



Wambo Coal Mine & Rail Loop

INDEPENDENT ENVIRONMENTAL AUDIT REPORT

for

Wambo Coal Pty Ltd

September 2018

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

WAMBO COAL MINE & RAIL LOOP

INDEPENDENT ENVIRONMENTAL AUDIT REPORT

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September 2018

for:

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EXECUTIVE SUMMARY

Hansen Bailey was commissioned by Wambo Coal Pty Limited to conduct an Independent Environmental Audit against Development Consent DA 305-7-2003 (as modified) for the Wambo Coal Mine and DA 177-8-2004 (as modified) for the Wambo Rail Loop for the Department of Planning & Environment for the period from 1 November 2014 to 31 August 2017. The audit also assessed compliance with Environment Protection Licence 529 and Mining Lease 1572.

This audit was conducted by Dianne Munro (RABQSA International Certified Auditor 107622) and Taylor Jackson from Hansen Bailey with the field visit component completed on 20-21 September 2017.

The audit consisted of a detailed desktop review of documentation, interviews with key Wambo Coal Mine staff and a field inspection of the mining and rehabilitation areas. The audit was conducted generally consistent with '*ISO 14010 - Guidelines and General Principles for Environmental Auditing*', and '*ISO 14011 - Procedures for Environmental Auditing*' and the '*Independent Audit Guideline, October 2015*' (Audit Guidelines) (DP&E, 2015).

Key actions and recommendations from the 2014 Independent Environmental Audit have generally been completed as described in **Section 3**.

The field inspection revealed that generally housekeeping on site was excellent, with the exception of the Wollemi workshop which requires ongoing management. The CHPP was well maintained, with sumps and drains observed to be de-silted and clear of obstructions.

The North Wambo Creek Diversion was reviewed during the audit site inspection. The site visit confirmed that maintenance works outlined in the current Mining Operations Plan have been undertaken or are ongoing. Ongoing management will be required to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established. In particular, the lower stage (Stage 3) requires significant attention as the bare earthworks in and adjacent to the diversion are likely to contribute to elevated levels of suspended sediment downstream.

Implementation of site rehabilitation is progressing generally in accordance with the predictions in the supporting documents of the Development Consent and Mining Operations Plan. Ongoing maintenance to ensure rehabilitation quality and best utilisation of the limited topsoil on site will require ongoing diligence. Weed management practices are being implemented on site and require ongoing attention.

A comparison of the mining proposed in the Environmental Impact Statement and current operations show that although the scheduling of the mine plan is progressing in a different timing to that described (particularly in the mining of the Montrose and Montrose East pits), however the total area of disturbance and conceptual rehabilitation plan is generally consistent with the Development Consent and approved Mining Operations Plan. As Wambo is aware, ongoing diligence and leading practice management in relating to noise and air quality must

continue in relation to open cut mining operations progressing through Montrose East pit in the next audit period.

A total of 85 community complaints were received from near neighbours during the audit period. These complaints were predominantly in relation to noise and blasting issues, and the number of complaints increased substantially in 2017. Complaints were followed up and addressed with the complainant with the actions taken being reported in the relevant Annual Reviews and recorded in the site complaints register.

A review of environmental incidents at Wambo since the previous audit indicated that seven incidents were recorded in 2015 and ten incidents were recorded in 2016. Of these, two were reportable and included a Sediment Dam failure in 2016 and a HRSTS Flow Meter failure in 2015 (outcomes from these reported incidents are discussed further in **Section 6.15**).

This audit identified some non-compliances against conditions of Development Consent DA 305-7-2003, DA 177-8-2004 and other licences and approvals. Non-compliances to be addressed are summarised in **Section 4**. The IEA identified a total of 36 non-compliances comprised of 25 issues. The non-compliances were risk ranked. No high risks were identified during the audit. 11 issues were identified as low risk and one issue as medium risk, with 13 issues classified as administrative in nature.

This audit also provides a series of recommendations arising from a review of site documentation and identified non-compliances (see **Section 7**). These confirm that the non-compliances identified over the audit were largely administrative in nature, however there are some additional management actions that are recommended to be undertaken as a priority.

At the time of the audit, Wambo Coal staff were aware of most of the identified non-compliances against Development Consent conditions, licences and approvals and were actively working to address a number of the issues identified in this report.

This audit has concluded that a good standard of environmental management is generally being applied in Wambo Coal Mine Operations.

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LIMITATIONS OF REPORT

In preparing this Independent Environmental Audit report, Hansen Bailey has assessed all activities appropriate and necessary to evaluate the environmental status of the site and operations on it. Hansen Bailey has addressed all technical matters which might reasonably be considered to be relevant to such an assessment conducted to standards which apply in NSW. Based on observations of the site, interviews with appropriate staff and a review of available documentation, it is Hansen Bailey's opinion that the potential critical environmental issues associated with the site and operations are those discussed in this report. However, Hansen Bailey can only advise on the basis of the information available to them and therefore cannot dismiss absolutely the possibility that parts of the site, or adjacent properties, may give rise to additional issues.

The conclusions presented in this report are professional opinions based solely upon Hansen Bailey's visual observations of the site and the immediate site vicinity, and upon Hansen Bailey's interpretations of the documentation reviewed, interviews and conversations with personnel knowledgeable about the site and other available information, as referenced in this report. These conclusions are intended exclusively for the purposes stated herein, at the site listed, and for the project indicated.

Opinions presented in this report apply to the site's conditions and features as they existed at the time of Hansen Bailey's site visit on 20 and 21 September 2017, and those reasonably foreseeable. They necessarily cannot apply to conditions and features which Hansen Bailey is unaware of and has not had the opportunity to evaluate.

This report does not, and does not purport to, give legal advice on the actual or potential environmental liabilities of any individual or organisation, or to draw conclusions as to whether any particular circumstances constitute a breach of relevant legislation.

**WAMBO COAL MINE & RAIL LOOP
INDEPENDENT ENVIRONMENTAL AUDIT**
for
Wambo Coal Pty Limited

1 INTRODUCTION

1.1 BACKGROUND

Hansen Bailey (HB) has been commissioned by Wambo Coal Pty Ltd (WCPL), to conduct an Independent Environmental Audit (IEA) (this Audit) against Development Consent DA 305-7-2003 (as modified) for the Wambo Coal Mine (Wambo) and DA 177-8-2004 (as modified) for the Wambo Coal Terminal.

The original supporting documentation of DA 305-7-2003 and DA 177-8-2004 are the '*Wambo Development Project Environmental Impact Statement*' (Resource Strategies, 2003) (Wambo EIS) and the '*Proposed Alterations to the Wambo Development Project – Rail and Train Loading Infrastructure Statement of Environmental Effects*' (Resource Strategies, 2004), respectively.

A total of 14 modifications have been granted to DA 305-7-2003 and two modifications to DA 177-8-2004 with key components described in detail in **Section 1.5**.

The auditing period that this Report applies to is from 1 November 2014 to 31 August 2017. This Audit was conducted by Dianne Munro (DM) (Lead Auditor) and Taylor Jackson (TJ) (Auditor) from Hansen Bailey along with a number of technical specialists as follows:

- Air Quality – Judith Cox (JC) (Pacific Environment Limited) (PEL);
- Noise and Blasting – Mark Bridges (MB) (Bridges Acoustics);
- Groundwater – Daniel Barclay (DB) (Australasian Groundwater and Environmental Consultants Pty Ltd) (AGE); and
- North Wambo Creek Diversion, Sediment and Erosion – Ross Edwards (RE) (Hansen Bailey).

The auditing team was approved by the Department of Planning and Environment (DP&E) on 24 August 2017 (see **Appendix B** for correspondence).

The audit consisted of a detailed desktop review of documentation and interviews with key Wambo staff including:

- Steven Peart (SP) – Manager Environment & Community;
- Peter Jaeger (PJ) – Senior Environmental Advisor.
- Harry Egan (HE) – Environmental Advisor; and
- Nicole Dobbins (ND) – Environmental Advisor.

A field inspection of the mining area and rehabilitation areas in accordance with 'ISO 14010 - Guidelines and General Principles for Environmental Auditing', and 'ISO 14011 - Procedures for Environmental Auditing'. The field inspections were conducted on 20-21 September 2017 by the various specialists and HB team. The weather conditions at the time of the inspection (as per the BOM Singleton weather station) were dry and consisted of south west winds around 2 km/h (BOM, 2017). The week preceding the Audit was dry although 13 mm of rainfall was recorded at Singleton on 14 September 2017. These conditions were consistent with those experienced during the site inspection at Wambo which were observed to be dry with a light breeze at times.

An Opening and Closing Meeting was held at site with the Senior Management Team and Environmental staff from Wambo in attendance.

DP&E requested amendments to the draft IEA Report on 3 July 2018. The amendments are addressed in this final IEA.

1.2 REPORT STRUCTURE

Section 1 provides an introduction, background, site description and layout of Wambo, describes the requirement for the audit and provides a guide to the structure of the report. This section also describes current approved operations detailed in the EIS and modification documents approved for each of two development consents held by WCPL;

Section 2 provides a summary of the requirements of this audit;

Section 3 of this report provides a tabular representation of recommendations made during the previous independent audit and the status of their implementation;

Section 4 outlines the identified non-compliances and the status against Wambo approvals under DA 305-7-2003, DA 177-8-2004 and their supporting documents, modifications and other licences / approvals available for review at the time of the audit;

Section 5 provides a discussion on management plans, programs and strategies available for review at the time of the audit;

Section 6 of this report discusses the effectiveness of the environmental management and mitigation strategies that are currently undertaken at Wambo. General environmental performance is also discussed including monitoring results, field inspections performed during the site audit, complaints and incidents; and

Section 7 provides a summary of key recommendations from the audit including a risk assessment in accordance with the Audit Guidelines.

1.3 DOCUMENTS REFERENCED IN AUDIT

Appendix C provides a list of all information reviewed as part of this audit.

1.4 SITE DESCRIPTION

The Wambo Coal Mine (Wambo) is situated approximately 15 km west of Singleton, in New South Wales. The mine occurs within the Singleton Shire Council (SSC) Local Government Area (LGA).

Wambo is owned and operated by WCPL, a subsidiary of Peabody Energy Australia Pty Limited. A range of open cut and underground mining operations have been conducted at Wambo since mining commenced in 1969. Mining under the current DA 305-7-2003 commenced in 2004 and presently both open cut and underground mining methods are utilised to extract coal. The Wambo workforce consists of approximately 450 employees, comprised of 240 and 210 personnel employed for underground and open cut operations, respectively.

Open cut mining operations at Wambo involve the extraction of coal from the Whybrow, Wambo and Whynot Seams. Coal was mined from the South Bates, Montrose and Montrose East pits during the IEA period. The open cut is bound by United Colliery and the Golden Highway to the north, Wollombi Brook to the east and by uneconomic strip ratios to the south and west. The open cut mining fleet includes excavators, dozers, front end loaders, haul trucks, water trucks, service trucks, graders and drills. **Figure 1** shows the general layout of Wambo.

Development of the North Wambo Underground Mine commenced in 2005 and production (using longwall mining methods) commenced in 2007 in accordance with DA 305-7-2003 and was completed in January 2016. Mining in the South Bates Underground Mine commenced in 2014 and involves extraction from the Whybrow and Wambo seams. Operations are projected to end in 2018. Access to the South Bates Underground Mine is via the Bates South open cut pit wall

Run-Of-Mine (ROM) coal is from the underground operations is conveyed to a stockpile adjacent to the open cut pit wall where it is loaded into haul trucks and hauled to the ROM bin or the ROM coal stockpile. Underground mining equipment includes continuous miners, longwall mining equipment, electric shuttle cars, load haul dump machines and personnel transporters.

ROM coal from the mining operations is hauled to the Coal Handling and Processing Plant (CHPP) where it is crushed and washed. The approved ROM coal production rate is 14.7 million tonnes per annum (Mtpa).

In 2016, approximately 9.4 Million tonnes (Mt) of ROM coal was produced resulting in 6.3 Mt of saleable product after processing. Production of ROM coal in 2015 was 9.2 Mt, with 5.8 Mt of saleable product after processing. Predicted ROM coal production for 2017 is 9.4 Mt.

Product coal is transported from Wambo by rail. Product coal is reclaimed from the product coal stockpile at three reclaim points and is transferred via conveyors to the train load-out bin. The Wambo Coal Terminal is capable of loading product coal onto trains at a rate of 4,500 tonnes per hour.



Figure 1
Wambo General Layout (source: WCPL, 2017)

1.5 DEVELOPMENT CONSENT SUPPORTING DOCUMENTATION SUMMARY

Wambo operates under two Ministerial consents: granted in 2003 for coal mining operations (DA 305-7-2003); and in 2004 for a rail loading facility (DA 177-8-2004). Details of the each consent and their associated modifications are described below.

1.5.1 Wambo Mining Operations DA 305-7-2003

DA 305-7-2003 was granted 4 February 2004 for the expansion of open cut and underground mining operations within existing WCPL leases and into new mining lease application areas. The approval included the following:

- Selective auger mining of the Whybrow, Redbank Creek, Wambo and Whynot seams up to 200 m beyond the open cut limits within WCPL owned land;
- Longwall mining of the Wambo seam via the open cut highwall;
- An extension to the existing Wollemi Underground Mine Box Cut;
- Construction of a portal access to facilitate longwall mining of the Arrowfield and Woodlands Hill seams;
- Upgrade of the existing CHPP to facilitate increased production;
- Development of water control structures;
- Closure of Pinegrove Road and the development of new access and internal haul roads;
- Relocation of the administration area and site offices;
- Operation of the mine 24 hours a day, 7 days a week; and
- Continued haulage of coal by road from Wambo Coal to Mt Thorley Coal Loader.

To date, 17 modification applications have made under DA 305-7-2003 and 14 have been approved, as detailed below. Of these, 14 modifications have been granted. MODs 16 and 17 are currently undergoing assessment and MOD 10 was withdrawn and not determined.

Modification 1 – Extension of Time

MOD1 enabled (previously held) DA No 108/91 to remain active and was granted in late 2004.

Modification 2 – Reorientation of Panels

MOD2 was sought to modify the orientation and timing of the development of the Wambo Seam Underground Mine. Approval was obtained May 2005.

Modification 3 – Infrastructure Construction

MOD3 was granted in January 2006 to facilitate the construction of infrastructure for the underground and open cut mines.

Modification 4 – Remnant Coal Extraction

MOD4 was sought to extract remnant coal from the existing Wollemi Underground Mine. Approval was obtained in April 2006.

Modification 5 - Temporary Creek Diversion

MOD5 was sought to construct a temporary diversion of North Wambo Creek to allow open cut mining to proceed uninterrupted for the proceeding two years.

As part of the approved mine plan, WCPL was required to permanently divert North Wambo Creek around the open cut workings. However, the time required to construct, stabilise and commission the full length of the North Wambo Creek Diversion in accordance with the Minister's requirements would have interrupted the progress of open cut development at Wambo. MOD5 enabled WCPL to avoid any interruptions to open cut mining, and ensure that there is sufficient time to construct the permanent diversion.

MOD5 was determined on 20 October 2006 under Section 96(1A) by a SEE and enabled the construction and operation of a temporary creek diversion on a 2 km section of North Wambo Creek for 2 years.

Modification 6 – Temporary Bypass of North Wambo Creek

MOD6 was granted on 25 January 2007 in accordance with Section 96(2) and was supported by a *Statement of Environmental Effects* (SEE) dated September 2006. The SEE describes three distinct components:

- The staged construction of the North Wambo Creek diversion;
- Installation of boreholes and infrastructure for gas drainage, ventilation and dewatering of the North Wambo Underground Mine; and
- Various administrative changes.

Modification 7 - Chitter Dump Water Storage Dam

MOD7 was granted on 22 June 2009 under Section 96(1A) seeking approval for the construction of a new mine water management structure with an overall capacity of 810 Megalitres (ML) to allow for the dewatering of underground workings.

Modification 8 – South Water Storage Dam

MOD8 was granted 27 August 2009 in accordance with Section 96(2) to enable the construction of a mine water storage dam to facilitate the dewatering of the underground workings.

Modification 9 – Subsidence Conditions

MOD9 was granted on 28 February 2011 under Section 75W, was essentially administrative and sought to modify the conditions of consent to reflect current best practices for subsidence.

Modification 10

An application for MOD 10 was made and later withdrawn by WCPL.

Modification 11 – Montrose Water Storage

MOD 11 was granted 18 January 2013 under Section 75W for the construction and operation of a 1,500 ML mine water storage dam.

Modification 12 – Southern Longwall Modifications

MOD 12 was granted on 12 December 2016 under Section 75W and enables:

- Realignment and extension/relocation of the approved Arrowfield and Bowfield Underground mine longwall panels (including areas previously not approved for underground mining);
- Minor relocation of the approved Arrowfield and Bowfield Underground Mine box cut and drift to reflect the Modification;
- Development of the modified mine layout to meet the existing approved subsidence management commitments;
- An extension of the mine life by approximately six years;
- Construction and operation of additional surface infrastructure required (e.g. ventilation shafts and gas drainage wells); and
- Construction of a portion of the surface facilities outside of the approved surface development area.

Modification 13 – Additional Longwalls

MOD13 enabled the development of two additional longwall panels (longwalls 9 and 10) in the Wambo seam to recover an additional 3.7 Mt of ROM coal from the North Wambo Underground Mine and was granted on 8 August 2013.

