Air Quality and Greenhouse Gas Management Plan

March 2024

DOCUMENT CONTROL

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19 June 2013	0	Original document	Carly McCormack	Gary Mulhearn
30 January 2015	1	Update after review	Jack Potter	Gary Mulhearn
28 April 2017	2	Update after review	Gary Mulhearn	Gary Mulhearn
25 June 2018	3	Update after review.	Carly McCormack	Carly McCormack
25 March 2021	4	Review of AQGHGMP following transition to Care and Maintenance in March 2020.	IEMA	Julie McNaughton
22 February 2023	5	Update after review to reflect the sealing of the mine in October 2022 and closure planning and early works scope.	IEMA	Julie McNaughton
08 March 2024	6	Response to DPHI RFI	IEMA	Julie McNaughton

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1 INTRODUCTION

1.1 Background

Austar Coal Mine Pty Ltd (Austar), a subsidiary of Yancoal Australia Limited (Yancoal), owns the Austar Coal Mine, a closed underground coal mine located approximately 10 kilometres (km) southwest of Cessnock in the Lower Hunter Valley in NSW (refer to **Figure 1**). The Austar Coal Mine incorporates the former Pelton, Ellalong, Cessnock No. 1 (Kalingo) and Bellbird South Collieries and includes coal extraction, handling, processing and rail and road transport facilities (refer to **Figure 1**).

The Austar mining complex includes approximately 10,300 hectares (ha) of sub-surface mining leases and 923 ha of surface leases. It measures approximately 17 km across and 16 km long. As such, for the purposes of closure planning, Yancoal has divided the mining areas at Austar into discrete Closure Management Areas (CMAs), representing key areas of the mine site.

The adopted CMAs are shown in Figure 1 and are as follows:

- CMA 1 - Austar Pit Top Facilities - including administration buildings, the main access drift which was sealed in October 2022, coal conveyor bin, store, workshop and laydown facilities);
- CMA 2 - Pelton CHPP - including CHPP, administration areas, Reverse Osmosis plant, overland conveyor and a number of heritage listed buildings in various states of repair;
- CMA 3 - No. 1 shaft (sealed, was the second egress man winder);
- CMA 4 - No. 2 shaft (administrative buildings, laydown areas and mine dewatering via a pipe line which pumps to Kalingo and Austar Dams to CHPP);
- CMA 5 - Kalingo Infrastructure Area (KIA) (partially sealed ventilation shafts and decommissioned underground services);
- CMA 6 - Kitchener Surface Infrastructure Site (SIS) (temporarily sealed ventilation shafts and fan infrastructure, fully sealed services borehole/drop hole), along with water management dams, pipelines and powerlines; and
- CMA 7 – Aberdare Extended Emplacement Area (EEA) – coarse reject emplacement area;
- CMA 8 - Bellbird Areas 12 and 13); and
- CMA 9 – Other lands

Mining was approved under two major project approvals: Bellbird South (DA 29/95) and Stage 3 (PA 08_0111), along with numerous development approvals from Cessnock City Council. Bellbird South consent DA 29/95 expired on 14 February 2022[1] whilst the Stage 3 consent PA 08_0111 expires on 31 December 2030.

[1] Under Schedule 2 Condition 5, DA 29/95 continues to apply in all respects other than to permit the carrying out of mining operations, until the rehabilitation of the site is complete.

This revision of the AQGHGMP has been prepared to document air quality management and monitoring activities whilst the site is in the closure planning stage, specifically the prefeasibility and feasibility studies, Early works and Executable planning phases as detailed in **Figure 2**.

A revised plan will be required prior to Execution works. It is important to note that this timeline is indicative only. As knowledge gaps are filled, additional time may be required to ensure closure planning and execution is carried out to minimise rework and provide optimal rehabilitation outcomes. The AQGHGMP will require review and update prior to Execution works.

1.2 Closure Status and Activities

On 30 March 2020, the Austar Coal Mine transitioned to care and maintenance, with cessation of mining and coal processing activities. On 26 February 2021, a decision was made by the Yancoal board to transition the Austar Coal Mine from care and maintenance to closure. In October 2022, the mine was permanently sealed and access is no longer possible. Ventilation and compressed air operations ceased and the mine is gradually flooding.

Austar is currently at closure planning stage of mine closure, undertaking technical studies and site investigations to address closure knowledge gaps and develop detailed decommissioning and rehabilitation execution plans that will deliver optimal rehabilitation outcomes at the site. A number of 'Early Works' (including progressive decommissioning of redundant infrastructure) may be undertaken while closure studies are completed.

Standard maintenance activities will continue as per the operational and care and maintenance phase of the mine. This includes but is not limited to:

- road and infrastructure maintenance;
- water management i.e. erosion and sediment control, pumping and dam desilting;
- standard site inspections and light vehicle movements;
- land management activities including weed management, rehabilitation repair, fencing, and site security;
- plant maintenance;
- deliveries and waste management;
- environmental monitoring; and
- general administrative and maintenance tasks.

Specific activities which may be undertaken on site during the closure planning and Early Works phase include:

- detailed site investigations including drilling and test pitting programs to inform technical studies such as contamination, geochemistry, geotechnics and capping and landform designs;
- removal and transport of saleable equipment from the site;
- decommissioning and removal of surface plant and equipment;
- demolition of non-heritage mine infrastructure;
- desilting and decommissioning of mine water dams, including erosion and sediment control;

- sealing and rehabilitation of historic exploration boreholes; and
- rehabilitation trials.

While specific closure execution requirements and activities have not yet been finalised, it is anticipated that major earthworks will be required. When specific activities are known, appropriate environmental management measures will be identified and implemented and management plans updated accordingly. Management plans will be submitted to DPHI for approval prior to commencement of closure execution activities not currently considered.

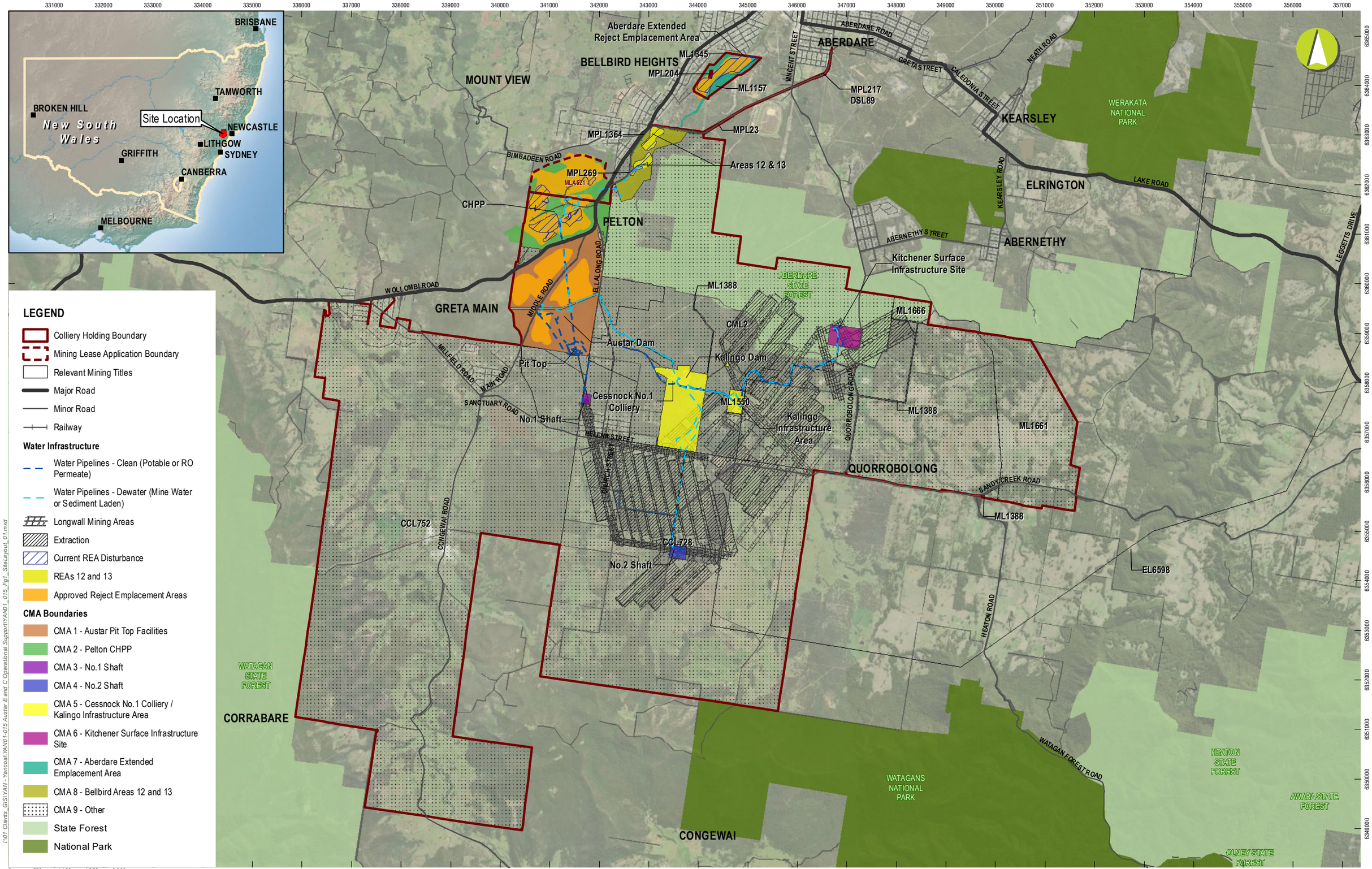
1.3 Purpose and Scope

This AQGHGMP outlines the management measures to be implemented during closure at the Austar Mining Complex to minimise the potential for air quality and greenhouse gas impacts on the local community and the environment.

