for groundwater inflow to the pit.

As was observed in 2019 an increased storage within the void has seen an out flow from the void into the underground workings during early 2020. Total inputs of 1,785ML during the 2020 period in comparison to 771ML during 2019 is representative of the sustained below average rainfall experienced at the Werris Creek Coal Mine in previous years. These water stocks have continued to be carried over from previous surplus years.

8 REHABILITATION

The rehabilitation objectives for WCC are described in Section 4 of the WCC MOP. The post mining land use goal for WCC is to reinstate certain areas of the mine to White-box Grassy Woodland communities and to ensure rehabilitation and revegetation is self-sustaining.

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

During the reporting period, mining operations progressed generally in line with the Mining Operations Plan. Works were undertaken in growth medium development (approximately 18 Ha) during the period via subsoil and topsoil applications on the central and eastern plateau rehabilitation areas as well as completion of the northern visual bund. Extensive land forming (approximately 44Ha) and contouring of western emplacement batters was also undertaken. This is generally in alignment with MOP requirements. WCC will continue to rehabilitate the final landform in line with these requirements. All infrastructure continued to be in use during the period, and as such, no areas of infrastructure were rehabilitated during the period.

Rehabilitation processes for the 2020 reporting year focused on ecosystem establishment of 16 ha and the maintenance and advancement of current vegetated areas. This included the planting of approximately 8500 native tube stock coupled with ongoing maintenance and watering of newly planted stock (see Section 6.4.2 Environmental Performance, Revegetation). New tree planting numbers of native tube stock were increased during 2020 the make up for the deficit in planting numbers achieved during the recent years of severe drought. Increased planting numbers of tube stock will continue during the 2021 period to further enhance overall tree numbers on the balance of the existing rehabilitation areas.

The increased rainfall experienced onsite during the 2020 period resulted in prolific weed growth by some fast growing opportunistic weed species. One species in particular - David's Spurge (*Euphorbia davidii*) has been observed in high abundance in areas previously lacking ground cover as a result of the previous drought conditions. Following the onset of regular rainfall from late January 2020, the weed quickly established itself in many areas around the site. Chemical control of the spurge has commenced with care being taken to not impact the desired native species and trees via the use of selective herbicides. The control program will continue in subsequent growing seasons in an effort to control the presence of the David's Spurge and any other weed species observed within the established rehabilitation areas. Inspections of rehabilitation structures identified that all areas are generally structurally sound, with some maintenance required to access tracks following repeated heavy rainfall events during 2020. A description of rehabilitation monitoring and other initiatives to boost rehabilitation success have been reported in Section 6.4 Biodiversity of this review.

8.2 REHABILITATION TRIALS

WHC is supporting research into arboreal habitat augmentation of woodland rehabilitation by installing previously cleared timber back on the post mining landform to replicate habitat provided by stag trees that occur naturally in woodland communities.

During 2020, the use of Jute matting and taller (450mm) Corflute type tree guards were utilised to assess performance in preventing weed competition around base of the planted tube stock, predation by kangaroos and retention of moisture at base of trees. Initial results appear positive with survival rates for planted tube stock exceeding 90% survival. The current intention is to retrieve the corflute guards approximately 12 months after tree planting. Dependant on the condition of the corflute, it may be able to be reused on subsequent planting campaigns.

Table 18 presents a summary of the disturbance classes for the end of the previous reporting period, the end of the current reporting period, and a forecast as at the end of the next reporting period and **Figure 10** identifies the rehabilitation categories as at December 2020.

Table 18 – Rehabilitation Status

Mine Area Type[1]	Previous Reporting Period 2019	This Reporting Period 2020 (Actual)	Next Reporting Period 2021 (Forecast)
	2019 (ha)	2020 (ha)	2021 (ha)
A. Total mine footprint	575	591	601
B. Total active disturbance	372	380	335
C. Land being prepared for rehabilitation	35*	34	22
D. Land under active rehabilitation	168	176	221
E. Completed rehabilitation	0	0	0

[1] Refer Annual Review Guideline (p.11) for description of mine area types.