Modification 14 – Additional Longwall

MOD14 enabled the development of one additional longwall panel (longwall 10A) in the Wambo seam to recover an additional 13.9 Mt of ROM coal from the North Wambo Underground Mine and was granted on 10 April 2015.

Modification 15 – Additional Longwalls

MOD15 enabled the development of three additional longwall panels (longwalls 14 to 16) in the Wambo seam to recover an additional 5.6 Mt of ROM coal from the South Bates Underground Mine and was granted on 10 November 2015.

Modification 16 – United Wambo

MOD16 is currently being assessed by DP&E and facilitates a Joint Venture (JV) project between United Collieries and Wambo Coal. The approval of MOD16 would provide consistency between the existing consent with State Significant Development (SSD) Application 1742 and extend the period of approved operation of coal handling operations and the CHPP to match the life of the United Wambo Open Cut Coal Mine Project. The key components of United Wambo Open Cut Coal Mine Project include:

- The production of up to 10 Mtpa of ROM coal;
- Employment for approximately 500 personnel;
- A 23 year Project life;
- Relocation of a 2 km section of the Golden Highway; and

- Relocation of 330 kV and 66 kV transmission lines.

This modification is not considered in this audit.

Modification 17 – South Bates Extension

MOD17 is currently being assessed by DP&E and facilitates the extension of the South Bates Underground Mine. MOD17 extends the approved mine life by seven years (up to 2039) and enables the mining of an additional 18 Mt of ROM coal (with no change to the current total approved ROM coal production rate of 14.7 Mtpa) and an additional 3.7 Mt of coarse rejects and 2.1 Mt of tailings. MOD17 will involve the construction of additional infrastructure such as new ventilation shafts, gas drainage and other ancillary infrastructure. An additional mining lease within Authorisation (A) 444 will be required as part of MOD17.

This modification is not considered in this audit.

1.5.2 Wambo Rail & Train Loading Infrastructure

Construction commenced on the Wambo rail loop and coal loader in late 2004 and the rail loader commenced full operation in June 2006. Two modifications to DA 177-8-2004 have been approved as detailed below. One was sought in the audit period.

Modification 1 – Upgrade of Wallaby Scrub Road/Golden Highway Intersection

MOD1 related to the type of intersection WCPL was required to construct at the junction of Wallaby Scrub Road and the Golden Highway. MOD1 was undertaken in accordance with Section 96 (1A) and was granted 15 December 2006.

Modification 2 – Rail Refuelling Facility

MOD2 of the rail Infrastructure was approved on 17 February 2012 in accordance with Section 75W and enabled the construction and operation of a rail refuelling facility including:

- Installation of a 100 kilolitre (kL) self-bunded, double skinned diesel storage tank;
- Oil storage;
- Sand and water storage tanks; and
- Spill and oily water management system.

Modification 3 – United Wambo

MOD3 is currently being assessed by DP&E and facilitates a Joint Venture (JV) project between United Collieries and Wambo Coal. MOD3 would ensure consistency between the existing consent with SSD Application 1742 and extend the period of product coal transportation operations to match the life of the United Wambo Open Cut Coal Mine Project.

This modification is not considered in this audit.

2 AUDIT REQUIREMENTS

2.1 DEVELOPMENT CONSENT

This assessment and subsequent report has been compiled pursuant to Schedule 6 Condition 7 of DA 305-7-2003. Each requirement of DA 305-7-2003 is listed in **Table 1**, along with where each is addressed in this report. This audit also addresses the requirements of Schedule 6, Condition 7 of DA 177-8-2004, which states that:

“The Applicant shall ensure that the development [as approved under DA 177-8-2004] is included in the Independent Environmental Audit of the Wambo Mining Complex.”

Table 1
DA 305-7-2003 Audit Requirements

Description	Where Addressed
Every 3 years, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:	This audit
(a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;	Appendix A
(b) include consultation with the relevant agencies;	Section 2.1.2
(c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these consents/approvals);	Sections 4, 5, 6
(d) review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals;	Sections 4, 5
(e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and	Section 7
(f) be conducted and reported to the satisfaction of the Secretary.	Appendix B
<i>Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary. Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.</i>	Appendix B

2.1.1 Audit Guidelines

This audit report has also been prepared in accordance with the ‘Independent Audit Guideline, October 2015’ (Audit Guidelines) (DP&E, 2015). **Table 2** lists key requirements from the Audit Guidelines, the relevant Section of the Guidelines which references the requirement, and indicates where each is addressed in this report.

Table 3 reproduces the “risk levels” from **Section 4.1** of the Audit Guidelines which were attributed to the non-compliances identified during the audit period as described in **Section 4**.

Table 2
Audit Guidelines Requirements

Section	Description	Where Addressed
2	Assess the operator’s compliance with the requirements of regulatory approvals, including (as applicable): <ul style="list-style-type: none"> • The Development Consent; • The Environment Protection Licence; • The Mining Lease; and • Water licences and approvals. 	Section 4, 6 and Appendix D
2, 3	The scope of the audit and the audit team (including any technical specialists) to be determined by the lead regulator.	Section 1, Appendix B
3.3	The auditor team must be independent of the development being audited and audit findings must be based on verifiable evidence.	Section 1, Appendix A, Appendix D and E
4.1	The compliance status of each requirement or commitment should be assessed in accordance with the compliance assessment criteria and risk levels in the audit guidelines.	Section 4 and Appendix D
4.2	Consultation with key regulatory agencies prior to commencement of the audit site inspection.	Section 2.1.2
5.1	The audit outcomes to be documented in a thorough, accessible and accurate audit report that is written in a neutral tone reflecting facts gathered by the audit team.	This IEA Report
5.1	The audit report should include the following sections: <ul style="list-style-type: none"> • Introduction, providing a brief overview of the development, audit scope and objectives; • Methodology, describing the audit team, methodology applied, document reviews, site inspections and interviews; • Audit findings, including documentation of consultation, response to actions from the previous audit, assessment of compliance status against the conditions and commitments in relevant documents and a discussion of environmental incidents and performance; and • Recommendations, identifying any opportunities for improvement identified in the audit. 	This IEA Report
5.2	Audit reports submitted to the lead regulator must be certified by the lead auditor on an attached ‘Independent Audit Submission Form’	Appendix A
5.3	Copies of the final audit report to be distributed to regulatory agencies within two weeks of finalisation and placed on the development’s website.	WCPL Responsibility

Section	Description	Where Addressed
6	The operator of the development to respond to the lead regulator responding to the audit findings and recommendations with an action plan within four weeks of receiving the final audit report.	WCPL Responsibility

Table 3
Audit Guidelines Risk Levels for Non-Compliances

Risk Level	Colour Code	Description
High		Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium		Non-compliance with: <ul style="list-style-type: none"> potential for serious environmental consequences, but is unlikely to occur; or potential for moderate environmental consequences, but is likely to occur
Low		Non-compliance with: <ul style="list-style-type: none"> potential for moderate environmental consequences, but is unlikely to occur; or potential for low environmental consequences, but is likely to occur
Administrative non-compliance		Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

2.1.2 Consultation with Relevant Agencies

During the preparation for this IEA, input was sought from regulatory agencies to confirm any areas of compliance or environmental management at the Wambo Mine that should be a particular focus.

The following agencies were approached by WCPL directly (or as otherwise indicated) for input as part of the scoping phase of this IEA:

- SSC (approached by Hansen Bailey);
- DP&E;
- NSW Trade and Investment, Department of Resources and Energy (DRE);
- Office of Environment & Heritage (OEH);
- Department of Primary Industries – Water (DPI Water); and
- Environment Protection Authority (EPA).

Where issues were raised during consultation, these are listed in **Table 4**. Each has been addressed in this IEA Report.

Table 4
Agency Requirements and Where Addressed

Ref	Requirement	Where Addressed
SSC		
1.	No additional matters for consideration, other than those identified in the relevant condition of consent.	N/A
DP&E		
2.	1. The proposed erosion and sediment control specialist shall have demonstrated understanding and experience of: <ul style="list-style-type: none"> a. The identification, management and mitigation of the erosion and revegetation hazards associated with magnesian, dispersive and saline mine spoils; b. The application and limitations of contemporary erosion and landscape evolution models as they relate to magnesian, dispersive and saline mine spoils; and c. Drainage, erosion and sediment control best management practices appropriate for magnesian, dispersive and saline mine spoils. 	Appendix F
3.	2. The Department is concerned about the stability and function of the North Wambo Creek Diversion and requires a fluvial geomorphologist to be included on the audit team to assess geomorphological function of the North Wambo Creek Diversion compared to appropriate undisturbed reference reach sections of North Wambo Creek.	Section 6.7.3 and Appendix F
4.	3. The Department is concerned about the potential for hydrological connectivity between the open cuts and the underground mining operations and requires a hydrogeologist to assess this aspect.	Section 6.6.2 and Appendix F
DRE		
5.	Is there a current Mining Operations Plan (MOP) in place and has it been approved by DRE.	Section 5
6.	Has the MOP been prepared in consultation with the relevant agencies as outlined in the Project Approval?	Section 5
7.	Is the rehabilitation strategy as outlined in the MOP consistent with the Project Approval in terms of progressive rehabilitation schedule and proposed final land use?	Section 6.10
8.	Has the rehabilitation objectives and completion criteria, as outlined in the MOP, been developed in accordance with the proposed final land as outlined in the Project Approval.	Section 6.10
9.	Are the subsidence remediation strategies developed for the Extraction Plan consistent with the MOP?	Section 6.9
10.	Has a rehabilitation monitoring program been developed and implemented to assess performance against the nominated objectives and completion criteria (including subsidence management)? – verified by reviewing monitoring reports and rehabilitation inspection record.	Section 6.10
11.	Are mining operations being conducted in accordance with the approved MOP (production, mining sequences etc.), including within the designated MOP approval boundary – to be verified by site plans and site inspection.	Section 6.2

Ref	Requirement	Where Addressed
12.	Is rehabilitation progress, including vegetation community types, consistent with the approved MOP as verified by site plans and a site inspection? This should include an evaluation against rehabilitation targets and whether the final landform is being developed in accordance with the conceptual final landform in the Project Approval.	Section 6.10
13.	Based on visual inspection, are there any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation.	Section 6.10 and Appendix E
14.	Are there controls to ensure top soil management is appropriate to achieve nominated final land use? For example, is the source of a top soil stockpile recorded to ensure it is used to achieve a specified final land use outcome.	Appendix D , Sch 4 Con 94A of DA-305-7- 2003
OEH		
15.	OEH recommends that the following aspects are included in the audit: The extent of new rehabilitation areas in relation to the current mine plan;	Section 6.10
16.	The nature and extent of weeds, and how they are being controlled, in the rehabilitation and the Remnant Woodland Enhancement Areas (RWEAs);	Section 6.10
17.	Effectiveness of management of the RWEAs and ways that management actions may be changed for better outcomes and cost effectiveness;	Section 6.10
18.	Nature of mine rehabilitation, including temporarily disturbed land such as that associated with coal seam gas drainage infrastructure, and how it compares to reference sites;	Section 6.10
19.	Cliffline monitoring of the Wollemi Escarpment – techniques used, sample siting and density, and results;	Section 6.10
20.	The effectiveness of rehabilitation of subsidence impacts, particularly cracking and ponding, on vegetation health and composition;	Section 6.9
21.	The status of the Conservation Agreement to be placed over the RWEAs; and	Appendix D , Sch 4 Con 41 of DA-305-7-2003
22.	Effectiveness of the current monitoring program in capturing and evaluating revegetation and RWEA management in realizing stated objectives. Include suggestions on how the monitoring program could be improved to better measure and assess results; including appropriate statistical analysis of the monitoring data.	Section 6.10
DPI Water		
23.	Assessment as to whether the project holds the required water entitlements and licences under the <i>Water Management Act 200</i> or <i>Water Act 1912</i> (as applicable)	Section 6.6.3
24.	Compliance with the conditions of any water licences/approvals held.	Section 6.6.3
25.	Summary Table of all water licences and copies of original licence.	Section 6.6.3
26.	Identification of all water storages for the mine and identification of their licensing status being either exempt, subject to harvestable rights or regulated via water access licence.	Section 6.6.3

Ref	Requirement	Where Addressed
27.	Quantification of both active and passive take by the Project from each relevant water source and a comparison against previously modelled predictions.	Section 6.6.3
28.	Does the proponent have enough licensed water entitlement to cater for active and passive take of water?	Section 6.6.3
29.	Are adequate records kept to enable determination of the volume and source of surface and groundwater taken.	Section 6.6.3
30.	Do any exemptions under the <i>Water Management (General) Regulation 2011</i> or <i>Harvestable Rights Order (Gazetted 31 march 2006)</i> apply to the capture of water.	Section 6.6.3
EPA		
31.	The EPA encourages independent audit towards proponents improving their environmental performance. We do not provide input as our role is to set environmental objectives for environmental/conservation management and manage outcomes.	N/A

3 PREVIOUS AUDIT RECOMMENDATIONS & STATUS

The key recommendations from the 2014 IEA and the status of each as at September 2017 are summarised in **Table 5**. Any issues where were not complete have been transferred to Recommendations in **Section 7**.

Table 5
2014 Audit Recommendations & Status

Ref	Description	Status	2017 IEA Comment
Actions			
5.19	Include reporting on measures to minimised greenhouse gas emissions in the Annual Review (Schedule 4, Condition 3).	Compliant	Section 5.4 of 2015 and 2016 Annual Reviews
5.8	Revise the North Wambo Creek Diversion Plan to include the required section on mechanism for the return of intercepted groundwater (Schedule 4, Condition 31(c)).	Not Compliant	Not yet revised.
5.3	Engage specialist to complete the required Reject Emplacement Strategy document, in consultation with DRE (Schedule 4, Condition 22G).	Compliant	Submitted for approval in September 2014.
5.5	Include HRSTS compliance forecasts in Annual Reviews (Schedule 4, Condition 26).	Compliant	Section 6.3.4 of 2015 and 2016 Annual Reviews.
5.7	Revised Site Water Management Plans should be finalised as soon as practical and submitted for consultation with required agencies (Schedule 4, Conditions 29(f), 30).	Compliant	Site Water Management Plan components revised in 2015-2016.
5.8	Ensure that design for return of groundwater is in place for the North Wambo Creek Diversion Plan (Schedule 4, Condition 31(c)).	Compliant	Table 4 of 2015 IEA noted revisions to address these requirements.
5.10	Finalise the Final Void Strategy as soon as possible in 2015 for DP&E and SSC approval, and consultation occur with DRE (Schedule 4, Condition 39).	Compliant	Submitted in June 2016 to DP&E.
5.16	Submit the oral history report document for the Wambo Homestead Complex as soon as practical in 2015 (Schedule 4, Condition 60).	Compliant	Oral History report submitted to OEH 5/5/2015.
5.17	Confirm which, if any, moveable Non-Aboriginal items identified in the Wambo EIS should be conserved (Schedule 4, Condition 70).	Compliant	None proposed to be moved.
5.18	Ensure Montrose Tree Screen areas are maintained and effective in mitigating visual impacts (Schedule 4, Condition 82). (Plate 15 in Appendix E).	Not Compliant	Limited rainfall has hindered the establishment of vegetation. However, there does not appear to have been progress since last audit.

Ref	Description	Status	2017 IEA Comment
5.5, 5.9, 5.12, 5.19, 5.20	Ensure all data, analyses and other information required to be reported on an annual basis is documented in accordance with consent conditions (Schedule 6, Condition 5).	Compliant	All required information reported in Annual Reviews.
5.21	Place responses to the 2011 independent audit and this document on the Wambo website (Schedule 6, Condition 12).	Compliant	Responses to past audits included in Annual Reviews.
5.1	Undertake regular training on blast fume management with relevant personnel to ensure pre-blast checks are undertaken (Schedule 4, Condition 2).	Compliant	Evidence of training provided.
5.11	Review the Surface Disturbance Permit (SDP) form checklist to include a figure which shows the disturbance associated with the SDP, the MOP disturbance boundary and the approved Surface Development Area from Figure 2 of the North Wambo Underground Modification EA (or modified version) (Schedule 3, Condition 2).	Compliant	Viewed SDP 589.
DA 305-7-2003 – Recommendations			
1.	Remove consent condition requiring payment of S94 contributions when the consent is next modified (Schedule 3, Condition 11).	-	This condition has been removed from the consent.
2.	Remove consent condition requiring payment of community enhancement funds for the Warkworth / Jerrys Plains area when the consent is next modified (Schedule 3, Condition 12).	-	This condition has been removed from the consent.
3.	Amend consent condition to remove reference to properties 23, 31, 51 and 56 when the consent is next modified (Schedule 4, Condition 1).	-	A note has been included in this condition.
4.	Do not include discussion of exceedances of impact criterion on mine owned land in the Annual Reviews (Schedule 4, Condition 4).	-	Exceedance on WCPL land for DD still reported in Table 16 (2015 AR) and Table 15 (2016 AR).
5.	Consider removing DD gauges as long as next closest receiver has a DD between them and operation (Schedule 4, Condition 4).	-	Completed
6.	Review of real-time noise monitoring sites is recommended to ensure ongoing effectiveness as a management tool for Wambo operations (Schedule 4, Condition 6).	-	N01 and N03 reassessed and relocated.
7.	Amend consent condition to remove reference to Kannar property when the consent is next modified (Schedule 4, Condition 7).	-	A note has been included in this condition

Ref	Description	Status	2017 IEA Comment
8.	Investigate options to integrate the predictive weather (Weatherzone) and real-time monitoring (Sentinex) elements of the noise and air quality management systems to enhance the predictive abilities of the system prior to operations going through Montrose Ridge (Schedule 4, Conditions 5B, 8).	-	See discussion at Section 6.4 and 6.5
9.	Commission a second remote camera for the visual monitoring of in-pit equipment locations and dust emissions consistent with Table 14 of the Air Quality and Greenhouse Gas Management Plan (Schedule 4, Condition 5C).	-	Completed. Second camera installed to monitor Montrose and Montrose East activities.
10.	Commission a noise monitoring specialist provide advice on an alternate representative location for the Muller monitor where it is less affected by traffic noise and consideration of a directional element (Schedule 4, Condition 8).	-	Completed. Appendix D, Schedule 4 Condition 6 of DA-305-7-2003
11.	Maintain a register to document timing and scale of any operational changes made in response to adverse conditions or noise alarms from monitoring units and document this in future Annual Reviews (Schedule 4, Condition 8).	-	Completed. See Appendix D, Schedule 4 Condition 8 of DA-305-7-2003
12.	Maintain a register to document timing and scale of any operational changes made to minimise cumulative noise impacts and document this in future Annual Reviews (Schedule 4, Condition 9).	-	See Appendix D, Schedule 4 Condition 8 of DA-305-7-2003
13.	Use best endeavours to resolve data sharing agreement for co-ordination of blast times, particularly in relation to monitors to the NW of the open cut area to assist in management of noise and air quality of northern receivers (Schedule 4, Condition 18).	-	Informal blast sharing between neighbouring mines (see Appendix D, Schedule 4 Condition 17 of DA-305-7-2003).
14.	Include mapping and specific description impact performance for threatened ecological communities (Boxgum woodland and WSW) in future SMP reviews (Schedule 4, Condition 22).	-	Complete. SMP appended to Extraction Plan for LW 11-16.
15.	Review the approved Rehabilitation Management to ensure consistency with the approved Extraction Plans (Schedule 4, Condition 22).	-	Complete. MOP amendment D.
16.	Review SW monitoring sites in consultation with relevant regulators and remove redundant sites from monitoring program (Schedule 4, Condition 35).	-	Complete.
17.	Update signage of the Keeping Place for Aboriginal cultural heritage items to ensure that the area is well defined (Schedule 4, Condition 53).	-	Viewed photo of signage.