The purpose of this AQGHGMP is to:

- Describe the air quality and greenhouse gas monitoring program associated with the Austar Mining Complex;
- Provide a mechanism for review of performance against relevant air quality impact assessment criteria;
- Provide a description of the measures to be implemented by Austar to mitigate air quality and greenhouse gas impacts;
- Describe the process for responding to any incidents, complaints or non-compliances; and
- Describe the review, reporting and continual improvement process.

The AQGHGMP has been prepared in accordance with the relevant conditions of PA 08_0111, DA29/95 and Environment Protection Licence 416 (refer to **Appendix A** for details of conditions).



LEGEND

- Colliery Holding Boundary
- Mining Lease Application Boundary
- Relevant Mining Titles
- Major Road
- Minor Road
- Railway

Water Infrastructure

- Water Pipelines - Clean (Potable or RO Permeate)
- Water Pipelines - Dewater (Mine Water or Sediment Laden)
- Longwall Mining Areas
- Extraction
- Current REA Disturbance
- REAs 12 and 13
- Approved Reject Emplacement Areas

CMA Boundaries

- CMA 1 - Austar Pit Top Facilities
- CMA 2 - Pelton CHPP
- CMA 3 - No.1 Shaft
- CMA 4 - No.2 Shaft
- CMA 5 - Cessnock No.1 Colliery / Kalingo Infrastructure Area
- CMA 6 - Kitchener Surface Infrastructure Site
- CMA 7 - Aberdare Extended Emplacement Area
- CMA 8 - Bellbird Areas 12 and 13
- CMA 9 - Other
- State Forest
- National Park

0 550 1,100 1,650 2,200 m

Scale: 1:70,000

GDA 1994 MGA Zone 56

25/01/2023

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Source:

Austar Coal Mine

Site Layout

FIGURE 1

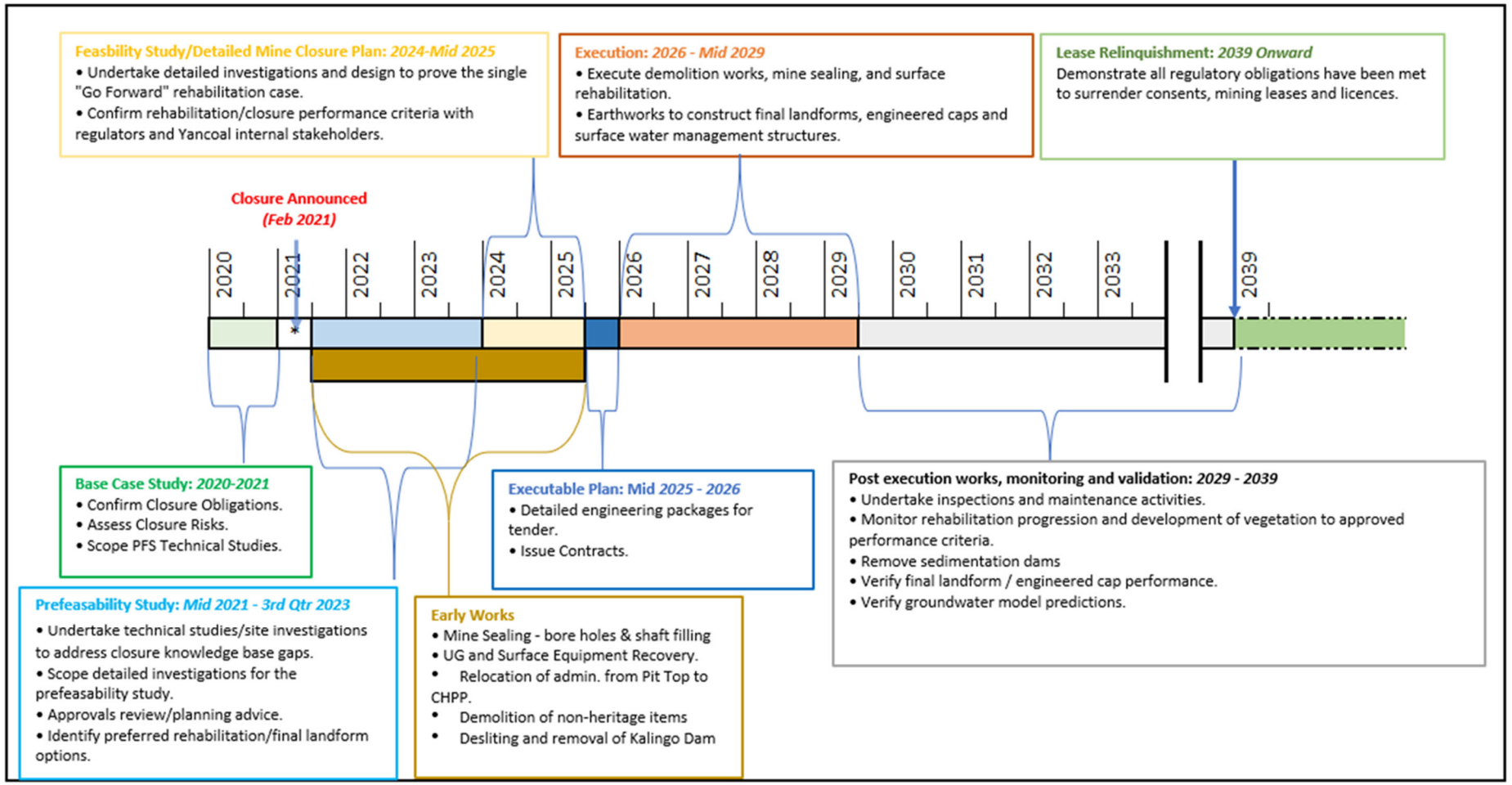

FIGURE 2 CONCEPTUAL CLOSURE TIMELINE

2 STAKEHOLDER CONSULTATION

In accordance with Schedule 3 Condition 6(a) of PA 08_0111, consultation with the NSW Environment Protection Authority (EPA) was undertaken during the preparation of the original AQGHGMP as well as for subsequent updates, as required.

Given the EPA's previous advice that they do not review management plans, Austar approached the EPA during the preparation of the 2021 update to the AQGHGMP to confirm their current approach. Austar proposed that, if this remained their current process regarding reviewing management plans, Austar would submit the plan to DPHI and, once approved, a copy of the plan would be provided to the EPA. EPA concurred with this approach. This revision of the AQGHGMP will be sent to the EPA upon its approval. When approved, DPHI's letter of approval of the AQGHGMP will be appended as **Appendix B**. Evidence of consultation with the EPA dated 24 March 2021 is included in **Appendix C.**

3 BASELINE DATA

3.1 Air Quality

A summary of air quality results since commencement of monitoring is provided in the following subsections. Air quality monitoring locations are shown in **Figure 3**.

3.1.1 Depositional Dust

Annual average depositional dust results since monitoring commenced are provided in **Table 1**.

TABLE 1 – DEPOSITIONAL DUST GAUGES - ANNUAL AVERAGE INSOLUBLE SOLIDS (G/M^2/MONTH)

Year	D1 (Insoluble solids g/m^2)	D2 (Insoluble solids g/m^2)	D3 (Insoluble solids g/m^2)	D4 (Insoluble solids g/m^2)	D5 (Insoluble solids g/m^2)	D7 (Insoluble solids g/m^2)	D8 (Insoluble solids g/m^2)	D9 (Insoluble solids g/m^2)
2007*	0.8	1.0	1.0	0.8	1.0	-	-	-
2008	0.7	0.9	1.4	1.0	2.0	-	-	-
2009	1.5	1.4	2.0	1.5	1.3	-	-	-
2010	0.9	1.5	1.5	0.9	0.8	-	-	-
2011	1.1	1.1	0.9	1.8	0.4	-	-	-
2012	1.0	3.3#	1.0	3.4	0.7	-	-	-
2013	1.2	3.9#	1.1	1.2	1.7	0.7~	0.4~	0.5~
2014	1.8	1.6	1.1	2.5	2.5	0.7	0.9	1.1
2015	0.7	1.1	1.1	2.6	2.6	0.7	0.5	0.8
2016	1.0	1.6	1.1	1.5	2.0	1.0	0.8	0.8
2017	0.9	1.4	0.9	1.7	0.9	1.0	1.0	1.1
2018	0.8	1.1	0.7	1.4	2.0	0.6	1.0	1.0
2019	1.5	1.6	1.0	1.8	1.3	1.2	0.8	1.3
2020	1.2	1.8	1.0	1.7	1.2	1.0	1.3	1.6
2021	0.7	1.1	0.6	1.9	1.3	0.6	0.6	0.9
2022	0.4	1.1	0.7	2.2	0.8	0.7	0.7	0.8
2023	0.8	3.0	0.5	1.9	1.0	0.4	0.5	0.4

Notes: *2007 Annual Average calculated on data collected from April to December 2007.
~Annual average data for 2013 calculated from July to December 2014.
Investigation found annual average result influenced by resident's activities (earthworks, vegetation clearing, burning off).