** Comprises areas seeded with a cover crop only, and those waiting on final native grass seeding when rainfall / soil moisture conditions allow.*

No areas of rehabilitation at WCC have received formal signoff for completion; however, areas under active rehabilitation as listed in item D above are trending well towards completion.

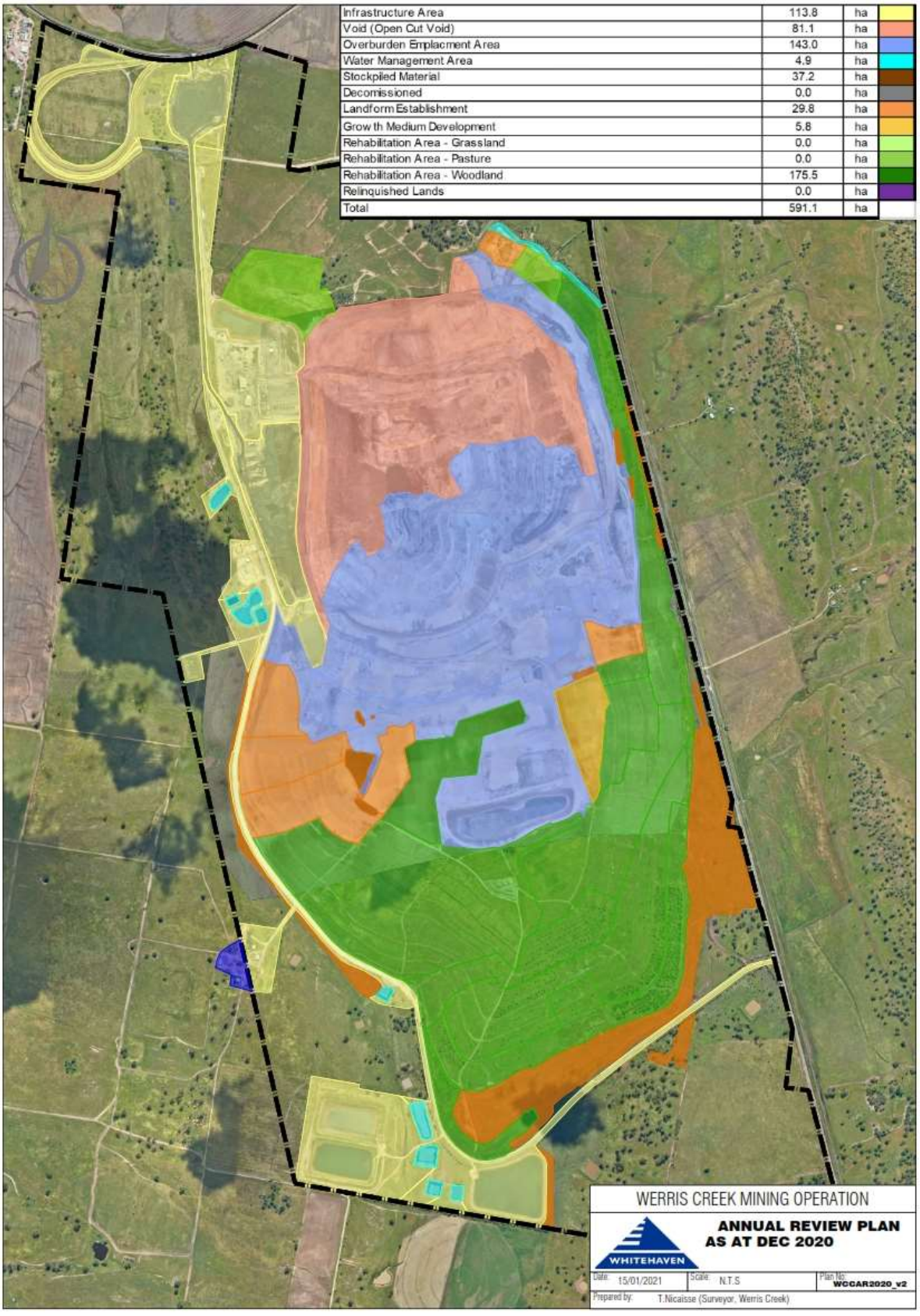


Figure 10: Rehabilitation Status at December 2020

8.3 REHABILITATION WORKS PROPOSED FOR NEXT REPORTING PERIOD

WCC aims to continue rehabilitation efforts during the 2021 reporting period largely in accordance with the projections under year 5 of the current MOP. These actions will focus on finalisation of decommissioned areas, landform development and growth medium development of the next section of the outer western batter and northern extents of the upper plateau. Works will also continue to focus on the in-fill planting of tube stock on all rehabilitation areas.

An area of approximately 23 Hectares is scheduled for growth medium development during early 2021 (currently landformed and contoured) on the western emplacement batter. An additional 22 hectares of land will also be landformed during early 2021 on the central plateau and north western emplacement batter and is scheduled for growth medium development during winter 2021. These areas (total of approximately 45Ha) will be seeded with suitable cover crops, native seed mix and planted with native tubestock during the 2021 period.

In addition to the progression of the rehabilitated landform, WCC will manage the existing areas of rehabilitation to ensure a continued trend towards the rehabilitation objectives as previously described. This will include significant focus on infill planting on existing established areas with native tubestock including relevant mid storey species coupled with increased weed management programs to target any emerging weed issues (current or future).

8.4 KEY ISSUES TO ACHIEVING SUCCESSFUL REHABILITATION

There are four key issues in achieving successful rehabilitation, including:

- Poor vegetation establishment and growth due to poor soils/lack or nutrient;
- Weed and feral animal infestation;
- Excessive erosion and sedimentation resulting in land stability and vegetation growth issues;
- Harsh weather conditions limiting growth, i.e. extended periods of drought.