Ref	Description	Status	2017 IEA Comment
18.	Consider seeking recovery of funding contribution to HACHTF if regulators confirm that it has not been expended, or if it has, seek the documented outcome of the Trust Fund (Schedule 4, Condition 56).	-	Not pursued.
19.	Remove conditions relating to the haulage of product coal by public roads as this activity has been superseded (Schedule 4, Conditions 74 – 78).	-	These conditions have been amended in the consent.
20.	Notify owners of private residences that were predicted to experience high visual impacts of right to visual mitigation under consent condition, if not already provided (Schedule 4, Condition 83).	-	Viewed email dated 20/02/17 to Murphy with attached visual assessment report
21.	Seek expert advice from noise and air specialists to confirm that predictions remain valid with the change in mine plan progression (in comparison to Wambo EIS) proposed by Wambo (Schedule 4, Condition 84).	-	Undertaken as part of modification approvals.
22.	2014 Annual Review include a discussion of actions undertaken to mitigate off-site lighting impacts (Schedule 4, Condition 85).	-	Section 4.12.1 of 2014 Annual Review.
5.18	Report on greenhouse gas emissions and minimisation actions in the Annual Review (Schedule 4, Condition 87).	-	Section 5.4.4 of 2015 and 2016 Annual Reviews
23.	Report on the effect of growth medium trials on rehabilitation performance in the 2015 Annual Review (Schedule 4, Condition 94A).	-	Section 7.1.1 of the 2015 Annual Review.
24.	Investigate the viability of aerial seeding or other cost effective 'interim' rehabilitation strategies to reduce dust emissions and report on their feasibility in the Annual Review (Schedule 4, Condition 94B).	-	Section 7.1.7 of the 2015 and 2016 Annual Reviews.
25.	Prepare revised Rehabilitation Management Plan in accordance with consultation requirements for agencies (Schedule 4, Condition 94B).	-	Revised version approved 3/7/2017.
26.	Review the approved EMS in 2015 (Schedule 6, Condition 1).	-	Revised version submitted for approval 26/7/17.
DA-177-8-2004			
5.24	Seek final correspondence from RMS confirming their requirements (or otherwise) for the upgrade of the Golden Highway / Wallaby Scrub Road intersection.	Not Compliant	There is no written evidence to confirm that RMS was consulted for the construction of the Golden Highway intersection (see Schedule 4 Condition 19).

Ref	Description	Status	2017 IEA Comment
5.25	Include the rail loop and refuelling facility in future lighting reviews of the Wambo site.	Compliant	Complete. Viewed most recent lighting audit dated 24/7/17.
EPL 529			
5.27	Review premises map referred to in EPL conditions and update at next variation to reflect current operations if there is any inconsistency (Condition A2.1).	Compliant	Updated 24/4/17
ML 1572			
27.	Request amendment to Condition 21 Trees and Timber (a-c) or removal from the document at the next renewal of the ML (Condition 21).	Compliant	Removed.

4 NON-COMPLIANCES AGAINST APPROVALS & LICENCES

This section provides a discussion on the identified non-compliances and status against DA 305-7-2003, DA 177-8-2004 and other licences approvals available for review at the time of the IEA.

Table 1 and Table 2 of **Appendix D** provides a complete tabulated list of conditions of DA 305-7-2003 and DA 177-8-2004, respectively, with the compliance status and comments against each.

Table 3 in **Appendix D** provides a list of the other licences and approvals assessed as part of this IEA, with the compliance status and comments against each.

A summary of the non-compliances against each document is summarised below in **Table 6**. Recommendations arising from the non-compliances are highlighted in bold text in **Table 6** and included in **Section 7**.

Table 6
Non-Compliances Identified

Ref	Non-Compliance	Risk
Previous Audit Non-compliances		
5.8	North Wambo Creek Diversion Plan not yet revised to include the required section on mechanism for the return of intercepted groundwater (Schedule 4, Condition 31(c)).	Low
5.18	The Montrose Tree Screen has been commenced however is not well established to mitigate visual impacts (Plate 15 in Appendix E). Limited rainfall has hindered the establishment of vegetation. However, there does not appear to have been any significant works since last audit.	Low
5.24	There is no written evidence to confirm that RMS was consulted for the construction of the Golden Highway intersection (see Schedule 4 Condition 19 of DA 177-8-2004).	Low
DA 305-7-2003		
Sch 3, Con 1	Some non-compliances against conditions of consent, EPL and previous audit as described in this table.	See below
Sch 3, Con 2A	Some non-compliances identified as per this table.	See below
Sch 3, Con 7B	Various examples of consultation not being conducted with other regulators (e.g. for revision of management plans).	Administrative
Sch 3, Con 10	Stream flow monitoring equipment failure resulting in failure to monitor stream flow at three locations in South Wambo Creek (FM5, FM6 and FM9) throughout 2016 and 2015. WCPL advises that the FM5 stream flow monitor was replaced and FM6 was relocated in December 2016.	Low
Sch 4, Con 6	Minor (1 dBA) exceedances of the noise limits occurred on two occasions (June and August 2017) at N16 Muller, however the minor exceedances were not sustained and were within the 2 dB tolerance recommended in Section 11.1.3 of the INP. The two minor exceedances did not coincide with noise-related complaints. Both exceedances were self-reported.	Administrative
Sch 4, Con 8 and 9	Formal coordination with nearby mines for cumulative noise management does not occur and an agreed protocol does not exist.	Low

Ref	Non-Compliance	Risk
Sch 4, Con 22G	No evidence that the Rejects Emplacement Strategy has been approved. The plan is likely to require review following determination of the United and Wambo Open Cut Coal Mine Project.	Administrative
Sch 4, Con 23A	A non-compliant unlicensed release of runoff occurred on 21 April 2015 from a sump located adjacent to Wollombi Creek at Hales Crossing. This release is not permitted under an EPA licence. Failure of temporary sediment dam on resulting in the non-compliant unlicensed release of sediment and water to the Waterfall Creek catchment.	Medium
Sch 4, Con 25	A comparison of the site water balance to the EIS is not provided.	Administrative
Sch 4, Con 29	See schedule 4, condition 10 of DA 305-7-2003. Non-compliance with the requirements for discharge measurement occurred during the reporting period due to equipment failure. Measures observed during the site inspection have been implemented to prevent recurrence.	Low
Sch 4, Con 30 and 30A	The Site Water Management Plan does not include a predicted salt balance.	Administrative
Sch 4, Con 39	No evidence of consultation with SCC for Final Void Management Plan.	Administrative
Sch 4, Con 71	Consistent with previous IEAs, there is no written evidence to confirm that RMS was consulted over the construction of the Golden Highway intersection. The 2011 audit noted that Wambo consulted with RMS regarding the realignment and was advised that this work was not required.	Administrative
Sch 4, Con 82	See previous audit non-compliance ref 5.18.	Low
Sch 4, Con 87	Greenhouse gas emissions and minimisation were not reported in 2013-14 Annual Review. However, it has been confirmed they are contained in the 2015 and 2016 Annual Reviews.	Administrative
Sch 4, Con 89	A small area of spontaneous combustion was reported in 2017. No evidence to confirm that DRE (now DRG) is satisfied with spontaneous combustion management. Since the audit, WCPL reported the spontaneous combustion in Section 5.17 of the 2017 Annual Review which was submitted on 31/03/18. No comments were received from DRG.	Administrative
Sch 4, Con 94A	No evidence was provided to show soils surveys were undertaken in audit period.	Administrative
Sch 6, Con 3	Two exceedances occurred within the audit period for the HRSTS flow meter failure and Sediment Dam Wall Failure as discussed in Section 6.15.	Low
Sch 6, Con 6	Evidence was not available during this audit to confirm that all plans were reviewed after every Annual Review, incident and IEA and revised if necessary.	Administrative
Sch 6, Con 12	Letter (c) and (d) in Schedule 3 Condition 2 not publicly available at time of audit.	Administrative
DA 177-8-2004		
Sch 4, Con 5	No evidence of reporting on measures to minimise train loading outside specified hours to DP&E's approval.	Administrative
Sch 4, Con 12	No evidence sited that the cessation of vibration monitoring was approved by the Director General.	Administrative
Sch 4, Con 13	See Schedule 4, Condition 12 of DA 305-7-2003.	Administrative
Sch 4, Con 17	See Schedule 4, Condition 32 of DA 305-7-2003.	Administrative

Ref	Non-Compliance	Risk
Sch 4, Con 19	See ref 5.24 of previous audit non-compliances.	Low
Sch 5, Con 1	Notifications not sent to landowners following minor 1dBA exceedances at the N16 (Muller) monitor in June and August. WCPL advises that notifications were not sent due to the minor nature of the exceedance. and influenced by highway and traffic noise. However, all non-compliances should be reported to neighbours with context on the nature of the exceedance.	Administrative
EPL 529		
O1	See Schedule 4, Condition 23A of DA 305-7-2003. A non-compliant unlicensed release of runoff occurred on 21 April 2015 from a sump located adjacent to Wollombi Creek at Hales Crossing. This release is not permitted under an EPA licence. Failure of temporary sediment dam on resulting in the non-compliant unlicensed release of sediment and water to the Waterfall Creek catchment.	Medium
M3.1	Failure to monitor dust deposition in April 2016, November 2016 and March 2016 at D07, D20 and D23 respectively and in January 2015 at D17.	Low
M4.1	Failure to continuously monitor weather data between 25 May 2016 and 31 May 2016.	Low
M7	See Schedule 3, Condition 10 of DA 305-7-2003. Failure to monitor stream flow at three locations in South Wambo Creek (FM5, FM6 and FM9) throughout 2016 and 2015. Failure to monitor stream flow in Stoney Creek (FM7 and FM8) in 2015.	Low
M8.1	Failure to capture all blast data. The blast monitoring system was replaced in June 2016 and since its installation, capture rate has been 100%.	Low
M9.1	Failure to monitor HRSTS discharge volumes from Eagle's Nest Dam six times in January 2016 and six times in April 2015. Although there was no in-line flow monitoring, the volume of discharge could be calculated using the vertical flow trajectory method which demonstrated that the volume of water discharged was within criteria (i.e. the non-compliance was of no environmental consequence). These non-compliances were assessed as "low" risk non-compliances in the 2015 and 2016 Annual Reviews and these assessments were accepted by DP&E.	Low
M9.4	Failure to record 24-hour PM10 data at Monitoring Point 13 on five occasions during 2016 due to hardware failures and local power outages. One instance occurred in 2016 at Monitoring Point 15. During each outage, consultants, involved with monitoring units' maintenance and operation, provided calculated 24hr averages to supplement WCPL's missing data. On none of these days were PM10 levels elevated above a PM10 24hr average of 50 µg/m ³ . This indicates that there was little potential for environmental consequences. These non-compliances were assessed as "low" risk non-compliances in the 2016 Annual Review and this assessment was accepted by DP&E.	Low

5 MANAGEMENT PLANS, PROGRAMS AND STRATEGIES

The development consents Wambo require preparation of a series of management plans and strategies. All currently approved management plans developed for Wambo in accordance with the requirements of DA 305-7-2003 and DA 177-8-2004 were reviewed during this IEA, including the:

- Environmental Management Strategy (EMS);
- Air Quality and Greenhouse Gas Management Plan (AQGGMP);
- Noise Monitoring Program (NMP);
- Blast Management Plan (BMP);
- Blast Flume Strategy Management Plan (BFSMP);
- Erosion and Sediment Control Plan (ESCP);
- Heritage Management Plan (HMP);
- Wambo Homestead Conservation Management Plan (WHCMP);
- Rehabilitation Management Plan (RMP);
- Flora and Fauna Management Plan (FFMP);
- Road Closure Management Plan (RCMP);
- Traffic Management Plan (TMP);
- Site Water Balance (SWB);
- Surface Water Monitoring Program (SWMP);
- Groundwater Monitoring Program (GWMP);
- Surface and Groundwater Response Plan (SGRP);
- Bushfire Management Plan; and
- Pollution Incident Response Management Plan (PIRMP).

A number of these plans have been revised and submitted to DP&E and are yet to be approved. The updated plans were considered in the IEA recommendations of this report. The status of each plan and any relevant recommendations in relation to each is provided in **Appendix D**.

The Environment Protection Licence (EPL) and MOP documents relevant to Wambo operations during the audit period were also reviewed. These included the *Wambo Coal Mining Operations Plan (Amendment F) 2015 – 2020* (May 2017) approved by DP&E on 3 July 2017. MOP Amendments A through to F were approved during the audit period. Section 1.5.1 of the MOP (Amendment F) outlines consultation undertaken with Government Departments between 2014 and 2017 as modifications to mine plans were being considered and MOP amendments were being progressed.

The approved Extraction Plans prepared by Wambo for Longwalls (LWs) 8 to 10A (2015) and for LWs 11 to 13 (2015) were also reviewed against the relevant consent conditions of DA 305-7-2003 to confirm their compliance status as discussed in **Section 7**.

6 ENVIRONMENTAL MANAGEMENT & MITIGATION EFFECTIVENESS

6.1 OVERVIEW

This section provides a general review of management and mitigation effectiveness at site. It provides a discussion on key issues including general environmental management, findings of the site inspection, complaints and incidents summary, monitoring, tailings management and water management.

The site visit was conducted on 20-21 September 2017 with field inspections conducted on both days with WCPL staff and the various technical specialists. The inspections involved a walk through the administration, workshop and CHPP as well as a drive to various areas around the site including the areas of rehabilitation, the tailings emplacement area, Wambo Homestead Complex and water management infrastructure including the Wambo Creek Diversion. Photographs from the site inspection are included in **Appendix E** and discussed throughout this IEA Report, as relevant. **Plates 1 to 9** were supplied by WCPL and provide a general overview of the Wambo mine. **Plates 10 to 15** were taken during the site visit.

A review of the Wambo EMS has confirmed that it meets the requirements of the DA 305-7-2003. However, as it was published in 2009, it does not reflect the current management and scope of operations on site. A draft version of the revised EMS is currently with DP&E pending approval.

6.2 MINING OPERATIONS & SITE INFRASTRUCTURE

Housekeeping around the site including the office complex, stores and workshop areas were generally in an excellent condition. Of exception to this was the Wollemi Workshop area which was noticeably untidy (see **Plate 10** of **Appendix E**) and it is recommended that general housekeeping is a focus within area.

The CHPP was generally well maintained, with sumps and drains observed to be de-silted and clear of obstructions. Spill kits and segregated waste bins were observed in workshop areas.

The network of perimeter collection drains and bunds at the coal stockpile area were generally found to be clear of obstructions and adequate for containing runoff from this area. A small amount of coal sediment was observed in a road drain at one location outside the coal stockpile perimeter collection drainage network. An accumulation of coal sediment in the drain and 90 degree change in flow direction were observed at this location. The affected road drain was inspected and observed to return to the perimeter collection drainage network a short distance (approximately 50 m) downstream. No release of coal sediment from the site was observed to have occurred. The observed coal sediment is likely to be the result of spillage from the drain. It is recommended that the drain be de-silted at this location and monitored to confirm whether the flow direction of the drain is adequate.

The product coal reclaim tunnel area is located in a contained catchment that receives runoff from the southern part of the coal stockpile area, via surface drains and culverts. Coal

sediment was observed to be contained within this area with no evidence of any spillage of coal sediment from this area to the Hales Crossing sumps.