Annual average depositional dust results are below the long term impact assessment criteria for maximum total deposited dust levels of 4g/m^2/month on all occasions.

With the exception of D2 (Pelton Village) in 2012 and 2013, annual average depositional dust results have not exceeded the maximum increase in deposited dust levels of 2g/m^2/month. An investigation into elevated depositional dust measurements at D2 was undertaken and found that Austar was not reasonably the source of the increased results, with local ground disturbance activities by the neighbouring resident (earthworks, clearing, mowing, pile burning) potentially the contributing factor in months where elevated results were observed.

3.1.2 Particulate Matter - PM_{10}

Annual average PM_{10} results since monitoring commenced are provided in **Table 2**.

TABLE 2 – HVAS AND TEOM - ANNUAL AVERAGE PARTICULATE MATTER <10µM (PM_{10})

Year	HVAS1 (PM_{10} µg/m^3)	HVAS2 (PM_{10} µg/m^3)	HVAS3 (PM_{10} µg/m^3)	TEOM (PM_{10} µg/m^3)
2007*	17.9	18.0	-	
2008	14.0	14.3	-	
2009	16.0	17.2	-	
2010	12.3	14.3	-	
2011	13.5	14.3	-	
2012	12.4	13.7	-	
2013	12.3	13.3	-	
2014	12.5	13.7	10.9#	
2015	9.9	10.4	9.6	
2016	10.8	12.0	10.1	9.6
2017	11.4	14.6	10.5	10.5
2018	15.8	18.0	14.7	12.8
2019	26.3	25.1	20.9	20.9
2020	13.6	13.9	12.8	14.2
2021	9.4	9.2	8.1	11.9
2022	6.9	7.5	6.1	10.2
2023	10.3	11.5	10.3	12.9

Notes: *2007 Annual Average calculated on data collected from 24 March 2007 to end December 2007.
#2014 HVAS3 Annual Average calculated on data collected from 9 June 2014 to end December 2014.

Annual average results for PM_{10} are well below the long term impact assessment criterion of 30µg/m^3.

3.1.3 Total Suspended Particulates

Annual average Total Suspended Particulates (TSP) results since monitoring commenced are provided in **Table 3**.

TABLE 3 – HVAS AND TEOM – ANNUAL AVERAGE TOTAL SUSPENDED PARTICULATES (TSP)

Year	HVAS1 (TSP µg/m^3)	HVAS2 (TSP µg/m^3)	HVAS3 (TSP µg/m^3)	TEOM (TSP µg/m^3)
2007*	44.8	45.0	-	
2008	35.0	35.8	-	
2009	40.0	43.0	-	
2010	30.8	35.8	-	
2011	33.8	35.8	-	
2012	31.0	34.3	-	
2013	30.8	33.3	-	
2014	31.3	34.3	27.3#	
2015	24.8	26.0	24.0	
2016	27.0	30.0	25.3	24.0
2017	28.5	36.5	26.3	26.2
2018	39.5	45.0	36.8	31.9
2019	65.8	62.8	52.3	54.0
2020	34	34.75	32	35.5
2021	23.5	23	20.25	29.75
2022	17.25	18.75	15.25	25.5
2023	25.7	28.8	25.7	32.3

Notes: *2007 Annual Average calculated on data collected from 24 March 2007 to end December 2007.
#2014 HVAS3 Annual Average calculated on data collected from 9 June 2014 to end December 2014.

Annual average results for TSP are well below the long term impact assessment criterion of 90µg/m^3.

3.2 Greenhouse Gas

Greenhouse gas emissions associated with the Austar Mining Complex have been categorised into Scope 1, 2 and 3 emissions as per the *Austar Coal Mine Project – Stage 3 Greenhouse Gas and Energy Assessment* (Umwelt, September 2008). The two "scope" categories that are directly related to the on-site operation of Austar can be defined as:

- Scope 1 – covers *direct emissions* from the combustion of fuels (for example, diesel) and industrial processes within the boundary of the mining operation; and
- Scope 2 – covers indirect emissions from the mining operation's consumption of purchased electricity that is produced by another organisation.

As the site has now closed, annual forecasts are no longer undertaken and actual energy use and emissions will be significantly lower.

As of 11 October 2022, Austar underground mine has been sealed and is gradually flooding. Fugitive scope 1 emissions have been estimated in accordance with section 5.2 of the *Estimating Emissions*

from Coal Mining Guideline (Clean Energy Regulator, 2022). This allows for fugitive emissions during post-mining activities to be calculated as a product of ROM coal multiplied by a state emission factor (0.019 t CO_2-e). As Austar is no longer producing ROM coal annual fugitive emissions are estimated to be 0 t CO_2-e.

Total emissions will continue to be reported as detailed in **Section 7.**

4 STATUTORY REQUIREMENTS

Relevant conditions from PA 08_0111 and DA 29/95, EPL 416 and PA 08_0111 Statement of Commitments and where these are addressed in this Plan are provided in **Appendix A**.

5 AIR QUALITY IMPACT ASSESSMENT CRITERIA

In accordance with Schedule 4 Condition 4 of PA 08_0111 and Schedule 3 Condition 17 of DA 29/95, Austar shall ensure that the dust emissions generated by activities at the:

- Kitchener Surface Infrastructure Site (PA 08_0111);
- Kalingo Infrastructure Upgrade Area (DA 29/95);
- Any relevant EPL[2], for dust generated by all other components of the project (PA 08_0111); and
- Do not cause additional exceedances of the air quality impact assessment criteria listed in **Table 4** at any residence on privately-owned land, or on more than 25 percent of any privately owned land.

TABLE 4 - LONG AND SHORT TERM IMPACT ASSESSMENT CRITERIA FOR PARTICULATE MATTER

Pollutant	Averaging Period	Criteria
Total suspended particulate (TSP) matter	Annual	90µg/m^3
Particulate matter <10µm (PM_{10})	Annual	30µg/m^3
Particulate matter <10µm (PM_{10})	24 hour	50µg/m^3

The long term impact assessment criteria for deposited dust are listed in **Table 5**.

TABLE 5 - LONG TERM IMPACT ASSESSMENT CRITERIA FOR DEPOSITED DUST

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method.

[2] Note Austar's EPL 416 does not specify air quality impact assessment criteria.

6 AIR QUALITY AND GREENHOUSE GAS MANAGEMENT

As detailed in Section 1, this version of the AQGHGMP has been prepared to address air quality and greenhouse gas management during the current closure planning and early works phase of closure planning. Dust generating activities during these phases may include:

- Minor surface disturbance during site investigations to inform closure planning.
- Early works demolition activities.
- Desilting and decommissioning of mine water dams
- Vehicle movements on unsealed roads.

The mitigation management measures listed below apply to current disturbance and early works and closure planning activities.

It is anticipated that major earthworks during rehabilitation and closure will result in increased dust emissions in comparison with the current scenario. When specific activities are known appropriate air quality mitigation measures will be identified and implemented. This plan will be updated to incorporate these measures.

6.1 Air Quality Management Controls

In order to mitigate potential air quality impacts from the Austar Mining Complex during closure planning, maintenance and early works, a number of air quality management controls have been, are currently, or will be implemented to mitigate and/or manage potential air quality impacts from the site. These controls are detailed in **Table 6**.

TABLE 6 - AIR QUALITY CONTROLS

Mitigation ID	Mitigation Measure	When Required/Status
	Design Controls	
1	The haul road to the reject emplacement area is essentially level, narrow and is vegetated right to the edge. In part, trees line the road and arc over it. This reduces the wind speed acting on the surface of the road which reduces the evaporation rate following watering for dust suppression. During closure planning and early works minimal hauling will be undertaken, with the exception of occasional campaign hauls for a specific short term project, such as a dam desilting project.	The haul road will be maintained as required during closure.
2	ROM and product coal stockpiles are located in densely forested area. The site is surrounded by trees which act as a vegetative wind break. Additionally, stockpiles are not in use during closure.	Stockpiles have been cleared in closure and a crust has formed over them. Dust generation is minimal from stockpile areas.
3	Progressive site rehabilitation and revegetation where appropriate (bulk earthworks and final rehabilitation will trigger an update to this management plan when plans are finalised).	Rehabilitation is undertaken in accordance with the Rehabilitation Management Plan.
	Closure Planning Controls	
4	**Unsealed Roads** Austar implement the following controls to reduce dust emissions from unsealed roads: • Optimise load capacity when hauling to limit number of return trips and travel distance of haul trucks;	Mitigation measures in place where required.