In cases where the performance is sub-optimal, additional management measures will be implemented (e.g. replanting, repairing landform and water management features, application of mulch/fertilisers, feral animal and weed control etc.).

9 COMMUNITY

WCC is located approximately 2 km south-southwest of the residential area of Werris Creek and 1.5km north of the rural community of Quipolly, and as such works closely with these communities to provide beneficial outcomes resulting from coal mining activities at WCC.

9.1 COMMUNITY ENGAGEMENT ACTIVITIES

WCC uses a variety of community engagement and consultation methods including the WCC Community Consultative Committee (CCC), regular updates to the Whitehaven Coal website, designated community telephone complaints lines, local media updates, local school visits, sponsorship of local community events and groups, and meetings as required with neighbours and a range of stakeholders including government and non-government agencies.

In addition, there were three CCC meetings held during the 2020 reporting period.

9.2 COMMUNITY CONTRIBUTIONS & INITIATIVES

WHC, which includes WCC, contributes financially to the economy at both state and federal level and to the communities in which we operate. Employees and contractors also add a significant economic contribution to townships in the Liverpool Plains Shire Council (LPSC) through their purchases from local businesses. Whitehaven Coal has contributed in excess of $1 billion to the North West NSW region since 2012.

Community Enhancement Fund (CEF)

As part of the Life of Mine Project, WCC established the Community Enhancement Fund (CEF) to provide support for community projects in the Liverpool Plain Shire and in particular the Werris Creek township.

Whitehaven has pledged more than $1m in payments to the Liverpool Plains Shire Council for community projects. Projects funded to date by Whitehaven in the Liverpool Plains LGA include:

- $100k for projects at Australian Railway Museum, Werris Creek;
- $70k for playground improvements in Werris Creek;
- $65k for skate park, Werris Creek;
- $50k for projects in villages in Liverpool Plains Shire; and
- $20k for Royal Theatre, Quirindi.

9.3 COMMUNITY COMPLAINTS

WCC maintains a dedicated community telephone complaints line (1800 942 836) which is published at the mine entrance and on the Whitehaven Coal website. In the event of a complaint or enquiry, details pertaining to the complainant, the complaint and action taken are recorded on the complaints register. The register is available on the Whitehaven website.