Water storage dams and ponds at the CHPP were generally well maintained, although coal sediment was found to have accumulated in some cells of the Gordon Below Franklin water storage. It is recommended that accumulated sediment is removed from the Gordon Below Franklin where necessary in order to reinstate the design/operating storage capacity.

Water carts were also viewed in operation on major haulage routes, both within the active mining areas and around key site infrastructure areas (see **Plate 11** of **Appendix E**).

The diesel storage container at the Rail Loop was adequately secured with fencing and a pad lock and was signed appropriately (see **Plate 12** of **Appendix E**).

A photo of the Keeping Place for Aboriginal archaeological items was noted during the audit, which was secure and well maintained. Signage for the site has been reinstated to clearly identify this area as per previous IEA recommendation.

6.3 MINE PLAN PROGRESSION

The Wambo EIS concept mine plans (Figure 2.8 to Figure 2.9) and MOP Plans (Figures 3C to Figure 3D) were compared to a recent aerial dated April 2017 and to site observations.

Mine plan progression was generally consistent with the current MOP, but differed to those in the EIS (not in footprint) but in timing (i.e. operations worked from the NW to the E rather than as the E to the W as indicated in Figure 2.8 of the EIS).

The underground mining operations in the EIS (Figure 2.9) planned the extraction of coal from LW7 in Year 13 (generally aligning with 2017). However, current mining activities are occurring in LW13 and LW14, generally consistent with the MOP and subsequent modification documents.

Open cut operations in Montrose and Montrose East are slightly behind the predictions in the EIS and subsequently behind in rehabilitation of that area. The Montrose East operation remains a sensitive area due to the relatively exposed nature of operations in relation to private receivers. The progression of mining is considered to have the potential to generate noise, air quality and visual impacts for private residences located to the north-west and west of Wambo (clearly anticipated in the Wambo EIS) and will require ongoing diligence and management.

6.4 AIR QUALITY

The air quality component of the IEA was undertaken by Judith Cox on 21 September 2017 as contained in **Appendix F**.

The following recommendations were made regarding air quality:

- Analysis of dust deposition results are limited to comparison of the annual average against the criterion, as the single monthly values above this are not strictly exceedances;

- Future Annual Reviews should not discuss exceedances of criterion on mine owned land as previously recommended in the 2014 IEA;
- Consider removing unnecessary dust deposition gauges; and
- Whilst not an item listed in the condition, it is recommended that upon installation of new monitoring equipment, a suitable qualified person is engaged to ensure the placement and operation of all air quality monitoring equipment complies with the relevant standards.

6.5 ACOUSTICS

The acoustics component of the IEA was undertaken by Mark Bridges on 21 September 2017 as contained in **Appendix F**.

Information gathered during the document reviews and site visit indicated Wambo is substantially complying with relevant development consent conditions and is strongly focussed on minimising and controlling environmental noise and blasting impacts. The blast monitoring network is appropriate and indicates no exceedances of the blast criteria have occurred during the audit period. Blast management procedures, including control of vibration, overpressure and flyrock, are appropriate. The existing real time noise monitoring system is acceptable and the active noise management system based on results from the real time monitors is commendable.

Two minor administrative non-compliances were identified, both pertaining to noise coordination with nearby mines. Whilst staff from nearby mines are notified if Wambo's real time noise monitoring indicates an exceedance of criteria, there is currently no formal or consistent management procedures to coordinate noise or respond to impacts with the nearby mines. It is recommended that a protocol is prepared in consultation with other nearby mines and included in the Noise Management Plan in accordance with Schedule 4 Condition 9e of the consent.

It is recommended that a review of the noise and blast monitoring systems and their locations is undertaken to ensure these accurately and efficiently represent noise levels at the closest and potentially most affected private residences whilst minimising extraneous noise from other sources such as road traffic or other mines. In particular, the Thelander blast monitor may require calibration and should be investigated as soon as possible.

Blast monitoring data was noted to be incorrectly reported in March 2017 due to vibration and overpressure values being in the wrong columns. As such, additional care should be taken to ensure blast monitoring data is checked and reported correctly in the future.

Although outside of the IEA period, it is also recommended that approval is sought to blast within 500 m of the land owned by Hunter Valley Operations as part of future operations and in accordance with Schedule 4 Condition 19b of the consent.

6.6 WATER MANAGEMENT

Water management structures observed at the site were generally well maintained. General maintenance and rehabilitation works associated with creek banks and floodplains have been undertaken or are ongoing and are generally consistent with the current MOP.

The North Wambo Creek Diversion is discussed separately in **Section 6.7**.

6.6.1 Groundwater

The groundwater component of the IEA was undertaken by Daniel Barclay from AGE on 20 September 2017 as contained in **Appendix F**.

Ongoing water monitoring is conducted as prescribed within the Groundwater Monitoring Program (GMP).

The following recommendations were made regarding groundwater:

- It is understood that a revised GWMP (version 12) is currently in preparation by WCPL. This latest GMP and Water Management Plan should be finalised as soon as is practical to include the recommended updates and changes required by DP&E;
- Update reference in the GMP “*Jiwan J. Gates, G. (1992) A Practical Guide to Groundwater Sampling, 1st Edition, NSW Department of Water Resources Technical Services Division TS92 080*” to a more current and publicly available reference;
- Update hyperlinks within the GMP and other documents that are outdated and no longer work;
- Section 4.2 of the GMP states that measurement of groundwater field parameters (pH, EC) are carried out using a calibrated water quality meter and a flow cell during purging. pH and EC readings should be recorded in the field once they have stabilised. It is recommended that all parameters are recorded during purging and stabilisation so as to demonstrate compliance with the necessary guidelines;
- Updated site field forms to reflect additional data monitored during sampling;
- Discuss process of uploading water quality data directly from the laboratory to the database in Section 4.3 of the GMP;
- Update Figure 7 in the GMP to clearly show the location of monitoring bores;
- Section 2.4.2 of the site water balance states that “*the proposed SBU (Wambo Seam)1 is subject to modifying DA305-7-2003 (MOD15). MOD15 was submitted in July 2015 and is currently under determination by the DP&E*”. This project has been approved and this statement should be updated in the site water balance; and
- During the site visit, groundwater inflow was observed in the western highwall of the Montrose open pit. This groundwater inflow is originating from the alluvial sediments. Whilst it may be impractical to do so, AGE suggest that there would be benefit to

manage this water separately to the entire open pit. In particular, metering of the alluvial inflow would provide a more accurate input into the site water balance model (rather than back calculations) and would provide verification to the groundwater flow model predictions.

6.6.2 Hydrological Connectivity

The hydrological connectivity assessment was undertaken by AGE. A copy of the report is in **Appendix F** with a summary provided below.

The interaction and connectivity of the underground and open cut mining areas was assessed in 2012 (Heritage Computing) and 2015 (HydroSimulations) as part of modifications to DA 305-7-2003. The groundwater model used for Wambo is updated using observation data. The monitoring data water levels suggest that the model is representative of the actual groundwater regime and there is interaction and connectivity of the open cut and underground areas. The degree of connectivity is dependent on the overlap of the open cut and underground areas and the future exposure of mine surfaces (AGE, 2018).

Water licensing of the open cut and underground operations is discussed in **Section 6.6.3**.

Recommendations made by AGE for future modelling and groundwater impact assessments have been included in **Table 9**.

6.6.3 Water Take Predictions

Based on the MOD17 groundwater assessment by Hydrosimulations (2017), and the 2015/2016 Annual Reviews, the current licences held by WCPL are sufficient to cover the predicted take of water from the water sources.

The EIS (Resource Strategies, 2003) predicted that the annual extraction from the Hunter River, Wollombi Brook and/or surrounding mining operations would be on average 106 ML and up to a maximum of 1,000 ML (see Table 2-4 of the EIS). This is not indicated by source. Water take was predicted to be at its highest in years 8 to 11 of mining operations (Gilbert and Associates Pty Ltd, 2003). The total take in 2015 and 2016 was 350 ML and 271 ML respectively, which is within the maximum limit predicted.

MOD17 predicted that the take of water due to underground operations from the Lower Wollombi Brook water source would be 57 ML per year on average, with a maximum take of 69 ML per year. Water take in the North Coast Fractured and Porous Rock water source was predicted to be 919 ML per year on average, with a maximum take of 1,448 ML per year (HydroSimulations, 2017).

6.6.4 Groundwater Licensing

The water licences held, and take by WCPL during the IEA period are listed in **Table 7** (reproduced from the 2015 and 2016 Annual Reviews and 2017 data supplied by WCPL). There is a total of 1,647 ML available from the North Coast Fractured and Porous Rock Groundwater Sources, 420 ML from the Lower Wollombi Brook water source and 2,114 ML from the Hunter River water source.

WCPL advised that in mid-2015, WCPL applied to DPI-Water to combine all of its North Coast Fractures and Porous Rock Groundwater Sources (Sydney Basin – North Coast Groundwater Source) groundwater licences that contained an extraction entitlement into a single licence. The purpose of this licence is to streamline mining activities and simplify the reporting of extraction against licensed entitlements.

In correspondence dated 18 February 2016, DPI-Water confirmed that the application for the combined allocation (under the *Water Act 1912*) had been lodged and was currently being assessed by DPI-Water. Any outstanding renewals were thus deemed active.

The status of its' conversion to licences under the *Water Management Act 2000* is yet to be advised by DPI-Water. It is recommended this is regularly followed up with DPI-Water.

All water storages onsite are mine water dams or sediment dams and are exempt from licencing. There are no dams, subject to or classified as harvestable rights dams.

Table 1 demonstrates for the audit period, WCPL held adequate licences for its stated takes. It should be noted that the takes shown below are for calendar year, this should be shown for financial year as per conditions of the Water Licences.

Copies of the original licences are included in **Appendix G**).

Table 7
Water Licensing and Take (Calendar Year)

Licence	Share	Total Take 2015 (ML)	Total Take 2016 (ML)	Total Take 2017 (ML)*
Hunter Regulated River Water Source				
WAL 718	1,000 shares	0	0	104.8
WAL 8599	6 shares	0	0	
WAL 8600	868 shares	0	0	
WAL 8604	240 shares	0	0	
Hunter Unregulated and Alluvial Water Sources (Lower Wollombi Brook)				
WAL 18437	350 shares	350	271	116.5
WAL 23897	70 shares	0	0	
North Coast Fractures and Porous Rock Groundwater Sources (Sydney Basin – North Coast Groundwater Source)				
WAL 39738	243 shares	1,343.4	1,331	551.9
20BL167738	57 ML/year			
WAL 39735	40 shares			
WAL 41494	750 ML/year			
20BL172061				
20BL173040				
WAL 41532	98 ML/year			
WAL 39803	450 shares			
20BL173032				
20BL173033				
20BL173034				

Licence	Share	Total Take 2015 (ML)	Total Take 2016 (ML)	Total Take 2017 (ML)*
20BL173035				
20BL173844	9 ML/year			

Source: 2015 and 2016 Annual Reviews. 2017 data provided by WCPL
* to 31 August 2017

6.7 NORTH WAMBO CREEK DIVERSION

6.7.1 Overview

The North Wambo Creek Diversion area was reviewed to confirm the status of this area following the environmental incident recorded in 2013 due to the failure of the erosion and sediment controls in this area following a period of high rainfall. The audit component of the North Wambo Creek Diversion was undertaken by Ross Edwards and is included in **Appendix F**.

The site visit confirmed that maintenance works outlined in the current MOP have been undertaken or are ongoing such as:

- Planting trees and shrubs over a 2 ha area of the diversion;
- Weed management (*Galenia pueescens*);
- Erosion repairs;
- Re-seeding of creek banks and floodplain;
- Undertaking revegetation trials with native grass species; and
- Remediation of subsidence effects associated with South Bates Underground Mining.

The management of the diversion is managed under the North Wambo Creek Diversion Plan required under DA 305-7-2003 and was last updated in 2013.

6.7.2 Key Environmental Management Issues

The key environmental management issues relating to the diversion are erosion and mine subsidence.

Erosion

Drone footage and a site inspection confirmed that the reach of North Wambo Creek upstream of the diversion is generally stable with a relatively consistent level of grass cover in the channel and on the overbank area.

In the upper stage (Stage 2), rainfall runoff draining to the diversion channel as overland flow has resulted in areas of rilling and localised gully erosion and channel migration is actively occurring. Extensive revegetation and repair work has been undertaken, however, the dry conditions have prevented an even establishment of ground cover and some areas of bare soil

are present. Ongoing management will be required in order to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established.

The lower stage (Stage 3) of the diversion is generally constructed in competent to highly weathered bedrock.

A number of issues were observed during the site visit including:

- The limited depth of root penetration of shrubs and trees resulting in treefall;
- The limited deposition of sediments in the creek bed;
- The efficacy of rock-lined infiltration channels in overbank areas;
- The presence of exposed soils with visibly dispersive characteristics; and
- The presence of subsidence cracks in the bed and banks.

The areas of bare earthworks in and adjacent the diversion without any significant revegetation are likely to contribute to elevated levels of suspended sediment in North Wambo Creek immediately downstream of the lower stage of the diversion.

As such, the diversion is not yet compliant with the completion criteria for geomorphic function and stability.

Subsidence

WPCL has indicated that surface ponding due to subsidence is not a significant environmental management issue and that there is minimal ponding of water in the depressions caused by subsidence. This is consistent with the environmental assessment documentation for the diversion. WPCL has indicated that regulators have not raised any concerns in relation to the residual ponding areas due to subsidence.

Consistent with the previous IEA recommendation, ongoing inspections and maintenance will be required over approximately 10 years to ensure the long-term success of the Creek Diversion.

6.7.3 Geomorphological Function

An assessment of the geomorphological function of North Wambo Creek Diversion was undertaken by Ross Edwards (Hansen Bailey) via a review of the '*North Wambo Creek – Geomorphic reach comparison and planning for diversion rehabilitation*' (Alluvium Consulting Australia Pty Ltd, 2018) (Alluvium Report) commissioned by WCPL.

North Wambo Creek comprises three upstream reaches, the diversion (Stage 2A, Stage 2B and Stage 3) and a downstream reach. There are no undisturbed reaches of North Wambo Creek as the upstream reaches have been disturbed by non-mining activities and the downstream reach by mining activities (Alluvium, 2018). A comparison was therefore made between the diversion and the upstream reaches that have not previously been disturbed by mining activities.

The diversion is not yet compliant with the completion criteria for geomorphic function and stability based the following known issues:

- The flow conditions (i.e. velocity, shear stress and stream power) within the diversion and North Wambo Creek frequently exceed of the referenced diversion stability criteria;
- Rainfall and runoff draining to the diversion channel as overland flow has resulted in areas of rilling and localised gull erosion in the Stage 2 diversion reach;
- The lack of successful revegetation and other remedial measures in the Stage 2 and Stage 3 diversion reaches and the associated effects on the long-term performance of the diversion;
- There is limited potential for establishment of riparian species on constructed benches and upper bank slopes of the diversion (due to lack of inundation);
- Limited potential for sediment deposition in the Stage 3 reach and high stripping potential;
- The presence of highly dispersive soils and subsidence cracks in the Stage 3 reach and associated erosion issues;
- The adequacy of flood protection measures for the adjacent open cut pit due to the height and construction of the rock spillway and embankment; and
- The long-term maintenance requirements associated with the rock chute at the diversion outlet to North Wambo Creek.

Wambo has committed to a timetabled diversion management program that addresses the key requirements as listed above. The proposed program was assessed by Ross Edwards and determined that *“if implemented this program is expected to significantly improve the operation of the diversion”* (RE, 2018).

WCPL has also committed to the preparation and implementation of a revised North Wambo Creek Diversion Management Plan. The current diversion management and monitoring objectives, strategies and commitments are contained in several documents making it difficult for site personnel to effectively manage the diversion. It is recommended that the commitments in these documents are consolidated into a single management plan for the diversion.

Further recommendations for the diversion action plan and management are detailed in **Appendix F**. A summary has been included in **Table 9**.

6.8 SEDIMENT AND EROSION

6.8.1 Overview

The erosion and sediment control component of the IEA was undertaken by Ross Edwards on 20-21 September 2017 as contained in **Appendix F**.

The site inspection undertaken as part of this audit confirmed that the Montrose East 1 and Montrose East 2 sediment basins and associated contour drains have been constructed to control all sediment laden runoff from Montrose East and out of pit dump areas. It is understood that collected runoff is pumped to the mine water management system for reuse. However, ground cover has not yet been established due to a lack of rainfall and short-term management has been implemented through the use of geotextile fabric.

6.8.2 Key Environmental Management Issues

The key environmental management issues relating to sediment and erosion pertain to the water management strategy for sediment affected waters and management in the Rail Loop and Hales crossing area.

Sediment Affected Water Management Strategy

The management strategy for sediment affected runoff involves its containment and reuse in the mine water management system. The design and construction of sediment control structures are based on the Blue Book requirements which are not intended for full containment (i.e. nil discharge). Therefore, the key sediment control structures are likely to passively overflow during rainfall that exceeds the dam design events.

It is recommended that WCPL collect water quality data from these dams in order to characterise the quality of runoff from non-coal affected catchments. This data would be useful to support an investigation in the event of any uncontrolled discharge from these dams. This data would also be necessary to support any future passive drainage strategy for the management of runoff from rehabilitated areas to natural drainage features.