Mitigation ID	Mitigation Measure	When Required/Status
	• Speed limit on haul road 50km/hour and 30km/hour at CHPP site; • Haul roads and other unsealed roads are watered when in use; • Visual dust monitoring is undertaken by supervisory staff to ensure effective dust control; and • Regular maintenance of haul roads including grading, and where appropriate gravelling, of heavy trafficked areas. Grader speed is maintained below 8km/hour.	
5	**Sealed Roads** Austar will provide for the rapid clean-up of material spilled onto any sealed road, with re-routing of traffic around the spills until they have been removed, to minimise the potential for dust emissions from sealed roads. Road sweepers are employed where necessary.	Control in place as required.
7	**Rehabilitation Areas** Austar implement the following controls to reduce dust emissions from rehabilitation area projects: • Reject emplacement area has been compacted to stabilise the surface; • Completed have been progressively vegetated to reduce area of exposed soils at any one time; • Minimise double handling of materials where possible; • Avoid dozer operations at wind exposed areas during dry, windy conditions; and • Visual monitoring of rehabilitation projects by supervisors, with operations modified or ceased when elevated dust levels are observed to occur.	Controls implemented when reject emplacement and rehabilitation activities are occurring.
8	**Spontaneous Combustion** Spontaneous combustion has the potential to result in air quality and odour impacts.	Empty coal stockpiles and compacted reject emplacement areas are inspected regularly, however are low risk for spontaneous combustion.

Mitigation ID	Mitigation Measure	When Required/Status
	The underground mine has been sealed and the ventilation system and nitrogen intertisation plant decommissioned. The mine is gradually flooding. Mine sealing has included lightning protection. No coal stockpiles remain on site. Reject emplacement areas are monitored regularly, and geotechnical and geochemical analysis has shown low combustibility risk.	
9	**Odour and Fume Emissions** In accordance with Condition 5 Schedule 4 of Project Approval 08_0111 Austar is required to manage offensive odours. Odours are unlikely given that the underground mine has been sealed and the ventilation system and nitrogen intertisation plant have been decommissioned. Notwithstanding this, any reports of odour having the potential to impact off-site will be investigated and assessed, with corrective actions developed as necessary.	Odour complaints will be fully investigated, and corrective actions developed if required.
10	**Site investigation activities** • Contractors will undertake site investigations works in accordance with the latest revisions of Austar's Site Investigations Environmental Procedure. <u>Site Establishment Mitigation Measures:</u> • Water cart available to wet tracks • Speed limits in place • Dust Assessment Handbook • New site toolbox talk <u>Operation Mitigation Measures:</u> • Drilling with muds which limits dust • Water cart can be used as required	To be implemented when carrying out site investigations (i.e. test pitting, drilling monitoring bores, geotechnical and contamination studies.)

Mitigation ID	Mitigation Measure	When Required/Status
	• Cease or delay work when weather conditions are not suitable <u>Demobilisation and Cleanup:</u> • Watercart available to wet tracks • Speed limits in place • Dust Assessment Handbook • Toolbox talks	
11	**Demolition Works** • Disturbance to be restricted to the footprint of the infrastructure being demolished; • Avoid undertaking ground disturbance or demolition works during periods of strong winds; • Dust suppression of exposed soil and stockpiles is to be conducted as necessary to prevent dust generation; • Any stockpiles or exposed areas required to be in place for more than 30 days are to be covered, stabilised, or wet down as necessary to prevent the generation of dust; • Vehicles and equipment are operated efficiently and regularly maintained in accordance with the manufacturer's instructions, with pre-starts conducted daily prior to use; • Equipment will be switched off when not in use; • Vehicles are to be restricted to defined access roads and tracks, and posted site-specific speed limits; • Solid waste will be collected in designated covered receptacles (to prevent wind-blown litter) and disposed of on a regular basis; • Any welding, grinding, or cutting requires a Hot Works Permit to be prepared and approved; and • Fire extinguishers are available on all equipment.	During Demolition Activities

7 GREENHOUSE GAS MANAGEMENT

7.1 Objectives

The objectives of the AQGHGMP for Greenhouse Gas emissions are to ensure that appropriate procedures and programs of work are in place at the Austar Mine Complex to:

- Document the greenhouse gas and energy programs Austar is committed to;
- Establish a monitoring system to capture greenhouse gas and energy use; and
- Provide a mechanism for reporting monitoring results against greenhouse gas and energy use reporting criteria.

7.2 Greenhouse Gas Impact Assessment Criteria

7.2.1.1 Compliance Reporting Criteria

National Greenhouse and Energy Reporting Systems

Austar is required to report greenhouse gas emissions in accordance with the National Greenhouse and Energy Reporting System (NGERS) as its parent company (Yancoal Australia Pty Limited) triggers corporate reporting thresholds and the site triggers individual facility thresholds. The *National Greenhouse and Energy Reporting Act 2007* requires individual sites to report greenhouse gas emissions, energy consumption and energy production if one of the following threshold criteria is met:

- The site generates greenhouse gases (Scope 1 and 2) in excess of 25,000 t CO_2-e or more; or
- The site produces in excess of 100 TJ of energy; or
- The site consumes in excess of 100 TJ of energy.

Energy Savings Action Plan (ESAP)

In accordance with Schedule 4 Condition 6 of PA 08_0111, Austar prepared and implemented an Energy Savings Action Plan during the operation of the mine. Austar will continue to implement energy saving initiatives as relevant during closure planning and execution as listed in **Table 7.**

7.2.1.2 Greenhouse Gas Performance Measures

Austar is not required to commit to specific greenhouse gas performance targets under legislation or industry codes but is required to report to the federal government in a manner which may be reported publicly.

Austar will, however, continue to refine energy efficiency reductions based on the outcomes of monitoring and following continuous improvement processes.

Greenhouse gas indicators will be included in the Annual Review of environmental performance prepared for the DPHI.

7.3 Greenhouse Gas Management and Energy Savings Action Plan (ESAP)

Error! Reference source not found. outlines management measures that form the energy savings action plan required by PA 08_0111 schedule 4 condition 6 and Statement of Commitment 1.10 as well as additional controls that will be implemented as part of the closure site investigations.

TABLE 7 – GREENHOUSE GAS AND ENERGY SAVINGS ACTIONS

Mitigation ID	Mitigation Measure	When Required/Status
Closure Planning Controls		
1	Minimising energy use	Energy use reduced as much as possible during closure, including the decommissioning of vent fans and CHPP (biggest energy users)
2	Managing and minimising waste and waste water to manage greenhouse gas emissions	Minimal waste and waste water being generated during closure.
3	Consideration of installing SF_6 free switchgear	No new switch gear to be installed during closure. Substantial SF6 stocks have been removed from site in closure.
4	Austar will assess greenhouse gas emissions, energy use and energy production by direct monitoring and modelling from activity data. The greenhouse gas monitoring program will involve estimation of fugitive emissions and the collation of activity data such as energy use and fuel consumption during closure activities. Monitoring will be undertaken to meet the standards required by the NGERS Act.	Monitoring continuing in accordance with NGERS Act requirements.
5	Prior to bringing plant on site to carry out intrusive site inspections the following will be carried out: • Vehicles will undergo inspection before allowed to access the site. • Plant will undergo the introduction to site process. As part of environmental site inspection any excessive fume observed coming from plant will be noted and investigated.	To be implemented when carrying out site investigations (i.e. test pitting, drilling monitoring bores, geotechnical and contamination studies.)

7.4 Measurement and Evaluation

7.4.1 Greenhouse Gas Monitoring Program

Austar will monitor greenhouse gas emissions, energy use and energy production by direct monitoring and modelling from activity data to meet the standards required by the NGERS Act. The greenhouse gas monitoring program will involve the collation of activity data such as energy use, and waste disposal. As the mine is now sealed, fugitive emissions are no longer measured.

8 AIR QUALITY, METEOROLOGICAL AND GREENHOUSE GAS MONITORING

8.1 Air Quality and Meteorological Monitoring Program

To assess compliance against dust deposition and dust concentration criteria for Austar PM_{10} and depositional dust will be routinely monitored at locations shown on **Figure 3**. A meteorological station is operated at the CHPP.

In addition, a tapered element oscillating microbalance (TEOM) monitor is included in the Austar Mining Complex monitoring network to meet PA08_0111 requirements relating to continuous monitoring. Of the Austar Mining Complex infrastructure areas, the CHPP has the largest disturbance area and therefore the greatest potential to generate dust. Based on wind data monitored from Austar's weather station, the prevailing wind direction at the CHPP during October-March is ENE and April-September SW. Given there are very few receptors to the SW of the CHPP and that the township of Bellbird is located to the NE, Bellbird was chosen as the TEOM location. This complements the PM_{10} HVAS's which are located to the south and west of the CHPP.