Blasting was the dominant cause for complaints within 2020, with 5 blast-related complaints of the total (6) complaints received. When compared to the 2019 reporting period, there was a reduction in blast-related complaints during 2020. The total number of complaints and respective category of each complaint for the current 2020 reporting period is provided in **Table 19**. The previous 2017 to 2019 reporting period's data has also been provided for comparison.

For specific complaint details and actions taken, refer to the Complaint Database for 2020 located on the Whitehaven Coal website.

Table 19 – WCC Complaints 2020

Issue	2017	2018	2019	2020
Blast - Vibration/Overpressure	9	19	12	5
Blast - Dust/Fume	1	2	1	0
Blast/Other	0	0	0	1
Noise – Mine	3	0	0	0
Dust – Mine	4	5	3	0
Surface Water	0	0	0	0
Odour	7	8	1	0
Water- evaporation	0	1	0	0
Number of Complaints Raised*	**24**	**35**	**17**	**6**

* Number of complaints does not equal the number of issues raised as one complaint can raise multiple issues.

10 INDEPENDENT AUDITS

An Independent Environmental Audit (IEA) was undertaken at WCC on the 11th and 12th of June-2020. The full IEA report and Action Plans can be found on the Whitehaven Coal website.

The Audit findings relative to the statutory conditions and implementation of the management plans is summarised in **Table 20** below.

Table 20 – Summary of 2020 IEA findings

Review	Non compliances (NC)	Observation (NC Obs)	Observation (C Obs)
Statutory Instruments	7	-	4
Implementation of Plans	-	-	-

An action plan was developed to address the 2020 IEA findings. The actions and their current status is summarised in below. It is noted that all required actions within the 2020 IEA action plan have been completed and closed out during 2020.

Table 21 - Status of the Implementation of the 2020 IEA Action Plan

Condition	Recommendations	Actions taken
PA 10_0059 MOD3 Schedule 3 Condition 8	Consider implementing an alert mechanism to identify potential blast exceedances – total number of blast events per month.	WCC has implemented a blast management tracking function in monitoring databases to track each planned blast event and provides a visual alert that identifies planned blast events that may exceed the prescribed monthly blast event limits. - Completed
PA 10_0059 MOD3 Schedule 3 Condition 14	Although the Site did receive odour related complaints, indicating offensive odour was emitted from Site, the site has robust odour management process to mitigate odours from spontaneous combustion. No actions required.	Mining of former underground area complete. Risk of spontaneous combustion and subsequent odour generation has substantially declined. No further action required. Item closed
EPL 12290 L1.1	Investigation into Low pH water discharge from EPA14 – February 2020 indicates that the exceedance appears to be anomalous. No further action required. Continue to monitor water quality during discharge events.	Discharge water quality will continue to be monitored as per approval requirements and the approved WCC Water Management Plan. Item closed
EPL 12290 L1.2	Investigation into Low pH water discharge from EPA14 – February 2020 indicates that the exceedance appears to be anomalous. No further action required. Continue to monitor water quality during discharge events.	Discharge water quality will continue to be monitored as per approval requirements and the approved WCC Water Management Plan. Item closed
EPL 12290 L7.1	Although the Site did receive odour related complaints, indicating offensive odour was emitted from Site, the site has robust odour management process to mitigate odours from spontaneous combustion. No actions required.	No actions required. The site has robust odour management process to mitigate odours from spontaneous combustion. Item closed
EPL 12290 O5.3	The operations manager's contact details should be updated in the PIRMP and amended copies issued where relevant.	PIRMP details updated with current staff contact details. Completed – Item closed.