Rail Loop and Hales Crossing

In April 2014 an incident occurred involving runoff from the rail loading facility entering Wollombi Brook via the Hales Crossing sump. The site inspection indicated that the sump was desilted with maximum capacity available and the memorandum of design indicated that the pump rate was sufficient to manage inputs from typical storm conditions.

However, it is understood from WPCL that the sump is located within the flood extents of Wollombi Brook and has previously been inundated. In addition, during flood events in the creek it may be necessary to remove the pumping apparatus and the ability to dewater the sump. It is recommended that relocating the sump and pump apparatus to a location outside the flood extents of Wollombi Brook be investigated.

6.9 SUBSIDENCE

Underground mining operations have been undertaken in the North Wambo (NW) LW Panels 8B, 9, 10 & 10A and South Bates (SB) LW 11, 12, 13 & 14 during the IEA period. The extraction plans reviewed as part of the IEA were:

- North Wambo Underground Extraction Plan LW 8—10A (2015); and
- South Bates Underground Extraction Plan LW 11-13 (2015).

WCPL is monitoring and reporting on impacts associated with mine subsidence in accordance with the Subsidence Monitoring Program contained within the Extraction Plans as Appendix H. It is noted from the site inspection and documentation reviewed that there is a good correlation between the subsidence predictions made in the EIS and those being monitored and reported from mining to date.

A review of the Extraction Plans and the Extraction Plan Report for LW 8-10A (dated 31 July 2017) confirmed that WCPL is operating generally consistent with the subsidence performance measure as provided in Table 14A of DA 305-7-2003. The remediation strategies outlined in these plans are consistent with those outlined in Section 3.3.4 of the current MOP.

Baseline cliff top survey of the Wollemi Escarpment was completed for areas identified as having the potential for being impacted by subsidence resulting from mining of South Bates Underground Longwalls 11-16.

A Survey was commenced in October 2015 with subsequent surveys completed upon finalisation of longwall panels in January 2016, June 2016, February 2017 and September 2017. Surveys are undertaken utilising an Unmanned Aerial Vehicle (Microdrone MD4-1000) and a high resolution camera along a GPS programmed route.

The high resolution individual and panoramic images taken as part of these surveys are analysed by WCPL subsidence consultants with results reported in End of Panel reports. As reported in the WCPL 2016 Annual Review, no instabilities have been identified to date.

6.10 REHABILITATION

Progression

An aerial photograph dated April 2017 was compared to the figures in the EIS (Figure 2.8 to Figure 2.9) and MOP Plans (Figures 3C to Figure 3D).

While the extent of rehabilitation is generally progressing in accordance with predictions made in the Wambo EIS and the MOP, areas such as the area north of Montrose East have been reshaped and seeded but a lack of rain has limited the revegetation. Rehabilitation objectives and completion criteria outlined in Section 6 of the MOP are consistent with those in the EIS.

Vegetation

Vegetation community types are generally consistent with those outlined in the MOP. Evidence of early establishment of woodland corridors in the RL 160 dump area were viewed during the site inspection and from the aerial. It is recommended that these woodland corridors are developed further to join the existing areas and the MOP is amended to show defined corridors. It is noted that this recommendation is pending the outcome of the United Wambo Open Cut Coal Project (currently being assessed for approval by DP&E).

Wambo Coal undertakes its annual fauna and flora monitoring in compliance with the approved *WA-ENV-MNP-506 Biodiversity Management Plan (BMP) Rev 13*. The BMP and the monitoring program detailed within were developed to comply with the approved Conservation

Agreements and to the satisfaction of the NSW Office of Environment and Heritage and Commonwealth Department of Environment and Energy through extensive consultation.

Annual monitoring of rehabilitation and RWEAs is undertaken utilising quantifiable Biometric and Land Function Analysis methodologies. Results are compared against monitored analogue sites to determine rehabilitation and RWEA progression against approved relinquishment/performance criteria. Statistical analysis of annual data from 2008 to current is completed to assess the standard deviation of annual data, compensate for outliers and to better assess trends.

The Flora and Fauna Monitoring Report 2016 (Ecological) reported that Remnant Woodland sites were generally performing well and are meeting performance criteria. Dieback of *Angophora floribunda* (Smooth-barked Apple) was observed within the Warkworth Sands area of RWEA 'A'. While likely to be due to natural causes such as insect attack, this issue should be investigated and monitored over time to assess whether any management actions are required.

Subsidence

Inspections of subsidence affected areas are undertaken annually as part of the flora and fauna monitoring program. Minor subsidence cracks were noted at five vegetation sites and one bird monitoring site in 2017. Vegetation damage at these sites was considered negligible and subsidence performance measures were not exceeded at these locations (Ecological Australia, 2017).

More extensive subsidence impacts were observed on a ridgeline road in RWEA B, which was undermined in 2011 and as such the performance measures are not applicable (Ecological Australia, 2017). It was recommended by Ecological Australia that this area is rehabilitated to prevent further damage and reduce risks to the surrounding *Central Hunter Grey Box-Ironbark Woodland EEC*.

More recently (since May 2017), a bi-annual subsidence survey has been developed by SLR Consulting to undertake inspections on areas potentially affected by subsidence. Findings of the surveys are recorded in an excel database which was viewed after the audit. The database includes a risk assessment, photos and recommended actions to remediate areas. Of the 76 sites inspected, five sites were risk ranked as 'intolerable'. These were all due to multiple large cracks across and immediately adjacent to access tracks WCPL advised that a program of works is currently being developed to prioritise subsidence remediation, based on the results of the risk assessment contained within the database. It is recommended that remediation is undertaken where required to an acceptable standard and photos of completion are kept within the database along with a report checklist with date and signature demonstrating works were completed.

6.11 WEED MANAGEMENT

Some areas of rehabilitation also require ongoing management actions to control significant volumes of weeds to prevent these species impacting on rehabilitation performance. It was evident from the site visit that weed management activities had been undertaken as large areas of weeds were visibly dying.

Weeds are managed generally in accordance with the 'Weed Survey and Weed Management Plan' 2014 (Weed Plan) including in RWEAs. Spray diaries recorded from October 2016 to December 2016 were randomly viewed during the audit to provide an indication of weed management activities on site. **It is recommended that the Weed Plan is updated.**

Table 8 provides a summary of the weeds treated, treatment, location and area of weeds treated at Wambo during 2017 (Rural & Environmental Management Pty Ltd (REM), 2017). **Plate 1** and **Plate 2** show weeds that have been treated. **Figure 2** shows the extent of weeds at Wambo.

The Annual Flora and Fauna Monitoring Reports for 2015, 2016 and 2017 (Ecological Australia) identified that *Acacia saligna* forms the dominant midstorey species in some woodland rehabilitation areas. However, it is noted that this is dying off at most monitoring sites and the percentage of mid storey cover has been progressively decreasing overtime (average midstorey cover of 7.13% in 2015, 3.1% in 2016 and 2.1% in 2017).

It is recommended that future Annual Reviews include figures of areas that have been treated for weeds both onsite and within offsets during the annual review period with a focus on *Acacia saligna*.

Table 8
Weeds Treated at Wambo in 2017

Weeds Treated	Treatment	Locations	Area (ha)
Pear species, blue helitrope, galenia	Spray	Remnant Woodlands A	6.21
African boxthorn, lantana, green cestrum	Cut and paint, manual	Remnant Woodlands A	3.87
African boxthorn and olive, wild peach, green cestrum	Cut and paint, manual	Remnant Woodlands A	6.17
Pear species	Spray	Beltline Brook Paddock	5.67
African boxthorn and olive, wild peach, green cestrum	Cut and paint	Wollombi Brook North	2.71
Pear species, blue helitrope, galenia	Spray	Remnant Woodlands A	0.52
Balloon vine, moth vine, African boxthorn and olives	Spray	Remnant Woodlands A	0.05
Pear species, blue helitrope, galenia	Spray	Remnant Woodlands A	19.56
African Olive	Cut and paint	Remnant Woodlands A	10.73
Mother of millions	Spray	Remnant Woodlands A	10.23
Pear species, blue helitrope, galenia	Spray	Remnant Woodlands A	0.60
Silverleaf nightshade, variegated thistle, common thornapple	Spray	Lower south Wambo	0.40
Total			66.73



Plate 1
Treated Prickly Pear in RWEA A (REM, 2017)



Plate 2
Treated Pepper Tree in RWEA A (REM, 2017)



Figure 2
Extent of Weeds (source: Rural & Environmental Management Pty Ltd, 2017)

6.12 WAMBO HOMESTEAD COMPLEX

The Wambo Homestead Complex is subject to an ongoing program of restoration and maintenance works as described in the associated Wambo Homestead Complex Management Plan and described in the Annual Reviews. The homestead and curtilage were reviewed during the site inspection component of the audit and observed to be being maintained to a high standard (see **Plate 13** and **Plate 14** of **Appendix E**).

An oral history report for the Wambo Homestead Complex was submitted on 5 May 2015 in accordance with Condition 4 Schedule 60.

Opportunities for the local community to visit the Wambo Homestead are provided as evidenced by the photos of Jerry's Plains school attending the site and advertisements in Newsletters published on the WCPL website.

6.13 CUMULATIVE IMPACTS

Cumulative impact management at the site was seen to be well managed at the time of the audit, and regular communication between Steve Peart and other Wambo staff and the employees of surrounding mines on the management of blasting issues was viewed at the time of the audit. However, it is recommended that coordination with other mines regarding cumulative air and noise impacts is implemented.

Continuing diligence in relation to northern neighbours as WCPL encroaches northwards, especially in relation to cumulative impacts with HVO will be required.

6.14 COMPLAINTS

Community concerns are being well managed and are recorded within the WCPL Complaints Register, which is publicly available on the Wambo website for the year to date (last updated August 2017). A 24-hour complaints and enquiries line remains in operation where concerns regarding Wambo operations can be raised and the contact details for this line are regularly advertised.

85 community complaints have been received by Wambo since the previous audit including 16 in 2015, 22 in 2016 and 47 in 2017 (at the time of audit). No complaints were received in 2014 within the audit period.

During the audit period, the majority of complaints from the community received were in relation to noise and blasting impacts.

Of particular note is the significant increase in the number of noise complaints received for the 2017 audit period. Of the total 47 complaints received in 2017, 39 pertain to noise. This is can be largely attributed to the current workings in the Montrose East open cut area as it is closer to residences than previous workings. It should be noted however that there have only been two occasions where noise levels were higher than the criteria in the consent. Both were by 1dBA and are below the 2dBA allowance in the Industrial Noise Policy.

6.15 INCIDENTS

A review of incidents at Wambo since the previous indicated that two reportable incidents were recorded in the reporting period, including:

- Sediment Dam Failure in January 2016; and
- HRSTS Flow meter failure in February 2015.

All known environmental incidents were reported to the relevant agencies and summarised clearly within the Annual Reviews during the reporting period, along with follow up or remedial action planned or taken as a result of each.

6.15.1 Sediment Dam Failure

In January 2016, an uncontrolled release of water from a temporary sediment dam occurred following a period of significant rainfall (approximately 118.6 mm between 3 and 6 January 2017). Approximately 2.5 ML of water was discharged into the downstream tributary and ephemeral Waterfall Creek and 109.7m² of material from the dam wall.

WCPL reported the incident to the EPA and DP&E on 16 January 2016. The report detailed the event and actions and prevention measures to prevent a recurrence such as:

- Updating the ESCP (complete);
- Training for all relevant personnel responsible for implementing the ESCP;
- Develop an Erosion and Sediment Control construction sign off process that includes opportunities for staged inspections and reviews;
- Undertake a review of the site PIRMP to ensure that additional stakeholders are notified and consulted in relation to relevant environmental incidents; and
- Immediate rectifications works commenced on 13 January 2016 and completed on 14 January 2016. Repair works were inspected by DP&E and EPA on 14 January 2016.

All actions have been undertaken with the exception of formal training as all relevant personnel were involved in the review of the PIRMP.

The report concluded that the incident was contained within the WCPL EPL premises boundary and did not result in any significant environmental harm or impacts on the aquatic ecology of Waterfall Creek. However, the incident is yet to be finalised with EPA at the time of the audit.

6.15.2 HRSTS Flow Meter Failure

On 20 January 2016, WCPL received a request from the EPA in response to a failure to monitor at Point 4 during a HRSTS discharge on 7 and 8 January 2016. WCPL self-reported the incident and responded to the EPA on 12 February 2016. The incident was reported to have occurred due to an 'unidentifiable technical failure'.

WCPL operates and maintains communication equipment which makes the conductivity and flow measurements available to NSW DPI-Water. During the initial period of discharge under

the HRSTS on 7 January 2016, WCPL identified minor electrical issues with the radio communications between WCPL and DPI Water. Discharge was immediately ceased and a radio technician and electrical engineer were engaged to inspect and remedy communication problems. Following corrective actions and positive confirmation with DPI Water that communications were operational, HRSTS discharges re-commenced.

The flow was calculated using the vertical flow trajectory method as an alternative and manually entered into the communications system provided to DPI Water.

The incident was reported in the 2016 Annual Review.

7 AUDIT RECOMMENDATIONS

A consolidated list of recommendations arising from the outstanding non-compliances from the 2014 audit and additionally identified during this audit in **Table 6** is provided below in **Table 9**. Further, **Table 9** also includes recommendations that are related to continuous improvement.

Table 9
Audit Recommendations

Ref	Description
Previous Audit Non-compliances	
5.8, 5.18, 5.24	<p>Review actions recommended by previous audit which have not been completed. Update management plans as required to address recommendations that are relevant to contemporary operations (Table 5).</p> <ul style="list-style-type: none"> North Wambo Creek Diversion Plan not yet revised to include the required section on mechanism for the return of intercepted groundwater; There is no written evidence to confirm that RMS was consulted for the construction of the Golden Highway intersection (see Schedule 4 Condition 19 of DA 177-8-2004); and Limited rainfall has hindered the establishment of vegetation at the Montrose Tree Screen. However, there does not appear to have been progress since last audit.
DA 305-7-2003 Non-Compliance Recommendations	
Sch 3, Con 7B	Recommend that formal written requests to the Secretary are made in the future if consultation with regulators is not intended to be conducted in relation to management plans.
Sch 3, Con 10	Stream flow monitoring equipment failure. Recommend equipment is inspected regularly and replaced/repairs asap. FM5 was destroyed during a flood event and replaced in December 2016 (now FM15). FM6 was relocated in December 2016 (now FM16).
Sch 4, Con 8 and 9	Recommend that documented coordination with nearby mines and an agreed protocol is developed to manage cumulative noise impacts to the satisfaction of the Secretary.
Sch 4, Con 22G	<p>The Reject Emplacement Strategy (RES) should be submitted to DRG (not DP&E) and followed up to approval.</p> <p>It is noted that the plan is likely to require review following any positive determination of the United and Wambo Open Cut Coal Mine Project.</p>
Sch 4, Con 23A	Consideration should be given to the current Hales Crossing sump and pump arrangement to remove the risk of sump inundation. Options include relocating the sump and pump apparatus to a location outside the flood extents of Wollombi Brook.
Sch 4, Con 25	A comparison of the overall site water balance to the EIS predictions should be presented in future Annual Reviews. If the differences between the EIS water management system and operations are such that a meaningful comparison of the predictions is not possible, or the EIS does not provide sufficient detail on the water balance predictions to allow a comparison of the water balance (which looks likely based upon Appendix E of the EIS), this should be acknowledged.
Sch 4, Con 25	The Annual Reviews do not explicitly forecast compliance with the HRSTS rules. It is recommended that the forecast presented in future Annual Reviews is expanded to explicitly address forecast compliance.
Sch 4, Con 30 and 30A	Site Water Management Plan should be updated to include the predicted salt balance.
Sch 4, Con 71	Consistent with previous audit, recommend consultation occurs and correspondence received from RMS is sought confirming the new intersection is not required or they are satisfied for inclusion in next IEA.

Ref	Description
Sch 4, Con 82	Recommend the Montrose Tree Screen requires attention to ensure effectiveness in mitigating visual impacts.
Sch 4, Con 89	Recommend that DRE is consulted in the future to confirm satisfaction with spontaneous combustion management. This may occur through the Annual Review process, requesting a response to this query in the submission letter.
Sch 4, Con 94A	Recommend soil surveys are undertaken and section in Soil management Protocol updated for any remaining areas to be stripped showing specific depths for specific areas.
Sch 5, Con 1	Recommend neighbours are notified for all future exceedances of criteria.
Sch 6, Con 6	Recommend that a register is kept to confirm reviews of strategies, plans, and programs required under this condition are undertaken following triggers specified in a-d.
Sch 6, Con 12	Letter (c) and (d) in Schedule 3 Condition 2 are located and made publicly available on website.
DA 305-7-2003 Continual Improvement Recommendations	
Sch 4, Con 4	It is recommended that details of any exceedances are explained in the Annual Reviews. This includes referencing any local bushfires/RFS activity/extreme weather events that may have been the cause.
Sch 4, Con 11	ASAP investigate and remedy the likely calibration error for the overpressure microphone on the Thelander blast monitor, which developed in August 2017 after the last calibration check in July 2017. WCPL completed this after the site visit and prior to the finalisation of this report.
Sch 4, Con 12	Monitoring results for the period 23/2/2017 to 29/3/2017 were reported incorrectly (overpressure and vibration levels were swapped in the results table). Recommend that monitoring data is checked monthly to ensure results are reported correctly.
Sch 4, Con 15	A notification of entitlement to property inspection is sent to landowners within 2 km of the site that to ensure current owners are aware of this entitlement
Sch 4, Con 19	Seek written approval for blasting within 500 m of Crown and HVO land before blasting within 500 m of this land in the next audit period.
Sch 4, Con 25	Improvements could be made in terms of the overall site water management if specific groundwater inflows to the open cut via alluvium and Permian could be pumped and/or metered.
Sch 4, Con 29	It is understood that a salt balance model has been developed for the site for the United/Wambo project. It is suggested that this salt balance be updated annually to include the seepage quality monitoring data. There is no recommendation in terms of frequency of monitoring. WCPL should determine the frequency of monitoring to apply for the salt balance model.
Sch 4, Con 30	The GWMP should be updated with the suggestions provided by NSW government subsequent to approval of the GWMP in November 2015 and resubmitted. Updates should include: <ul style="list-style-type: none"> • A more contemporary reference to groundwater sampling techniques; • Amendment of the text relating to purging of groundwater bores to be consistent with the latest guidelines; • Outline the methods of water quality data upload from the laboratory; • The bore labels in Figure 7 need to be clear for all bores; and • General update of text relating to historical or proposed activities.
Sch 4, Con 30	It is recommended that section 2.2.16 of the Site Water Management Plan is improved by providing a high-level strategy for the decommissioning of water management structures (including the management of water during the decommissioning process) as part of any future update of the Site Water Management Plan.