8.2 Monitoring Locations and Frequency

The network to monitor air quality impacts and type of monitoring at each location is shown in **Table 8.**

TABLE 8 - AIR QUALITY MONITORING NETWORK

ID	Location	Monitoring Equipment
D1	Pyne Way, Mount View	DDG, HVAS
D2	Ellalong Road, Pelton Village	DDG, HVAS
D3	Bimbadeen Road, Mount View	DDG
D4	Ellalong Village	DDG
D5	South of No 3 shaft upcast ventilation shaft	DDG
D6	Bimbadeen Road, Mount View	TEOM
D7	Pelton Fire Trail, Quorrobolong	DDG
D8	Coney Creek Lane, Quorrobolong	DDG, HVAS
D9	Kitchener Village	DDG
Met Station	CHPP site, Pelton	Meteorological Station

Air quality monitoring locations will be reviewed and, where necessary, modified in consultation with DPHI and EPA according to progressive monitoring results and proposed closure activities.

The frequency of air quality monitoring to be undertaken for each type of monitoring equipment is detailed in **Table 9**.

TABLE 9 - AIR QUALITY MONITORING FREQUENCY

Type of Monitoring	Frequency
PM_{10} HVAS	Every 6 days**
Depositional Dust Gauges	Monthly
TEOM	Continuous*
Meteorological Station	Continuous*

* refer Section 8.2.3 and 8.2.4
** refer Section 8.2.1

Air quality monitoring locations will be reviewed and, where necessary, modified in consultation with DPHI and EPA over the life of operations according to progressive monitoring results and physical changes in mining operations.

Where possible, air monitoring equipment will be sited in accordance with *Australian Standard AS/NZS 3580.1.1:2016: Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment*.

8.2.1 High Volume Air Sampler Methodology

HVAS are operated in accordance with *Approved methods for the sampling and analysis of air pollutants in NSW* (DEC 2007) and *Australian Standard AS/NZS3580.9.6:2003 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM_{10} high volume sampler with size-selective inlet – Gravimetric method*.

For PM_{10} HVAS, data will be captured on the six day schedule specified by the EPA. If the HVAS doesn't complete the run on this day (due to situations such as equipment breakdown, power loss, scheduled maintenance, performance specification testing and vandalism), a make up run will be conducted on an alternate day to ensure full data sets. This will be noted and reported in Annual Reviews, but will not be treated as a non compliance.

Total suspended particulates (TSP) is not directly measured by instrumental techniques but is calculated on the basis that long term PM_{10} concentrations are approximately 40% of the corresponding long term TSP concentration (Holmes, 2003). Holmes (2003) stated in the Air Quality Impact Assessment report for the Wambo Development Project that "Monitoring data from areas in the Hunter Valley where co-located TSP and PM_{10} monitors have been operated for reasonably long periods of time indicate that long term PM_{10} concentrations are approximately 40% of the corresponding long term TSP concentration." Total suspended particulates will be determined by calculation based on this accepted long term PM_{10} to TSP ratio. The formula for this calculation is:

$$\text{Calculated TSP Concentration } (\mu g/m^3) = \text{Measured } PM_{10} \text{ Concentration } (\mu g/m^3) \times 2.5$$

8.2.2 Dust Deposition Gauge Methodology

Monitoring of dust deposition gauges is undertaken in accordance with *Approved methods for the sampling and analysis of air pollutants in NSW* (DEC, 2007). Deposited dust is assessed as insoluble solids as defined *by AS/NZS 3580.10.1:2016 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method.*

Samples are collected every 30 +/- 2 days. Samples are additionally analysed for ash residue and combustible matter to the Australian Standard to assist in determining possible contamination and dust sources. If the sample is deemed contaminated by environmental monitoring consultants, the result is excluded from the annual average calculation. Contaminated results will consider the findings recorded on the fieldsheet (often excessive insects, grass clippings etc.) and the ratio of ash to insoluble solids.

335000 336000 337000 338000 339000 340000 341000 342000 343000 344000 345000 346000 347000 348000 349000 350000 351000

6364000 6363000 6362000 6361000 6360000 6359000 6358000 6357000 6356000 6355000

MOUNT VIEW
MOUNT VIEW ROAD
CEDAR CREEK
BELLBIRD HEIGHTS
Areas 12 & 13
NM-7-1
NM-7-2
ML1345
ML1283
ML1457
VINCENT STREET
MPL217
GRETA STREET
CALEDONIA STREET
ABERDARE STREET
KEARSLEY
LAKE ROAD
NM-8-1
DSL89
MPL23
D6
KENDALL STREET
SW4
MPL1364
NM C3
BIMBADEEN ROAD
D3
D1
NM C1
SW1
MLA521
MPL269
SW2
SW6
CHPP
SW5
WOLLOMBI ROAD
NM C2
D2
WERAKATA NATIONAL PARK
KEARSLEY ROAD
D9
ABERNETHY STREET
ABERNETHY
CESSNOCK STREET
NM K3
WERAKATA STATE CONSERVATION AREA
CML2
Kitchener Surface Infrastructure Site
GRETA MAIN
MIDDLE ROAD
ELLALONG ROAD
BLACK CREEK
ML1666
LW A7
LW A8
LW A9
LW A10
LW A11
LW A12
LW A13
LW A14
LW A15
LW A16
LW A17
LW A18
LW A19
NM K2
NM K1
NM K4
ML1388
D7
D8
MB01
MB02
WBH1
WBH3
WBH2
COMA CREEK
SW C1
Austar Dam
NM-1-2
Pit Top
NM-1-1
Kalingo Dam
MILLFIELD ROAD
MAIN ROAD
SANCTUARY ROAD
NM-3-2
NM-3-1
No.1 Shaft
Cessnock No.1 Colliery
ML1550
D5
AQD1073A
Kalingo Infrastructure Area
SW Q2
SW Q3
D4
RUGBY STREET
HELENA STREET
QUORROBOLONG CREEK
CCL752
CONGEWAI ROAD
CHURCH STREET
SOUTH STREET
SANDY CREEK ROAD
LW B6
LW B5
LW B4
LW B3
LW B2
CCL728
NER 1010
MB03A
SW Q1
EL6598
MB04
ML1661
NM-4-1
HEATON ROAD

LEGEND

- Colliery Holding Boundary
- Mining Lease Application Boundary
- Relevant Mining Titles
- Mine Plan
- Major Roads
- Railway
- Creek Lines
- Water Pipeline - Potable
- Bellbird Pipeline 1 and 2
- Water Pipeline
- Austar Coal Mine - Austar Owned Land

Monitoring Locations

- Attended Noise Monitoring
- Dust Gauge
- Dust Gauge and HVAS
- Continuous Dust Monitor (TEOM)
- Creek Monitoring
- Ground Water Monitor
- Surface Water Monitoring
- Meteorological Station

CMA Boundaries

- CMA 1 - Austar Pit Top Facilities
- CMA 2 - Pelton CHPP
- CMA 3 - No.1 Shaft
- CMA 4 - No.2 Shaft
- CMA 5 - Cessnock No.1 Colliery / Kalingo Infrastructure Area
- CMA 6 - Kitchener Surface Infrastructure Site
- CMA 7 - Aberdare Extended Emplacement Area
- CMA 8 - Bellbird Areas 12 and 13
- CMA 9 - Other

I:\01 Clients_GIS\YAN - Yancoal\YAN01-015 Austar E and C Operational Support\YAN01_015_Fig3_NetworkMonitoring_02.mxd_04

0 330 660 990 1,320 m

Scale: 1:42,000

GDA2020 MGA Zone 56

22/02/2023

Austar Coal Mine

Environmental Monitoring Network

FIGURE 3

INTEGRATED ENVIRONMENTAL MANAGEMENT AUSTRALIA
www.iema.com.au

Sheet Size : A3

8.2.3 Continuous Dust Monitoring (TEOM) Methodology

The TEOM data is used to complement HVAS data in the following manner:

- Provide data to the northeast of the CHPP where no HVAS currently exists;
- Provide an understanding of regional episodic dust events;
- Provide an understanding of local episodic dust events;
- Provide an understanding of potential dust episodes resulting from mining activities; and
- Alert when dust levels are approaching the relevant criteria so that the operation can be adjusted accordingly (if required).

The TEOM unit operates in accordance with *Approved methods for the sampling and analysis of air pollutants in NSW* (DEC, 2007) and *AS 3580.9.8:2008 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*.

Continuous (i.e. 100%) data capture cannot always be achieved due to equipment faults or interruptions. For the purposes of this monitoring, 'continuous' refers to the capture of relevant volume monitoring data for the duration of the frequency reporting period except during the following situations:

- Equipment breakdown;
- Power loss;
- Scheduled maintenance;
- Performance specification testing; and
- Vandalism.

8.2.4 Meteorological Monitoring

Austar utilises a continuous weather recording station located at the CHPP site to record meteorological data (refer **Figure 3**). The location of the weather station facilitates the capture of data that is representative of the area subject to potential dust emissions. Logged meteorological parameters include:

- Wind speed;
- Wind direction;
- Sigma-theta from sampled wind direction measurements;
- Temperature; and
- Rainfall.