	(the change in roles has only occurred within the last few months).	
EPL 12290 M6.2	Update the website complaints line number to reflect the correct phone number.	The Website has been updated with the new Whitehaven Complaints number. Completed – Item closed.
EPL 12290 R1.5	Communicate with Environmental Team and higher management at Whitehaven confirming Annual Return submission date for EPL12290 is 30th May each year. Update calendars accordingly.	The introduction of a notification system to notify and escalate prior to approval reporting and submission dates has been implemented at WCC. Completed – Item closed.
EPL 12290 R1.7	Ensure a signed copy of the annual return is maintained for records.	A signed copy of future Annual Returns will be kept on file. Completed – Item closed.
EPL 12290 R4.1	WCC should review noise monitoring supplier contract to require reporting completed within 30 days.	Contractor engagement terms reviewed and required report submission time communicated with consultants. Completed – Item closed.
EA Statement of Commitments – 14.2	It is ERM's opinion that publication of a regular newsletter would duplicate effort already achieved during CCC meetings and annual reporting. No action deemed required.	Noted – No action required. Project updates to continue being made available to community via CCC minutes / reports and annual reporting documentation made available on project website. Item closed.

The remaining issues outstanding at the completion of the reporting period are summarised in **Table 22** All other actions required by previous IEA action plans not listed below have been completed or closed out previously.

Table 22 – Status of the Implementation of the 2017 IEA Action Plan

Condition	Recommendations	Actions taken
PA 10_0059 MOD2 Schedule 3 Condition 43	For the next MOP update, send the key sections of the MOP document to these agencies for review/comment.	WCC will ensure appropriate consultation will be undertaken during the next MOP revision scheduled for 2021 / 2022.
EPL 12290 M9.1	It is unclear to the auditor as to why the EPL requires 60 minute noise monitoring surveys to assess compliance with the criteria which is LAeq15minute.	WCC has considered and variation to EPL 12290 will be made at next EPL review. Completed – Item closed.

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 REPORTABLE INCIDENTS

Air Quality.

WCC reported fifteen incidents during the reporting period, associated with elevated dust levels:

- TEOM exceedances on the January 5th, 9th, 11th, 20th and 21st, February 19th and August 20th, refer to section 6.3.2. Investigations demonstrated that WCC was not the cause of the elevated results.
- HVAS exceedances at Tonsley Park PM10 on January 3rd, 9th and 21st, Kyooma PM10 on January 9th and 21st, Escott PM10 on January 9th and 21st, Glenara PM10 on January 21st, refer to section 6.3.2. Investigations demonstrated that WCC was not the cause of the elevated results.

Surface Water Quality

WCC reported a single incident / non-compliance with EPL 12290 during the reporting period, associated with discharge water quality.The non-compliant discharge related to the uncontrolled discharge of stormwater via Licensed Discharge Point (LDP) EPA14 on the 18th February 2020. The stormwater discharged during the event was analysed as having a result of 5.45 pH units. The resulting non-compliance was self-reported to the NSW EPA Pollution reporting line following detection of the non-compliance. The WCC Pollution Incident Response Management Plan (PIRMP) was activated as required (including all required notifications) and all required incident reporting was undertaken with reports submitted to both the NSW Environment Protection Agency and NSW Dept. of Planning, Industry and Environment (DPIE).

11.2 NON-COMPLIANCES

The compliance status of WCC against relevant approvals during the reporting period was assessed in Section 1 as at the end of the reporting period (2020). A single non-compliance was recorded during the reporting period and has been detailed within the body of this report in sections 7.2.2 and 11.1.

11.3 REGULATORY ACTIONS

WCC received a single Penalty Notice during the 2020 reporting period. The penalty notice related to the low pH stormwater discharge incident as detailed within sections 7.2.2 and 11.1 of this report.

12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Activities to be completed in the next reporting period to improve the environmental or community performance of WCC have been included in **Table 23**.

Table 23 – Activities proposed to be completed in the next reporting period

Activity	Timeframe
Completion of review and, if necessary, revision of Environmental Management Plans – submit to relevant Govt agencies and stakeholders for consultation / sign off as relevant.	In accordance with PA 10_0059
Progression of remaining actions from the 2017 IEA – Development of Closure MOP – submit to relevant stakeholders and agencies for consultation	2021 – early 2022
Continued community liaison and engagement with local stakeholders	Ongoing