Ref	Description
Sch 4, Con 32	The following area recommendations for the ESCP: <ul style="list-style-type: none"> • A description of the existing as-built ESC arrangements for each sediment-affected catchment would enhance the current understanding of the site ESC arrangements; and • A description of the known issues and actions would be useful in demonstrating that the ESCP is operating effectively and areas for improvement.” (RE, 2018). <p>Additionally, the ESCP structure and text would benefit from a review to improve the general readability of the document. This could involve ensuring that the plan structure is logical, the scope and progression of each section is clear, and overly lengthy or repetitious text is rationalised (RE, 2018).</p>
Sch 4, Con 34	Update GWMP to include Montrose Dam prior to its construction.
Sch 4, Con 34	Consideration should be made to directly monitor the quality of groundwater seepage reporting to the underground and open-cut workings.
Sch 4, Con 40	Offset area E is required to be secured under a conservation agreement by December 2017 and included in the Biodiversity Management Plan and MOP. A draft has been sent to OEH. This should aim to finalise by the due date.
Sch 4, Con 44	Recommend the nest boxes are installed as recommended in the 2016 flora and fauna monitoring report.
Sch 4, Con 47	Recommend that identification of ' <i>Acacia anuera</i> ' is finalised and amended in the development consent to <i>Acacia pendula</i> at next modification, if required.
Sch 4, Con 56	Seek to recover this contribution if regulators confirm that it has not been expended, or if it has seek the documented outcome of the Trust Fund.
Sch 4, Con 56D	Aerial on page 8 of the induction should be updated to be current.
Sch 4, Con 70	Site 3 and site 9 non-indigenous heritage items should be identified in the field. Then correspondence as required in the condition should occur to close out this item.
Sch 4, Con 83	Provide a more recent notification to owners of private residences of right to visual mitigation under consent condition.
Sch 4, Con 84	The Annual Review for 2016 reports 6 lighting complaints for the period however only 5 are reported in the register. Recommend that all complaints are reported correctly in future.
Sch 4, Con 90	Recommend the internal Dangerous Goods and Hazardous Substances Management Plan (last updated in May 2015) is reviewed and revised as needed in the next audit period.
Sch 4, Con 94	Woodland corridors in the RL 160 dump areas are developed further to join the existing areas and the MOP is amended at next review to show proposed and defined corridors.
Sch 4, Con 95	The mine exit strategy should be developed with Council within 5 years of closure (within the next audit period) or written extension sought from DPE if new approval is granted for the Wambo United Project.
Sch 5, Con 1	Notification to landowners of the publication of management documents and monitoring results on the website is updated at regular intervals (suggested 4-5 yearly).
Sch 6, Con 2	Once the revised EMS is approved it must be sent to the relevant agencies, Council and CCC within 14 days.
DA 177-8-2004 Non-Compliance Recommendations	
Sch 4, Con 5	A summary of train movement times should be added to future Annual Reviews.
Sch 4, Con 12	Written approval to be sought from the Director General to cease vibration monitoring.
Sch 4, Con 13	See Schedule 4, Condition 12.
Sch 4, Con 17	It is recommended that section 2.2.16 of the Site Water Management Plan is improved by providing a high level strategy for the decommissioning of water management structures (including the management of water during the decommissioning process).

Ref	Description
Sch 4, Con 19	Correspondence should be sought from RMS confirming that upgrades to the Golden Highway/Wallaby Scrub Road intersection are not required.
DA 177-8-2004 Continual Improvement Recommendations	
Sch 4, Con 6	Reviewed ARTC EPL 3142 and email from Matt Pearce of Aurizon dated 12/09/13. Email confirms that locomotives are required to be tested by the rail operator for compliance with noise requirements. Recommend that this is updated to remain contemporary.
Sch 4, Con 23	Recommend this condition is revised to remove at next modification as Correspondence with RMS no longer required as Mount Thorley Warkworth have approval to mine through Wallaby Scrub Road.
Sch 4, Con 24A	Internal inspections and photographs are taken of dirt tracking on the Golden Highway so that compliance with condition can be confirmed in future.
Other	
N/A	The road drain outside the coal stockpile perimeter collection drainage network should be de-silted and monitored to confirm whether the flow direction of the drain is adequate.
N/A	Accumulated sediment should be removed from the 'Gordon Below Franklin' dam where necessary in order to reinstate the design/operating storage capacity.
N/A	AGE made the following recommendations for future groundwater modelling and assessments(see Appendix F): <ul style="list-style-type: none"> • Future groundwater modelling updates/reports need a clear description of the interactions/connectivity of the open cut and underground area and how this is represented in the modelling; • Future groundwater modelling updates/reports should comment on the interaction/connectivity of the open cut and underground areas and whether it is visible in the observational data; and • Future annual groundwater monitoring reviews should comment on the interaction/connectivity of the open cut and underground area and on the degree of match of the predicted versus observed water levels. The predictions, actual and licensing requirements should be included in a tabular format in each Annual Review.
N/A	The status of the single groundwater licence under the <i>Water Management Act 2000</i> should be regularly followed up with DPI-Water.
N/A	Ross Edwards made the following recommendations for future management of the North Wambo Creek Diversion (see Appendix F): <ul style="list-style-type: none"> • The current diversion management and monitoring objectives are contained in several documents. It is recommended these are consolidated into a single management plan for the diversion. It is noted that Wambo is committed to the preparation and implementation of a new Diversion and Rehabilitation Plan; • The diversion management program should be implemented to improve the operation of the diversion; • Ongoing management is required in order to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established; and • Rehabilitation of subsided areas of the diversion is required in accordance with an Extraction Plan (or Subsidence Management Plan), including repairing surface subsidence cracks and undertaking subsidence remediation where necessary in areas where the diversion has been subsided.
N/A	The area in RWEA B is rehabilitated to prevent further damage and reduce risks to the surrounding Central Hunter Grey Box-Ironbark Woodland EEC as per Ecological Australia's recommendations.

Ref	Description
N/A	Subsidence affected sites identified as 'intolerable' by SLR Consulting should be remediated to an acceptable standard as per SLR's recommendations. Photos of completion should be kept within the database along with a report checklist with date and signature demonstrating works were completed.
N/A	It is recommended that the Weed Plan is updated.
N/A	Future Annual Reviews include figures of areas that have been treated for weeds during the annual review period with a focus on <i>Acacia saligna</i> .

* * *

for

HANSEN BAILEY

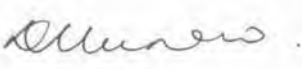


Taylor Jackson
Environmental Scientist



Dianne Munro
Principal

APPENDIX A
DP&E Certification Form

Independent Environmental Audit Submission Form	
Project	
Consent No.:	DA 305-7-2003 (as modified), DA 177-8-2004 (as modified)
Description of Project:	Wambo Coal Mine & Wambo Coal Rail Loop
Project Address:	Jerrys Plains Road, Warkworth NSW 2330
Proponent	Wambo Coal Pty Limited
Proponent Address:	PMB 1 SINGLETON NSW 2330
Independent Audit	
Title of Audit:	Wambo Coal Mine & Rail Loop Independent Environmental Audit
Certificate	<p>I certify that I have prepared the contents of the attached independent audit and to the best of my knowledge:</p> <ul style="list-style-type: none"> • It is in accordance with relevant approval condition(s) • I have acted professionally, accurately and in an unbiased manner in conducting the audit • I am not related to any owner or operator of the project as a spouse, partner, parent, child, sibling, employer, employee, business partner, in sharing a common employer, or in a contractual arrangement outside the audit • I do not have any pecuniary interest in the project, including where there is a reasonable likelihood or expectation of appreciable financial gain or loss to me or to a person to whom I am related • Neither I nor my employer have provided consultancy services for the project that were subject to this audit • I have not accepted, nor intend to accept any inducement, commission, gift or any other benefit (apart from fair payment) from any owner or operator of the project, their employees or any interested party. I have not knowingly allowed, nor intend to allow my colleagues to do so.
Signature:	
Name:	Dianne Munro
Address:	6/127-129 John Street, Singleton NSW 2330
Email Address:	dmunro@hansenbailey.com.au
Auditor Certification (Body, No. Grade):	Auditor (Environmental Scheme) for Environmental Management, EMS and Compliance Audits. RAB/QSA International. No. 107622
Date:	14 September 2018

APPENDIX B
Regulatory Correspondence

Contact: Michael Frankcombe
Phone: 02 65753413
Email: michael.frankcombe@planning.nsw.gov.au
compliance@planning.nsw.gov.au
Our ref: DA 305-7-2003, as modified

Steven Peart
Manager Environment and Community
Wambo Coal
PMB 1
Singleton NSW 2330

**Wambo Coal Pty Ltd – DA 305-7-2003
Independent Environmental Audit Team**

Dear Steven,

Thank you for your letter 14 August 2017 in response to the Departments letter 26 July 2017 regarding the scope and specialist requirements of the proposed audit team to undertake the Independent Environmental Audit (IEA) of Wambo Coal Pty Ltd (WCPL) in accordance with Schedule 6, Condition 7 of DA 305-7-2003.

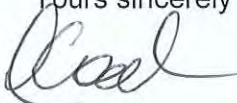
The Department has reviewed the information provided and endorses the revised scope of the IEA and proposed audit team with the following personnel:

- Dianne Munro – Lead Auditor
- Taylor Jackson – Auditor
- Judith Cox – Air
- Mark Bridges – Noise and Blasting
- Ross Edwards – Erosion and Sediment Control, Fluvial Geomorphology
- Daniel Barclay – Hydrogeology

In accordance with Schedule 6, Condition 7 of DA 305-7-2003, the Department expects that the audit report and response to any recommendations contained within this report is submitted to compliance@planning.nsw.gov.au within 12 weeks of commencing the audit (the audit inspection date).

Should you need to discuss the above, please contact Michael Frankcombe as per the details provided above.

Yours sincerely



24/8/17

Leah Cook
Team Leader - Compliance
As Nominee of the Secretary

Steven Peart
Manager Environment and Community
Wambo Coal
PMB 1
Singleton NSW 2330

**Wambo Coal Pty Ltd – DA 305-7-2003
Independent Environmental Audit**

Dear Steven,

Thank you for your letter (24 July 2017) to the Department of Planning and Environment (the Department) requesting endorsement of Hansen Bailey to undertake the Independent Environmental Audit (IEA) of Wambo Coal Pty Ltd (WCPL) and their proposed scope in accordance with Schedule 6, Condition 7 of DA 305-7-2003.

In accordance with Schedule 6, Condition 7 of DA 305-7-2003, the Department endorses the proposed team from Hansen Bailey comprising:

- Dianne Munro - lead auditor
- Taylor Jackson - auditor
- Judith Cox – air quality specialist
- Mark Bridges – acoustic specialist

However, to undertake the IEA the following clarifications and additional requirements are to be provided to the Department for endorsement **prior to commencing the audit**:

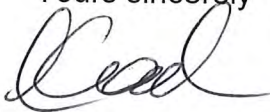
1. The proposed erosion and sediment control specialist shall have demonstrated understanding and experience of:
 - a. The identification, management and mitigation of the erosion and revegetation hazards associated with magnesian, dispersive and saline mine spoils;
 - b. The application and limitations of contemporary erosion and landscape evolution models as they relate to magnesian, dispersive and saline mine spoils; and
 - c. Drainage, erosion and sediment control best management practices appropriate for magnesian, dispersive and saline mine spoils;
2. The Department is concerned about the stability and function of the North Wambo Creek Diversion and requires a fluvial geomorphologist to be included on the audit team to assess geomorphological function of the North Wambo Creek Diversion compared to appropriate undisturbed reference reach sections of North Wambo Creek;
3. The Department is concerned about the potential for hydrological connectivity between the open cuts and the underground mining operations and requires a hydrogeologist to assess this aspect.

The Department expects that the audit will be conducted in accordance with the Independent Audit Guideline, October 2015. A copy of this guideline is available at: <http://www.planning.nsw.gov.au/~media/Files/DPE/Guidelines/independent-audit-guideline-2015-10-23.ashx>

The Department notes that WCPL has consulted with relevant agencies to ascertain any aspects that the agencies wish the audit to address. Please ensure the requirements of the agencies are included in the auditors brief. Evidence of consultation is to be provided in the audit report.

Should you need to discuss the above, please contact Michael Frankcombe as per the details provided above.

Yours sincerely

 27/7/17

Leah Cook
Team Leader - Compliance
As Nominee of the Secretary

Taylor Jackson

To: Dianne Munro
Subject: RE: Wambo - Independent DP&E Audit

From: Crawford, Mary-Anne [<mailto:mcrawford@singleton.nsw.gov.au>]
Sent: Tuesday, September 26, 2017 9:03 AM
To: Dianne Munro <DMunro@hansenbailey.com.au>
Subject: RE: Wambo - Independent DP&E Audit

Hi Dianne

Apologies for not responding earlier. Council have no additional matters for consideration, other than those identified in the relevant condition of consent.

MAC

From: Dianne Munro [<mailto:DMunro@hansenbailey.com.au>]
Sent: Tuesday, 19 September 2017 11:52 AM
To: Crawford, Mary-Anne <mcrawford@singleton.nsw.gov.au>
Subject: Wambo - Independent DP&E Audit

Good morning Mary-Anne,

I trust you are well.

We have been approved by DP&E to conduct the 2017 DP&E Compliance report for Wambo open cut and underground Mine.

As part of condition 7 of DA 305-7-2003, we are required to “... *Include consultation with the relevant agencies; ...*”

As a key regulator, could you please advise if there are any specific areas you wish us to consider and/or advise on during the audit?

We are conducting the site visit over 20 and 21 October. We look forward to any comments that your team may have so that we can address them in our report to DP&E.

Kind Regards,
Dianne.