The weather station is maintained and operated in accordance with *Approved methods for the sampling and analysis of air pollutants in NSW* (DEC, 2007) and *AS 3580.14:2014 Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications.*

Continuous (i.e. 100%) data capture cannot always be achieved due to equipment faults or interruptions. For the purposes of this monitoring, 'continuous' refers to the capture of relevant

volume monitoring data for the duration of the frequency reporting period except during the following situations:

- Equipment breakdown;
- Power loss;
- Scheduled maintenance;
- Performance specification testing; and
- Vandalism.

8.3 Greenhouse Gas Monitoring Program

Greenhouse gas monitoring will be undertaken in accordance with the requirements of the National Greenhouse and Energy Reporting Scheme (NGERS).

9 CONTINGENCY PLAN FOR UNPREDICTED IMPACTS

In the event of impacts exceeding impact assessment criteria, the following process will be implemented:

- The Environment & Community Superintendent will be notified;
- The Environment & Community Superintendent to determine if the unpredicted impact constitutes an environmental incident that requires external reporting (**Section 11.2**);
- Investigate to evaluate the contributing factors to the event. The investigation may include (where applicable):
    - Assessment of weather conditions for the period of monitoring, including wind speed and direction;
    - Visual assessment of the area surrounding the monitoring location to identify any potential sources of dust generation (on site and off site);
    - Review of operational activities during the period of monitoring.
- Implement remedial response and/or adaptive management measures, depending on the outcomes of the above investigation; and
- Implement the Review and Improvement component of this plan as required.

10 CONTINUAL IMPROVEMENT

Austar will implement reasonable and feasible best practice air quality mitigation measures appropriate for a closed site. The basis for continuous improvement of air quality mitigation measures will be through the ongoing monitoring of dust impacts and the contingency response and adaptive management process outlined in **Section 9.**

Any new mitigation measures that are implemented as a result of these investigations will be reported in the Annual Review.

11 COMPLAINTS, INCIDENTS AND REPORTING

11.1 Community Complaints and Independent Review

Community complaints are to be managed in accordance with the requirements of the Environmental Management Strategy.

A complaints register will be published on the Austar Coal Mine website, which will be updated monthly, and a summary of complaints will be provided in the Annual Review.

If a landowner of privately-owned land considers the site to be exceeding the impact assessment criteria, the independent review requirements in Schedule 5 Conditions 3 and 4 are to be followed.

11.2 Incident Reporting

Schedule 7 Condition 6 of PA 08_0111 and Schedule 5 Condition 4 of DA 29/95 specify the requirements for incident reporting. An incident is defined as a set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in the approval.

There is inconsistency between the wording of the conditions, however, the following protocol addresses the requirements of both conditions.

Austar will notify the Department and any other relevant agencies, of any incident associated with the mine complex as soon as practicable after Austar becomes aware of the incident.

Within 7 days of the date of the incident, Austar will provide a detailed report on the incident to the Department and any other relevant agencies. The report will include the following details:

- The date, time and nature of the exceedance/incident;
- Identify the likely cause of the exceedance/incident;
- Describe what action has been taken to date; and
- Describe the proposed measures to address the exceedance/incident.

Further investigation may be required beyond the 7 days depending on the nature of the incident.

As noted in **Sections 8.2.3** and **8.2.4**, continuous (i.e. 100%) data capture cannot always be achieved due to equipment faults or interruptions. Missing data as a result of the following situations is not considered an incident that requires formal external reporting however Austar will inform Department of Planning Housing and Infrastructure (DPHI) when such events occur and result in more than 24 hours of data loss:

- Equipment breakdown;
- Power loss;
- Scheduled maintenance;
- Performance specification testing; and
- Vandalism.

11.3 Landowner Notification

The landowner notification and provision of information requirements outlined in Schedule 5 Conditions 1 and 2 of PA 08_0111 must be enacted when triggered by exceedances of relevant impact assessment criteria.

11.4 Information Dissemination

A summary of monitoring results will be presented at Austar Community Consultative Committee (CCC) meetings.

Information will also be made available on the Austar website in accordance with the requirements of Schedule 7 Condition 9 of PA 08_0111 and Schedule 5 Condition 12 of DA 29/95.

11.5 Annual Review

In accordance with Schedule 7 Condition 3 of PA 08_0111 and Schedule 5 Condition 5 of DA 29/95, Austar will prepare an Annual Review for submission to the Department.

12 DOCUMENT REVIEW AND REVISION

Schedule 7 Condition 4 of PA 08_0111 and Schedule 5 Condition 8 of DA 29/95 specify the requirements for revision of strategies plans and programs. There is inconsistency between the wording of the conditions, however, both require that within 3 months of:

- The submission of an Annual Review;
- The submission of an incident report;
- The submission of an audit report; or
- The approval of a modification to the conditions of consent;

Austar shall review the strategies, plans and programs required by the approval/consent to the satisfaction of the Department.

DA 29/95 requires Austar to notify the Department in writing of any such review being undertaken.

Where a review leads to revision of a document, the revised document must be submitted to the Department for approval. The timing for submission of revised plans differs between the consents, being 4 weeks in PA 08_0111 and 6 weeks in DA 29/95. Given this, the 4 week requirement in PA 08_0111 will prevail.

Any changes made to this Plan or supporting documents as a result of the review will be made in consultation with the EPA.

13 REFERENCES

Attorney-General's Department (2003) *National Environment Protection (Ambient Air Quality) Measure*

Department of Environment and Conservation NSW (2007) *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*

Holmes (2003) *Air Quality Impact Assessment: Wambo Development Project*

Todoroski Air Sciences (September 2012) *Particulate Matter Best Management Practice Pollution Reduction Program*, Todoroski Air Sciences Eastwood NSW.

Umwelt (September 2008) *Austar Coal Mine Project – Stage 3 Greenhouse Gas and Energy Assessment*, Umwelt Toronto NSW.

Appendix A:
Approval Requirements

PROJECT APPROVAL/DEVELOPMENT CONSENT REQUIREMENTS

Relevant conditions from PA 08_0111 and DA 29/95 and where these conditions are addressed in this Plan are listed in the tables below.

TABLE 1: PROJECT APPROVAL CONDITIONS (PA 08_0111)

<table>
<tr><th>Schedule</th><th>Project Approval Conditions</th><th>Section of this Plan</th></tr>
<tr><td>2</td><td>STRATEGIES, PLANS AND PROGRAMS</td><td></td></tr>
<tr><td>2</td><td>12. With the approval of the Director-General, the Proponent may submit any strategies, plans or programs required by this approval on a progressive basis.</td><td>Noted</td></tr>
<tr><td>2</td><td>13. With the approval of the Director-General, the Proponent may integrate any strategies, plans, programs, reviews, audits or committees required by this approval with any similar requirement under another development consent or approval relating to the Austar Mine Complex.</td><td>AQGHGMP addresses PA 08_0111 and DA 29/95 conditions</td></tr>
<tr><td>4</td><td>AIR QUALITY AND GREENHOUSE GAS</td><td></td></tr>
<tr><td>4</td><td>Impact Assessment Criteria
4. The Proponent shall ensure that the dust emissions generated by the project do not cause additional exceedances of the air quality impact assessment criteria in:</td><td></td></tr>
<tr><td></td><td>(a) Tables 3, 4 and 5 for dust generated by the Surface Infrastructure Site; and
(b) any relevant EPL, for dust generated by all other components of the project, at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

Table 3: Long term impact assessment criteria for particulate matter – Surface Infrastructure Site
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m^3</td></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>30 µg/m^3</td></tr></table>Table 4: Short term impact assessment criterion for particulate matter – Surface Infrastructure Site
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td>50 µg/m^3</td></tr></table>Table 5: Long term impact assessment criteria for deposited dust – Surface Infrastructure Site
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2 g/m^2/month</td><td>4 g/m^2/month</td></tr></table>Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</td><td>5</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>4</td><td>Operating Conditions
5. The Proponent shall:</td><td></td></tr>
<tr><td></td><td>(a) ensure that any visible air pollution generated by the project is assessed regularly and measures are taken to minimise air quality impacts on privately-owned land; and</td><td>6</td></tr>
<tr><td></td><td>(b) implement all reasonable and feasible measures to minimise the off-site odour and fume emissions generated by the mine complex's ventilation system or any spontaneous combustion on the site, to the satisfaction of the Director-General.</td><td>6</td></tr>
</table>

Schedule	Project Approval Conditions	Section of this Plan
4	**Air Quality and Greenhouse Gas Management** 6. The Proponent shall prepare and implement an Air Quality and Greenhouse Gas Management Plan for the mine complex, to the satisfaction of the Director-General. The plan must:	
	(a) be prepared in consultation with EPA, and be submitted to the Director-General for approval prior to the commencement of construction of the Surface Infrastructure Site (other than shaft construction referred to in Condition 1); and	2
	(b) include, in addition to the standard requirements for management plans (see Condition 2 of Schedule 7): • an air quality monitoring program providing for a combination of continuous monitors, high volume samplers and dust deposition gauges; • an energy savings action plan, including a feasibility study into the capture and beneficial utilisation of methane gas emissions from the project; and • a detailed continual improvement program for investigating, implementing and reporting on all reasonable and feasible measures to reduce dust generated by the mine complex.	8 7 10
4	**METEOROLOGICAL**	
4	7. The Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the project in accordance with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* and to the satisfaction of the Director-General.	8.2.4
5	**NOTIFICATION OF LANDOWNERS**	
5	If the results of the monitoring required in schedule 4 identify that impacts generated by the project are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact, then the Proponent shall, within 2 weeks of obtaining the monitoring results, notify the Director-General, the affected landowners and tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria in schedule 4.	11.3
5	If the results of monitoring required in schedule 4 identify that impacts generated by the project are greater than the relevant air quality impact assessment criteria in schedule 4, then the Proponent shall send the relevant landowners and tenants (including tenants of mine owned properties) a copy of the NSW Health fact sheet entitled "Mine Dust and You" (and associated updates) in conjunction with the notification required in condition 1.	11.3
5	**INDEPENDENT REVIEW**	
5	3. If a landowner of privately-owned land considers the project to be exceeding the impact assessment criteria in schedule 4, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land. If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 2 months of the Director-General's decision: (a) consult with the landowner to determine his/her concerns; (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to: · determine whether the project is complying with the relevant impact assessment criteria in schedule 4; and · identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and (c) give the Director-General and landowner a copy of the independent review.	11.1

Schedule	Project Approval Conditions	Section of this Plan
5	4. If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 4, then the Proponent may discontinue the independent review with the approval of the Director-General. If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 4, then the Proponent shall: (a) implement all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria, and conduct further monitoring to determine whether these measures ensure compliance; or (b) secure a written agreement with the landowner to allow exceedances of the relevant impact assessment criteria, to the satisfaction of the Director-General. If the further monitoring referred to under paragraph (a) above determines that the project is complying with the relevant impact assessment criteria, then the Proponent may discontinue the independent review with the approval of the Director-General.	11.1
7	**ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING**	
	Management Plan Requirements 2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
	(a) detailed baseline data;	3
	(b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Appendix A 5
	(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	6
	(d) a program to monitor and report on the: • impacts and environmental performance of the project; • effectiveness of any management measures (see (c) above);	8
	(e) a contingency plan to manage any unpredicted impacts and their consequences;	9
	(f) a program to investigate and implement ways to continually improve the environmental performance of the project over time;	10
	(g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and	11
	(h) a protocol for periodic review of the plan.	11

Schedule	Project Approval Conditions	Section of this Plan
7	**Annual Review** Each year, the Proponent shall review the environmental performance of the mine complex to the satisfaction of the Director-General. This review must: (a) describe the works that were carried out in the past year, and the works that are proposed to be carried out over the next year; (b) include a comprehensive review of the monitoring results and complaints records of the mine complex over the past year, which includes a comparison of these results against the · the relevant statutory requirements, limits or performance measures/criteria; · the monitoring results of previous years; and · the relevant predictions in the EA and Extraction Plan; (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the mine complex; (e) identify any discrepancies between the predicted and actual impacts of the mine complex, and analyse the potential cause of any significant discrepancies; and (f) describe what measure will be implemented over the next year to improve the environmental performance of the mine complex.	11.5
7	**Revision of Strategies, Plans and Programs** 4. Within 3 months of: (a) the submission of an annual review under Condition 3 above; (b) the submission of an incident report under Condition 6 below; (c) the submission of an audit report under Condition 7 below; or (d) any modification to the conditions of this approval, (unless the conditions require otherwise), the Proponent shall review the strategies, plans, and programs required under this approval, to the satisfaction of the Director-General. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Director-General. *Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the project.*	11
7	**Incident Reporting** 6. The Proponent shall notify the Director-General and any other relevant agencies of any incident associated with the mine complex as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Director-General and any relevant agencies with a detailed report on the incident.	11.2
7	**Access to Information** 9. From the end of 2009, the Proponent shall make the following information publicly available on its website: (a) a copy of all current statutory approvals for the mine complex; (b) a copy of the current environmental management strategy and associated plans and programs; (c) a summary of the monitoring results of the mine complex, which have been reported in accordance with the various plans and programs approved under the conditions of this approval; (d) a complaints register, which is to be updated on a monthly basis; (e) a copy of the minutes of CCC meetings; (f) a copy of any Annual Reviews (over the last 5 years); (g) a copy of any Independent Environmental Audit, and the Proponent's response to the recommendations in any audit; and (h) any other matter required by the Director-General.	11.4

TABLE 2: DEVELOPMENT CONSENT CONDITIONS (DA 29/95)

<table>
<tr><th>Schedule</th><th>Development Consent Conditions</th><th>Section of this Plan</th></tr>
<tr><td>3</td><td>AIR QUALITY</td><td></td></tr>
<tr><td>3</td><td>Impact Assessment Criteria
17. The Applicant must ensure that the dust emissions generated by the Infrastructure Upgrade Area identified in Figure 1.3 of the April 2006 SEE do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 3, 4 and 5 at any residence on, or on more than 25 percent of, any privately-owned land.

Table 3: Long term impact assessment criteria for particulate matter
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m^3</td></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>30 µg/m^3</td></tr></table>
Table 4: Short term impact assessment criterion for particulate matter
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td>50 µg/m^3</td></tr></table>
Table 5: Long term impact assessment criteria for deposited dust
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2 g/m^2/month</td><td>4 g/m^2/month</td></tr></table>
Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</td><td>5</td></tr>
<tr><td>3</td><td>Operating Conditions
18. The Applicant must:</td><td></td></tr>
<tr><td></td><td>(a) ensure any visible air pollution generated by the development is assessed regularly, and measures taken to minimise air quality impacts on privately-owned land; and</td><td>6</td></tr>
<tr><td></td><td>(b) implement all reasonable measures to minimise the off-site odour, greenhouse gas and fume emissions generated by the mine's ventilation system or any spontaneous combustion at the development, to the satisfaction of the Secretary.</td><td>6</td></tr>
<tr><td>3</td><td>Monitoring
19. The Applicant must prepare an Air Quality Monitoring Program for the development to the satisfaction of the Secretary. This program must include an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this consent.

The Applicant must implement the approved program as approved from time to time by the Secretary.</td><td>8</td></tr>
<tr><td>3</td><td>METEOROLOGICAL MONITORING</td><td></td></tr>
<tr><td>3</td><td>20. The Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the development in accordance with the requirements in Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales and to the satisfaction of the Secretary.</td><td>8.2.4</td></tr>
</table>

Schedule	Development Consent Conditions	Section of this Plan
5	**ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING**	
5	**Incident Reporting** 4. Within 7 days of detecting an exceedance of the limits/performance criteria in this consent, the Applicant must report the exceedance/incident to the Department (and any relevant agency). The report must: (a) describe the date, time, and nature of the exceedance/incident; (b) identify the cause (or likely cause) of the exceedance/incident; (c) describe what action has been taken to date; and (d) describe the proposed measures to address the exceedance/incident.	11.2
5	**Regular Reporting** 4A. The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	11.4
5	**Annual Review** 5. By the end of September each year, unless the Secretary agrees otherwise, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must: (a) describe the development (including any rehabilitation) that was carried out in the previous year to 30 June, and the development that is proposed to be carried out over the current year to 30 June; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous year to 30 June, which includes a comparison of these results against the: • relevant statutory requirements, limits or performance measures/criteria; • requirements of any plan or program required under this consent; • monitoring results of previous years; and • relevant predictions in the documents listed in condition 2 of Schedule 2; (c) identify any non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the development; (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (f) describe what measures will be implemented over the next year to improve the environmental performance of the development.	11.5
5	**Revision of Strategies, Plans and Programs** 8. Within 3 months of: (a) the submission of an incident report under condition 4 above; (b) the submission of an Annual Review under condition 5 above; (c) the submission of an audit report under condition 6 above; and (d) the approval of a modification to the conditions of this consent, the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. The applicant must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary. *Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended*	11

Schedule	Development Consent Conditions	Section of this Plan
5	**Updating and Staging of Strategies, Plans or Programs** 8A. To ensure that strategies, plans or programs required under this consent are updated on a regular basis, and that they incorporate any appropriate additional measures to improve the environmental performance of the development, the Applicant may at any time submit revised strategies, plans or programs for the approval of the Secretary. With the agreement of the Secretary, the Applicant may also submit any strategy, plan or program required by this consent on a staged basis. With the agreement of the Secretary, the Applicant may prepare a revision of or a stage of a strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this consent. While any strategy, plan or program may be submitted on a staged basis, the Applicant will need to ensure that the operations associated with the development are covered by suitable strategies, plans or programs at all times. If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the development to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.	Noted
5	**Relationship with other consents** 8B. With the agreement of the Secretary, the Applicant may combine any strategy, plan, program, review, audit or committee required by this consent with any similar requirement under another development consent or approval relating to the Austar Mine Complex, including Project Approval 08_0111 for the Stage 3 mining area.	AQGHGMP addresses PA 08_0111 and DA 29/95 conditions
5	**Evidence of Consultation** 8C. Where consultation with any public authority is required by the conditions of this consent, the Applicant must: (a) consult with the relevant public authority prior to submitting the required document to the Secretary for approval; (b) submit evidence of this consultation as part of the relevant document; (c) describe how matters raised by the authority have been addressed and any matters not resolved; and (d) include details of any outstanding issues raised by the authority and an explanation of disagreement between any public authority and the Applicant.	2

Schedule	Development Consent Conditions	Section of this Plan
5	**Access to Information** 12. The Applicant must: (a) make copies of the following publicly available on its website: • the documents listed in condition 2 of Schedule 2; • all current statutory approvals for the development; • approved strategies, plans and programs required under the conditions of this consent; • a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent; • a summary of the progress of the development; • contact details to enquire about the development or to make a complaint; • a complaints register, which is to be updated on a monthly basis; • minutes of CCC meetings; • the last five annual reviews; • any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit; • any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	11.4

EPL REQUIREMENTS

Relevant conditions from EPL 416 and where these conditions are addressed in this Plan are listed in the table below.