Dianne Munro
Principal
MEnvLaw BSc

HANSEN BAILEY
Tel: (02) 6575 2003
Fax: (02) 6575 2001
Mobile: 0428 772 566
Email: dmunro@hansenbailey.com.au

APPENDIX C
Audited Documentation

- Hansen Bailey (2015) Wambo Coal Mine & Rail Loop Independent Environmental Audit Report – March 2015
- Department of Mineral Resources (2005) Mining Lease 1572
- Department of Planning & Infrastructure (2013) Wambo Coal Mine (DA 305-7-2003) North Wambo Creek Diversion Stage 3
- Godden Mackay Logan Heritage Consultants (2012) Wambo Homestead Complex Conservation Management Plan Review
- Multiskilled Resources Australia (2017) Wambo Coal – External Lighting Audit
- Resource Strategies (2003) Wambo Development Project Environmental Impact Statement
- Resource Strategies (2004) Wambo Rail Development Statement of Environmental Effects
- Resource Strategies (2006) Wambo Coal Mine Modification, Statement of Environmental Effects
- Resource Strategies (2009) Wambo Coal Mine Statement of Environmental Effects on Proposed Modification
- Resource Strategies (2009) Wambo Coal Mine Statement of Environmental Effects on Proposed Modification
- Resource Strategies (2009) Wambo Coal Mine Modification Statement of Environmental Effects
- Resource Strategies (2012) North Wambo Underground Mine Modification, Environmental Assessment for the Modification of DA 305-7-2003 (Mod 13) the Additional of North Wambo Underground Mine Longwalls 9 and 10
- Resource Strategies (2013) Wambo Montrose Water Storage Modification Environmental Assessment
- Resource Strategies (2014) North Wambo Underground Mine Longwall 10A Modification (Mod 14)
- Resource Strategies (2015) North Wambo Underground Mine Longwalls 14 to 16 Modification (Mod 15)
- WCPL (2016) Erosion and Sediment Control Plan
- WCPL (2014) Flora and Fauna Management Plan
- WCPL (2015) Groundwater Monitoring Program
- WCPL (2017) Mining Operations Plan Amendment F, 2015-2020 – May 2017
- WCPL (2010) Modification Application D 305-7-2003 MOD 9

- WCPL (2015) Surface and Groundwater Response Plan
- WCPL (2015) Surface Water Monitoring Program
- WCPL (2016) Annual Environmental Management Report 2014 – 2015
- WCPL (2017) Annual Environmental Management Report 2015 – 2016
- WCPL (2016) Pollution Incident Response Management Plan (PIRMP)
- WCPL (2013) Bushfire Management Plan
- WCPL (2009) Environmental Management Strategy
- WCPL (2016) Montrose Sediment Dam Failure Incident Report
- WCPL (2014) Air Quality and Greenhouse Gas Management Plan
- WCPL (2017) Blast Management Plan
- WCPL (2015) Blast Flume Strategy Management Plan
- WCPL (2015) Site Water Balance
- WCPL (2017) Community Complaints Register (2014 – August 2017)
- WCPL (2015) Open Cut Induction
- WCPL (2015) Environment Protection Licence 529 Annual Returns (2012-13, 2013-14, 2015)
- WCPL (2017) Monthly Environmental Monitoring Reports (2013 – August 2017)
- WCPL (2014) Noise Management Plan
- WCPL (2015) North Wambo Underground Mine Extraction Plan, Longwalls 8 to 10A
- WCPL (2015) South Bates Underground Mine Extraction Plan, Longwalls 11 to 13
- WCPL (2017) South Bates Underground Mine Extraction Plan, Longwalls 11 to 16
- WCPL (2014) Quarterly Attended Noise Monitoring Reporting (2013 – August 2017)
- WCPL (2017) Reportable Environmental Incidents Register (2015 – 2016)
- WCPL (2014) Life of Mine Rejects Emplacement Strategy

APPENDIX D
Development Consent Compliance Tables

Table D1

**DA 305-7-2003 Conditions of Approval
For Audit Period 1 November 2014 to 31 August 2017**

Key

- Blue type represents 2004 modification
- Red type represents May 2005 modification
- Green represents January 2006 modification
- Pink represents April 2006 Modification
- Orange represents October 2006 Modification
- Violet represents January 2007 Modification
- Brown represents June 2009 Modification
- Lime represents August 2009 Modification
- Blue with yellow background represents February 2011 Modification
- Taupe represents January 2013 Modification
- Light Blue represents July 2013 Modification
- Blue with grey background represents April 2015 Modification
- Purple represents October 2015 Modification
- Maroon represents October 2016 Modification

Sch	Con	Requirement	Status	Comments
		Obligation to Minimise Harm to the Environment		
3	1	The Applicant shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.	Not compliant	Some non-compliances against conditions of consent and EPL as described below.
		Terms of Approval		
3	2	The Applicant shall carry out the development generally in accordance with the: (a) DA 305-7-2003; (b) EIS titled Wambo Development Project, volumes 1-5, dated July 2003, and prepared by Resource Strategies Pty. Ltd.;	Compliant	Mining operations, equipment and employment during the audit period were undertaken generally in accordance with the documents referred to under this condition.

Sch	Con	Requirement	Status	Comments
		<p>(c) letter from Holmes Air Sciences to the Department, dated 3 September 2003, and titled Wambo Development Project - Response Air Quality Assessment;</p> <p>(d) letter from Wambo Coal Pty. Ltd. to the Department, dated 24 October 2003, and titled Wambo Development Project – Development Application Amendment (DA 305-7-2003-i);</p> <p>(e) Statement of Environmental Effects titled Wambo Development project – Wambo Seam Underground Mine Modification, dated January 2005, and prepared by Wambo Coal Pty Ltd;</p> <p>(f) document titled Wambo Development Project – Modification of DA 305-7-2003-I, dated 24 October 2005;</p> <p>(g) document titled Wambo Development Project – Modification of DA 305-7-2003-I; dated 23 January 2006;</p> <p>(h) document titled Wambo Development Project – Modification of DA 305-7-2003-I; dated 27 July 2006;</p> <p>(i) document titled Wambo Coal Mine Modification Statement of Environmental Effects; dated September 2006;</p> <p>(j) document titled Wambo Coal Mine Statement of Environmental Effects on Proposed Modification, dated March 2009;</p> <p>(k) document titled Wambo Coal Mine Modification Statement of Environmental Effects, dated June 2009 and the response to submissions dated July 2009;</p> <p>(l) the modification application DA 305-7-2003 MOD 9 and accompanying letter prepared by Wambo Coal Pty Ltd; and (m) conditions of this consent.</p> <p>(m) the modification application DA 305-7-2003 MOD 11 and accompanying documents titled <i>Wambo Montrose Water Storage Modification Environmental Assessment</i> dated June</p>		<p>The following supporting documents were relevant during the audit period: a-d and o-r. Additional documents reviewed in the audit are in Appendix C.</p>

Sch	Con	Requirement	Status	Comments
		<p>2012 and Wambo Montrose Water Storage Modification Response to Submissions dated 4 September 2012;</p> <p>(n) the modification application DA 305-7-2003 MOD 13 and accompanying documents entitled <i>North Wambo Mine Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwalls 9 and 10</i> dated December 2012 and <i>North Wambo Underground Mine Modification - Response to Submissions</i> dated April 2013;</p> <p>(o) the modification application DA 305-7-2003 MOD 14 and accompanying documents entitled <i>North Wambo Underground Mine Longwall 10A Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwall 10A</i>, dated September 2014, and associated <i>Response to Submissions</i> dated December 2014; and</p> <p>(p) the modification application DA 305-7-2003 MOD 15 and accompanying documents entitled <i>South Bates (Wambo Seam) Underground Mine Modification Environmental Assessment – The addition of South Bates (Wambo Seam) Underground Mine Longwalls 14 to 16</i>, dated August 2015, and associated <i>Response to Submissions</i> dated September 2015 and letter from Peabody Energy to the Department titled <i>Modification 15 to DA 305-7-2003 – Supplementary Request to Include Revised Portal Location</i>, dated 2 November 2015;</p> <p>(q) the modification application DA 305-7-2003 MOD 12 and accompanying documents entitled <i>South Wambo Underground Mine Modification Environmental Assessment</i>, dated April 2016, associated <i>Response to Submissions</i> dated June 2016 and letter from Peabody Energy to the Department titled <i>Modification 12 to DA 305-7-2003 – Request to Revise First Workings Layout</i>, dated 13 July 2016; and</p>		

Sch	Con	Requirement	Status	Comments
		(r) Approved Layout, shown in Appendix 5. <i>Note: With the approval of the Secretary, longwall panels may be shortened or narrowed, providing that the proposed variations do not result in increased subsidence impacts or environmental consequences.</i>		
3	2A	The Applicant shall carry out the development in accordance with the conditions of this consent	Not Compliant	Some non-compliances identified as per this table.
3	3	If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.	Not triggered	No inconsistencies noted in the audit period (HE pers comm).
3	4	The Applicant must comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent (including any stages of these documents); (b) any reviews, reports or audits commissioned by the Department regarding compliance with this consent; and (c) the implementation of any actions or measures contained in these documents.	Not triggered	No additional requirements in relation to management plans below.
		Deferred Commencement		
3	5	<i>This consent shall only commence when the Applicant has surrendered all previous development consents for the Wambo coal mine, excluding DA No. 108/91 issued by Singleton Shire Council, to the satisfaction of the Secretary</i>	Compliant	Compliance confirmed in 2011 audit. Previous audit confirmed development consents surrendered 14/11/05.
		Limits on Approval		
3	6	The Applicant may carry out mining operations at the Wambo Mining Complex until 1 March 2025. <i>Note: Under this consent, the Applicant is required to rehabilitate the site and carry out additional undertakings to the satisfaction of both the Secretary and the Executive Director Mineral Resources. Consequently,</i>	Not triggered	Cessation date not yet reached.

Sch	Con	Requirement	Status	Comments
		<i>this consent will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and those additional undertakings have been carried out satisfactorily.</i>		
3	7	The Applicant must not extract more than 14.7 million tonnes of ROM coal a year from the development.	Compliant	Viewed ROM coal extraction volumes reported in 2015 and 2016 Annual Reviews (S3.1 Table 6 & 5 respectively): <ul style="list-style-type: none"> • 2014: 9.6 Mt • 2015: 9.2 Mt • 2016: 9.4 Mt • 2017 (forecast): 9.4 Mt
		Staged Submission of any Strategy, Plan or Program		
3	7A	With the approval of the Secretary , the Applicant may: <p>(a) submit any strategy, plan or program required by this consent on a progressive basis; and</p> <p>(b) combine any strategy, plan or program required by this consent with any similar strategy, plan or program required under DA 177-8-2004.</p> <p><i>Notes:</i></p> <p><i>While any strategy, plan or program may be submitted on a progressive basis, the Applicant will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and</i></p> <p><i>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 to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.</i></p>	Not triggered	Not requested (HE pers comms)
3	7B	With the agreement of the Secretary, the Applicant may prepare a revision of a stage of a strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition of consent.	Not Compliant	Examples below of consultation not being conducted with other regulators. Recommend formal request to DPE be made in future if consultation not intended to be conducted with some/any regulators.

Sch	Con	Requirement	Status	Comments
		Structural Adequacy		
3	8	<p>The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.</p> <p><i>Notes:</i> Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works. Part 8 of the EP&A Regulation sets out the requirements for the certification of development. The development is located in the Patrick Plains Mine Subsidence District. Under section 15 of the Mine Subsidence Compensation Act 1961, the Applicant is required to obtain the Mine Subsidence Board's approval before constructing or relocating any improvements on the site</p>	Not triggered	No new buildings or structures in period (HE pers comms). Viewed South Bates Infrastructure aerial dated 26/09/2017 confirming no new buildings or structures.
		Demolition		
3	9	<p>The Applicant must ensure that all demolition work is carried out in accordance with AS 2601-2001: <i>The Demolition of Structures</i>, or its latest version.</p>	Not triggered	No demolition undertaken during audit period (HR pers comms). No demolition works reported in the 2015 and 2016 Annual Reviews.
		Operation of Plant and Equipment		
3	10	<p>The Applicant must ensure that all plant and equipment used at the site, or to transport coal off-site, are:</p> <p>(a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner</p>	Not Compliant	<p>SP (pers comm) confirmed schedule of maintenance for site equipment fleet and training packages in place for operators.</p> <p>The site inspection on 20/09/17 revealed water carts on site and no excessive dust from haul roads.</p> <p>Viewed work order for CAT793 – 20 June 2016.</p> <p>Excavator R996 dated 19 July 2016.</p> <p>Equipment fleet is not attenuated but continually monitored for noise and shut down when necessary (see further at Schedule 4 Condition 8).</p> <p>Stream flow monitoring equipment failure. FM5 was destroyed during a flood event and replaced in December</p>

Sch	Con	Requirement	Status	Comments								
				2016 (now FM15). FM6 was relocated in December 2016 (now FM16). Reported as non-compliance against EPL 529 Con M7. Recommend equipment is inspected regularly and replaced/repared as required.								
		Section 94 Contribution										
3	11	Deleted	N/A	N/A								
		Community Enhancement Contribution										
3	12	Deleted	N/A	N/A								
		ACQUISITION UPON REQUEST										
4	1	<p>Upon receiving a written request for acquisition from the landowner of the land listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in conditions 9-11 of schedule 5:</p> <table border="1"> <tbody> <tr> <td>2 – Lambkin</td> <td>23A & B - Kannar</td> </tr> <tr> <td>13C - Skinner</td> <td>31A,B,C & D - Fisher</td> </tr> <tr> <td>19A & B – Kelly</td> <td>51 – Hawkes</td> </tr> <tr> <td>22 – Henderson</td> <td>56 - Haynes</td> </tr> </tbody> </table> <p><i>Table 1: Land subject to acquisition upon request</i></p> <p><i>Note: For more information on the numbering and identification of properties used in this consent, see Attachment 1 of the EIS for the Wambo Development Project. Lands titled 23A & B – Kannar, 31A,B,C & D – Fisher, 51 – Hawkes and 56 – Haynes have been acquired and are now mine-owned.</i></p>	2 – Lambkin	23A & B - Kannar	13C - Skinner	31A,B,C & D - Fisher	19A & B – Kelly	51 – Hawkes	22 – Henderson	56 - Haynes	Not triggered	No requests received (HE pers comms).
2 – Lambkin	23A & B - Kannar											
13C - Skinner	31A,B,C & D - Fisher											
19A & B – Kelly	51 – Hawkes											
22 – Henderson	56 - Haynes											

Sch	Con	Requirement	Status	Comments									
		AIR QUALITY											
		Odour											
4	2	The Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the Wambo Mining Complex.	Compliant	It is noted that the recommended action from the 2014 Audit to provide regular training on this issue with relevant personnel to ensure pre-blast checks are undertaken has been adopted. However, the evidence provided fell outside the audit period.									
		Greenhouse Gas Emissions											
4	3	The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the Wambo Mining Complex to the satisfaction of the Secretary .	Compliant	Section 6 of the approved AQGGMP (2014) (AQGGMP) describes management controls. Confirmed that other measures in place to minimise emissions from equipment fleet (i.e. low emissions diesel, vehicle maintenance program). The recommendation from the 2014 audit to include comment in the Annual Review has been adopted and contained in Section 5.4 of the 2015 and 2016 Annual Reviews. (JC, 2017)									
		Air Quality Criteria											
4	4	<p>Except for the air quality affected land in Table 1, the Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the Wambo Mining Complex do not exceed the criteria listed in Tables 2, 3 and 4 at any residence on privately owned land, or on more than 25 percent of any privately owned land.</p> <p><i>Table 2: Long term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>d Criter</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>a 90 µg/</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>a 30 µg/</td> </tr> </tbody> </table> <p><i>Table 3: Short term impact assessment criterion for particulate matter</i></p>	Pollutant	Averaging period	d Criter	Total suspended particulate (TSP) matter	Annual	a 90 µg/	Particulate matter < 10 µm (PM10)	Annual	a 30 µg/	Compliant	<p>Viewed copy of approved AQGGMP dated February 2014.</p> <p>Best practice proactive and reactive management measures for air impacts were observed at site.</p> <p>Cameras in use clearly showed minimal dust generation and active use of water carts (JC, 2017).</p> <p>Viewed WeatherZone predictive meteorological forecast, alerts of adverse conditions to environmental and operational staff.</p> <p>TARPs in place to respond to adverse conditions.</p>
Pollutant	Averaging period	d Criter											
Total suspended particulate (TSP) matter	Annual	a 90 µg/											
Particulate matter < 10 µm (PM10)	Annual	a 30 µg/											

Sch	Con	Requirement	Status	Comments														
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Pollutant	Averaging period	D Criterion																
Particulate matter < 10 µm (PM10)	24 our	a 50 µg/m3																
Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum deposited dust															
c Deposited dust	Annual	b 2 g/m ² /mon h	a 4 g/															
		Air Quality Acquisition Criteria																
4	5	If particulate matter emissions generated by the Wambo Mining Complex exceed the criteria in Tables 5, 6, and 7 at any residence on privately-owned land, or on more than 25 percent of any privately owned land, then	Not triggered	No exceedances of acquisition criteria during the audit period. (JC, 2017)														

Sch	Con	Requirement	Status	Comments																										
		<p>upon written request for acquisition from the landowner, the Applicant shall acquire the land in accordance with the procedures in conditions 9 - 11 of schedule 5.</p> <p><i>Table 5: Long term land acquisition criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>a 90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>a 30 µg/m³</td> </tr> </tbody> </table> <p><i>Table 6: Short term land acquisition criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>da Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>24 hour</td> <td>a 150 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>4 hour</td> <td>b 50 µg/m³</td> </tr> </tbody> </table> <p><i>Table 7: Long term land acquisition criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase² in deposited dust level</th> <th>Maximum dust level</th> </tr> </thead> <tbody> <tr> <td>c Deposited dust</td> <td>Annual</td> <td>b 2 g/m²/mo h</td> <td>a 4 g/m²/m</td> </tr> </tbody> </table> <p><i>Notes to Tables 5-7</i></p> <p>a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);</p> <p>b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);</p> <p>c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and</p>	Pollutant	Averaging period	d Criterion	Total suspended particulate (TSP) matter	Annual	a 90 µg/m ³	Particulate matter < 10 µm (PM10)	Annual	a 30 µg/m ³	Pollutant	Averaging period	da Criterion	Particulate matter < 10 µm (PM10)	24 hour	a 150 µg/m ³	Particulate matter < 10 µm (PM10)	4 hour	b 50 µg/m ³	Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum dust level	c Deposited dust	Annual	b 2 g/m ² /mo h	a 4 g/m ² /m		
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Sch	Con	Requirement	Status	Comments
		<i>d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.</i>		
		Mine-owned Land		
4	5A	The Applicant shall ensure that particulate matter emissions generated by the Wambo Mining Complex do not exceed the criteria listed in Tables 2, 3 and 4 at any occupied residence on any mine-owned land (including land owned by adjacent mines) unless: (a) the tenant and landowner has been notified of health risks in accordance with the notification requirements under schedule 5 of this consent; (b) the tenant on land owned by the Applicant can terminate their tenancy agreement without penalty, subject to giving reasonable notice, and the Applicant uses its best endeavours to provide assistance with relocation and sourcing of alternative accommodation; (c) air mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning) are installed at the residence, if requested by the tenant and landowner (where owned by another mine other than the Applicant); (d) particulate matter air quality monitoring is undertaken to inform the tenant and landowner of potential health risks; and (e) monitoring data is presented to the tenant in an appropriate format, for a medical practitioner to assist the tenant in making an informed decision on the health risks associated with occupying the property, to the satisfaction of the Secretary.	Not triggered	No exceedances of air quality criteria occurred at residences on mine-owned land. (JC, 2017)
		Air Quality Operating Conditions		
4	5B	The Applicant shall: 10 (a) implement best management practice to minimise the off-site odour, fume and dust emissions from the Wambo Mining Complex, including	Compliant	(a) See response to Schedule 4, Condition 2 above on management procedures and best practice management measures.