TABLE 3: ENVIRONMENT PROTECTION LICENCE 416 (EPL 416)

<table>
<tr><th>Section</th><th>EPL Conditions</th><th>Section of this Plan</th></tr>
<tr><td>4</td><td>OPERATING CONDITIONS</td><td></td></tr>
<tr><td>4</td><td>O3 Dust</td><td></td></tr>
<tr><td></td><td>O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.</td><td>6</td></tr>
<tr><td>5</td><td>MONITORING AND RECORDING CONDITIONS</td><td></td></tr>
<tr><td>5</td><td>M4 Weather Monitoring</td><td></td></tr>
<tr><td></td><td>M4.1 The meteorological weather station must be maintained so as to be capable of continuously monitoring the parameters specified in condition M4.2.</td><td>8.2.4</td></tr>
<tr><td></td><td>M4.2 For each monitoring point specified in the table below the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point 7

<table><tr><th>Parameter</th><th>Units of Measure</th><th>Frequency</th><th>Averaging Period</th><th>Sampling Method</th></tr><tr><td>Air Temperature</td><td>Degrees Celsius</td><td>Continuous</td><td>1 hour</td><td>AM-4</td></tr><tr><td>Wind direction</td><td>Degrees</td><td>Continuous</td><td>15 minute</td><td>AM2 & AM-4</td></tr><tr><td>Wind speed</td><td>m/s</td><td>Continuous</td><td>15 minute</td><td>AM-2 & AM-4</td></tr><tr><td>Sigma theta</td><td>Degrees</td><td>Continuous</td><td>15 minute</td><td>AM-2 & AM-4</td></tr><tr><td>Rainfall</td><td>mm</td><td></td><td>24 hours</td><td>Standard rain gauge</td></tr></table></td><td>8.2.4</td></tr>
<tr><td></td><td>M4.3 Rainfall at the premises must be measured and recorded in millimetres per 24 hour period, at the same time each day.
Note: The rainfall monitoring data collected in compliance with Condition M4.2. can be used to determine compliance with L1.2.</td><td>8.2.4</td></tr>
</table>

STATEMENT OF COMMITMENTS

A list of the Statement of Commitments from PA 08_0111 which are relevant to air quality and greenhouse gas and where these commitments are addressed in this Plan are listed in the table below.

TABLE 4: PROJECT APPROVAL STATEMENT OF COMMITMENTS (08_0111)

<table>
<tr><th>Appendix</th><th>Statement of Commitments</th><th>Section of this Plan</th></tr>
<tr><td>3</td><td>1.9 AIR QUALITY</td><td></td></tr>
<tr><td></td><td>1.9.1 Austar Coal Mine will manage operations associated with the operation of the Surface Infrastructure Site so that dust deposition as a result of the development does not exceed levels set out in Table 1.2 at nearest non-project related residences.
Table 1.2 - Dust Deposition Criteria
<table><tr><th>Pollutant</th><th>Averaging Period</th><th>Maximum Increase in Deposited Dust Level</th><th>Maximum Total Deposited Dust Level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2 g/m^2/month</td><td>4 g/m^2/month</td></tr></table>Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</td><td>5</td></tr>
<tr><td></td><td>1.9.2 Austar Coal Mine will expand the existing dust monitoring network to include dust deposition gauges at locations to the south and north of the proposed Surface Infrastructure Site. Dust monitoring findings relating to the Surface Infrastructure Site will be reported annually in the Annual Review.</td><td>8</td></tr>
<tr><td>3</td><td>1.10 ENERGY AND GREENHOUSE GAS</td><td></td></tr>
<tr><td></td><td>1.10.1 Austar Coal Mine will develop and maintain an internal energy and GHG management plan for Stage 3 operations in accordance with Austar Coal Mine requirements. This will include reviewing:
energy efficiency in plant and equipment procurement, consideration be given to the life cycle costs advantages obtained by using energy efficient components;
the opportunity to install additional sub-metering for offices, workshops and winders;
operational initiatives such as turning off idling plant equipment;
control and temperature settings for air conditioning units in offices and switchrooms;
automatic control of external and internal lighting;
potential energy efficiency opportunities in water pumping and dust suppression systems (for example, variable speed drive pumps);
review changes in power consumption with installation of new equipment and install power factor correction equipment to suit; and
review workshop and bathhouse lighting and office and high bay lighting.</td><td>7</td></tr>
</table>

Appendix	Statement of Commitments	Section of this Plan
3	**1.15 CONTINUOUS IMPROVEMENT OF EXISTING OPERATIONS**	
	1.15.5 Austar Coal Mine will investigate opportunities for reduction in energy use and greenhouse gas emissions from the Austar Mine Complex. This will include: • ongoing review of emissions monitoring and management technology; • review of coal operations and potential for improvement as part of producing clean coal through coal preparation to reduce moisture and ash content, sulphur, nitrogen and other contaminants. This results in reduced emissions of greenhouse gases and other pollutants when the coal is used; and • consider the application of the in-force National Greenhouse and Energy Reporting System (NGERS) and the Carbon Pollution Reduction System (CPRS) on Austar operations.	7

Appendix B:

Management Plan Approval

Department of Planning, Housing & Infrastructure

Our ref: MP08_0111-PA-61

Carly McCormack
Environment & Community Superintendent
Austar Coal Mine Pty Limited
Darling Park – Tower 2
Level 18, 201 Sussex Street
Sydney NSW 2000

12/03/2024

Subject: Austar Coal Mine Air Quality and Greenhouse Gas Management Plan

Dear Ms McCormack,

I refer to the Air Quality and Greenhouse Gas Management Plan, including an Air Quality Monitoring Program, submitted to the NSW Department of Planning, Housing and Infrastructure (the Department) as required by Schedule 4, Condition 6 of MP08_0111 (as modified) and Schedule 3, Condition 19 of DA 29/95 (as modified). I also acknowledge your response to the Department's review comments and request for additional information.

The Department has carefully reviewed the document and is satisfied that it meets the requirements of the relevant conditions of consent. Accordingly, the Secretary has approved the Air Quality and Greenhouse Gas Management Plan (Revision 6 dated 8 March 2024).

You are reminded that if there are any inconsistencies between the Air Quality and Greenhouse Gas Management Plan and the conditions of approval, the conditions prevail. Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Katie Weekes on (02) 4927 3223 or via email at katie.weekes@dpie.nsw.gov.au.

Yours sincerely

JEvans

Jessie Evans
Director, Resource Assessments
Resource Assessments

As nominee of the Planning Secretary

Appendix C:
EPA Consultation

Carly McCormack

From: Anthony Van der Horst <Anthony.vanderHorst@epa.nsw.gov.au>
Sent: Wednesday, 24 March 2021 4:40 PM
To: Julie McNaughton; Carly McCormack
Subject: EPA Review of Management Plans

Hi Julie and Carly,

As discussed during our telephone conversation today, I understand that the EPA encourages the development of environmental management plans to ensure that proponents have met their statutory obligations and designated environmental objectives.
I also understand that the EPA does not generally undertake consultation of these documents as the EPA's role is to set environmental objectives for environmental/conservation management, not to be directly involved in the development of strategies to achieve those objectives.
My understanding is that the EPA also generally does not undertake consultation of environmental management plans and rarely offers comments on draft plans submitted.

During our telephone discussion you proposed:

- sending draft management plans to the Department of Planning Industry and Environment for review and approval as required by consent conditions;
- not sending draft management plans to EPA for comment/review; and
- sending final approved copies of management plans to EPA for our records.

Given the EPA's stated position on management plans, your proposal appears to be reasonable and I would encourage you to take this approach unless otherwise informed by the EPA.

Regards,

Anthony.

Anthony van der Horst
Operations Officer
Regulatory Operations
NSW Environment Protection Authority
D 02 4908 6808
anthony.vanderhorst@epa.nsw.gov.au