Sch	Con	Requirement	Status	Comments
		<p>best practice coal loading and profiling and other measures to minimise dust emissions from coal transportation by rail;</p> <p>(b) operate a comprehensive air quality management system at the Wambo Mining Complex that uses a combination of predictive meteorological forecasting, predictive and real-time air dispersion modelling and real-time air quality monitoring data to guide the day to day planning of mining operations and implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent;</p> <p>(c) manage PM2.5 levels in accordance with any requirements of any EPL;</p> <p>(d) minimise the air quality impacts of the Wambo Mining Complex during adverse meteorological conditions and extraordinary events (see noted above under Tables 5-7);</p> <p>(e) minimise any visible off-site air pollution;</p> <p>(f) minimise the surface disturbance of the site generated by the Wambo Mining Complex; and</p> <p>(g) co-ordinate air quality management at the Wambo Mining Complex with the air quality management at nearby mines (HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative air quality impacts of these mines and the Wambo Mining Complex, to the satisfaction of the Secretary.</p>		<p>Confirmed dust minimisation controls and coal profiling at Train Loading Facility.</p> <p>(b) Viewed predictive 'WeatherZone' system in use on site for air noise and blast impacts and outputs for each. This system is used as an operational tool to in combination with the real-time Sentinex monitoring network.</p> <p>(c) Confirmed that the Singleton UHAQMN site is deemed representative of WCPL for 24-hour PM2.5. This is noted in Section 7.3 of the approved AQGGMP.</p> <p>(d) Section 5 of the approved AQGGMP. Confirmed process of reviewing visible dust emissions (both on site and from off-site) and modifying operations in specific areas if required. Viewing on camera showed water carts in operation and dust controls in place for equipment and haul roads in active mining areas.</p> <p>(f) Viewed the WCPL Surface Disturbance Permit, required to be completed prior to any clearance work on site. Environmental signoff of the permit is required. (JC, 2017)</p>
		Air Quality and Greenhouse Gas Management Plan		
4	5C	<p>The Applicant shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval by the end of June 2013;</p> <p>(b) describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> • best management practice is being employed; 	Compliant	<p>A review of the AQGGMP was undertaken by PEL (see Appendix F). See Schedule 4, Conditions 3 and 4 for evidence that the AQGGMP has been implemented.</p> <p>(a) Viewed approval letter from DP&E dated 27/03/14 approving plan. Viewed letter to DP&E for Revision 5 dated 27/10/16.</p> <p>(b) Section 5, Table 14 of approved AQGGMP</p>

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> • the air quality impacts of the Wambo Mining Complex are minimised during adverse meteorological conditions and extraordinary events; and • compliance with the relevant conditions of this consent. <p>(c) describe the proposed air quality management system; (d) include a risk/response matrix to codify mine operational responses to varying levels of risk resulting from weather conditions and specific mining activities; (e) include commitments to provide summary reports and specific briefings at CCC meetings on issues arising from air quality monitoring; (f) include an air quality monitoring program that:</p> <ul style="list-style-type: none"> • uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development; • adequately supports the proactive and reactive air quality management system; • includes PM2.5 monitoring; • includes monitoring of occupied development-related residences and residences on air quality-affected land listed in Table 1, subject to the agreement of the tenant; • evaluates and reports on the effectiveness of the air quality management system; and • includes a protocol for determining any exceedances of the relevant conditions in this consent; and <p>(g) include a protocol that has been prepared in consultation with the owners of nearby mines (HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative air quality impacts of these mines and the Wambo Mining Complex.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>		<p>(c) Sections 5 -6 of the approved AQGGMP (d) Section 8.3.2 of the approved AQGGMP (e) Section 11.5 of the approved AQGGMP (e) Sections 7, 11.7 of the approved AQGGMP (f) Section 7.2.6 of the approved AQGGMP. Monitoring network inspected and reviewed by PEL (see Appendix F). (g) Also viewed updated draft AQGGMP (Version 5 dated 24 August 2017) submitted to EPA for comment.</p>
		1NOISE		

Sch	Con	Requirement	Status	Comments																																								
4	6	<p>Noise Impact Assessment Criteria</p> <p>The Applicant must ensure that the noise generated by the development does not exceed the noise impact assessment criteria presented in Table 9.</p> <table border="1"> <thead> <tr> <th>Day L_{Aeq}(15 minute)</th> <th>Evening/ Night L_{Aeq}(51minute)</th> <th>Night L_{A1}(1 minute)</th> <th>Land Number</th> </tr> </thead> <tbody> <tr> <td>35</td> <td>41</td> <td>50</td> <td>94 – Curlewis</td> </tr> <tr> <td rowspan="10">35</td> <td rowspan="10">40</td> <td rowspan="10">50</td> <td>3 – Birrell</td> </tr> <tr> <td>4B – Circosta</td> </tr> <tr> <td>15B - McGowen/Caslick</td> </tr> <tr> <td>16 – Cooper</td> </tr> <tr> <td>23C – Kannar</td> </tr> <tr> <td>25 – Fenwick</td> </tr> <tr> <td>28A & B – Garland</td> </tr> <tr> <td>33 -Thelander/O'Neill</td> </tr> <tr> <td>39 – Northcote</td> </tr> <tr> <td>40 – Muller</td> </tr> <tr> <td>254A – Algie</td> </tr> <tr> <td rowspan="4">35</td> <td rowspan="4">39</td> <td rowspan="4">50</td> <td>5 – Strachan</td> </tr> <tr> <td>6 - Merrick</td> </tr> <tr> <td>7 - Maizey</td> </tr> <tr> <td>37 - Lawry</td> </tr> <tr> <td rowspan="4"></td> <td rowspan="4"></td> <td rowspan="4"></td> <td>48 - Ponder</td> </tr> <tr> <td>1 - Brosi</td> </tr> <tr> <td>17 - Carter</td> </tr> <tr> <td>18 - Denney</td> </tr> <tr> <td></td> <td></td> <td></td> <td>38 - Williams</td> </tr> </tbody> </table>	Day L _{Aeq} (15 minute)	Evening/ Night L _{Aeq} (51minute)	Night L _{A1} (1 minute)	Land Number	35	41	50	94 – Curlewis	35	40	50	3 – Birrell	4B – Circosta	15B - McGowen/Caslick	16 – Cooper	23C – Kannar	25 – Fenwick	28A & B – Garland	33 -Thelander/O'Neill	39 – Northcote	40 – Muller	254A – Algie	35	39	50	5 – Strachan	6 - Merrick	7 - Maizey	37 - Lawry				48 - Ponder	1 - Brosi	17 - Carter	18 - Denney				38 - Williams	Not compliant	<p>Attended noise monitoring results were reviewed. Minor (1 dBA) exceedances of the noise limits occurred on two occasions (June and August 2017) at N16 Muller, however the minor exceedances were not sustained and were within the 2 dB tolerance recommended in Section 11.1.3 of the INP. The two minor exceedances did not coincide with noise-related complaints. Both incidents were self -reported.</p> <p>Noise monitoring locations N01 and N03 have been reassessed and relocated in the revised noise management plan prepared at the end of the audit period. The revised monitoring locations are considered appropriate. (MB, 2017)</p>
Day L _{Aeq} (15 minute)	Evening/ Night L _{Aeq} (51minute)	Night L _{A1} (1 minute)	Land Number																																									
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Sch	Con	Requirement				Status	Comments
		35	38	50	49 - Oliver 63 - Abrocuff 75 - Barnes 91 - Bailey		
		35	37	50	27 - Birralee 43 - Carmody 137 - Woodruff 163 - Rodger/Williams 246 - Bailey		
		35	36	50	13B - Skinner 178 - Smith 188 - Fuller 262A, B & C - Moses		
		35	35	50	All other residential or sensitive receptors, excluding the receptors listed in condition 1 above		
<p><i>Table 9: Noise impact assessment criteria dB(A)</i> Notes: Noise generated by the Wambo Mining Complex is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy</p>							
		Land Acquisition Criteria					
4	7	If the noise generated by the Wambo Mining Complex exceeds the criteria in Table 10, the Applicant must , upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 9-11 of schedule 5.				Not triggered	No exceedances of the land acquisition noise criteria in this condition occurred during the audit period. (MB, 2017)
		Day/Evening	Property				

Sch	Con	Requirement	Status	Comments						
		<table border="1"> <tr> <td>/Night L_{Aeq}(15 minute)</td> <td></td> </tr> <tr> <td>43</td> <td>94 - Curlewis 23C – Kannar 254A - Algie</td> </tr> <tr> <td>40</td> <td>All other residential or sensitive receptor, excluding the receptors listed in condition 1 above</td> </tr> </table> <p>Table 10: Land acquisition criteria dB(A) Note: Noise generated by the Wambo Mining Complex is to be measured in accordance with the notes presented below Table 9 above. <i>Property 23C – Kannar has been acquired and is now mine-owned.</i></p>	/Night L _{Aeq} (15 minute)		43	94 - Curlewis 23C – Kannar 254A - Algie	40	All other residential or sensitive receptor, excluding the receptors listed in condition 1 above		
/Night L _{Aeq} (15 minute)										
43	94 - Curlewis 23C – Kannar 254A - Algie									
40	All other residential or sensitive receptor, excluding the receptors listed in condition 1 above									
		Operating Conditions								
4	8	<p>The Applicant must:</p> <p>(a) implement best management practice to minimise the operational, low frequency and traffic noise of the Wambo Mining Complex;</p> <p>(b) operate a comprehensive noise management system for the Wambo Mining Complex that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide the day to day planning of mining operations and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this consent;</p> <p>(c) maintain the effectiveness of noise suppression equipment (if fitted) on plant at all times and ensure defective plant is not used operationally until fully repaired;</p> <p>(d) ensure that noise attenuated plant (if used) is deployed preferentially in locations relevant to sensitive receivers;</p>	Not compliant	<p>(a) SP and HE described Wambo’s active noise monitoring and management measures, resulting in intermittent interruptions to mining activity, that have been in place during the audit period and have resulted in substantial compliance with noise criteria (except for two minor 1 dBA exceedances at one monitoring location in June and August 2017). There is no evidence for low frequency or traffic noise impacts at any receptor.</p> <p>(b) Meteorological forecasts and real time noise monitoring system results were viewed. SP and HE described the proactive and reactive systems in place to manage noise to comply with relevant criteria.</p> <p>(c) No noise suppression systems are fitted so maintenance of such systems is not required.</p>						

Sch	Con	Requirement	Status	Comments
		<p>(e) minimise the noise impacts of the Wambo Mining Complex during meteorological conditions when the noise limits in this consent do not apply;</p> <p>(f) co-ordinate the noise management for the Wambo Mining Complex with the noise management at nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative noise impacts of these mines and the Wambo Mining Complex, to the satisfaction of the Secretary.</p>		<p>(d) SP and HE presented examples of some mining equipment producing lower noise levels than others being preferentially used in more exposed areas of the mine.</p> <p>(e) SP explained active noise monitoring and management occurs under all weather conditions, not just the conditions specified in the consent, requiring intermittent interruptions to production under such conditions.</p> <p>(f) Active noise management responds to noise from other nearby mines as well as from Wambo, therefore active coordination with the operators of nearby mines is not required to ensure compliance. However, formal coordination with nearby mines as required by this condition does not occur and an agreed protocol does not exist. Recommend that documented coordination with nearby mines and an agreed protocol is developed to manage cumulative noise impacts to the satisfaction of the Secretary.</p>
		Noise Management Plan		
4	9	<p>The Applicant must prepare and implement a Noise Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval by the end of June 2013;</p> <p>(b) describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> • best management practice is being employed; • the noise impacts of the Wambo Mining Complex are minimised during meteorological conditions when the noise limits in this consent do not apply; and • compliance with the relevant conditions of this consent; <p>(c) describe the proposed noise management system in detail;</p>	Not Compliant	<p>A review of the NMP was undertaken by Bridges Acoustics (see Appendix F). See Schedule 4, Condition 8 which confirmed that the NMP has been implemented.</p> <p>(a) Viewed approval letter from DP&E dated 27/3/14. Version 7 submitted to EPA on 11/09/2017 (not approved).</p> <p>(b) Mentioned in Sections 3.3 and 8 of the NMP. More detail is provided in the revised NMP prepared for the next audit period.</p> <p>(c) Mentioned in Sections 3.3 and 8 of the NMP. More detail is provided in the revised NMP prepared for the next audit period.</p>

Sch	Con	Requirement	Status	Comments																				
		<p>(d) include a monitoring program that:</p> <ul style="list-style-type: none"> uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the Wambo Mining Complex; adequately supports the proactive and reactive noise management system for the Wambo Mining Complex; includes a protocol for determining exceedances of the relevant conditions in this consent; evaluates and reports on the effectiveness of the noise management system for the Wambo Mining Complex; provides for the annual validation of the noise model for the Wambo Mining Complex; and <p>(e) include a protocol that has been prepared in consultation with the owners of nearby mines (including HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative noise impacts of these mines and the Wambo Mining Complex.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>		<p>(d) Requirements are covered by the NMP and the Annual Reviews during the audit period. "There is evidence to show Wambo Mine's response to noise and blasting related complaints is appropriate" (MB, 2017).</p> <p>(e) Section 6 of the NMP states potential exceedances of cumulative noise criteria will be reported to operators of nearby mines, however a formal protocol required by this condition has not been prepared. (MB, 2017) Recommend that documented coordination with nearby mines and an agreed protocol is developed to manage cumulative noise impacts to the satisfaction of the Secretary.</p>																				
		²METEROLOGICAL MONITORING																						
4	10	<p>Applicant must establish a permanent meteorological station at a location approved by the DECCW, and to the satisfaction of the Secretary, to monitor the parameters specified in Table 11, using the specified units of measure, averaging period, frequency, and sampling method in the table.</p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Units</th> <th>Averaging period</th> <th>Frequency</th> <th>Sampling method¹</th> </tr> </thead> <tbody> <tr> <td>Lapse rate</td> <td>°C /100m</td> <td>1 hour</td> <td>Continuous</td> <td>Note²</td> </tr> <tr> <td>Rainfall</td> <td>mm/hr</td> <td>1 hour</td> <td>Continuous</td> <td>AM-4</td> </tr> <tr> <td>Sigma Theta</td> <td>°</td> <td>1 hour</td> <td>Continuous</td> <td>AM-2</td> </tr> </tbody> </table>	Parameter	Units	Averaging period	Frequency	Sampling method ¹	Lapse rate	°C /100m	1 hour	Continuous	Note ²	Rainfall	mm/hr	1 hour	Continuous	AM-4	Sigma Theta	°	1 hour	Continuous	AM-2	Compliant	<p>Viewed Novecom siting report dated 19/12/16 confirming installed sensors (wind speed & direction, temperature @10m, humidity and rainfall) are operating within parameters listed in the Australian Standard (AS3580.14-2011). Whilst this only shows one temperature sensor and no solar radiation sensor, as this was a new installation, all equipment would have been under factory-warranted calibration. In addition, a calibration report from Sentinex, dated 4 September 2017 (outside this audit period) has been observed and confirms all equipment required are installed and operating correctly.</p>
Parameter	Units	Averaging period	Frequency	Sampling method ¹																				
Lapse rate	°C /100m	1 hour	Continuous	Note ²																				
Rainfall	mm/hr	1 hour	Continuous	AM-4																				
Sigma Theta	°	1 hour	Continuous	AM-2																				

Sch	Con	Requirement					Status	Comments				
		@ 10 m						<p>As station has not been in place for 12 months, no maintenance reports are available.</p> <p>Maintenance reports and data for period prior to installation of new station were observed (letters from AECOM dated 10 June 2015 for six monthly audit on 21 & 22 May 2015 and dated 19 February 2016 for six monthly audit on 30 November 2015)</p>				
		Siting	-	-	-	AM-1						
		Temp @ 10 m	K	1 hour	Continuous	AM-4						
		Temp @ 2 m	K	1 hour	Continuous	AM-4						
		Total Solar Radiation @ 10m	W/m ²	1 hour	Continuous	AM-4						
		Wind Direction @ 10 m	°	1 hour	Continuous	AM-2						
		Wind Speed @ 10 m	m/s	1 hour	Continuous	AM-2						
<p><i>Table 11: Meteorological monitoring</i></p>												
		³BLASTING & VIBRATION										
		Airblast Overpressure Limits										
4	11	<p>The Applicant must ensure that the airblast overpressure level from blasting at the Wambo Mining Complex does not exceed the criteria in Table 12 at any residence on privately-owned land with the exception of property 13C (Skinner) (see condition 20 below).</p> <table border="1"> <thead> <tr> <th>Airblast overpressure level (dB(Lin Peak))</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <tr> <td>115</td> <td>5% of the total number of blasts over a period of 12 months</td> </tr> </tbody> </table>					Airblast overpressure level (dB(Lin Peak))	Allowable exceedance	115	5% of the total number of blasts over a period of 12 months	Compliant	<p>A review of blast monitoring results has been carried out, with acceptable results subject to the following comments. Monitoring results for the period 23/2/2017 to 29/3/2017 were reported incorrectly (overpressure and vibration levels were swapped in the results table).</p> <p>Two overpressure levels over 115 dBA were noted in May 2017 at Muller, however both were within 120 dBA which complies with the criteria.</p> <p>Recommendation: Wambo staff investigate a likely calibration error for the overpressure microphone on the Thelander blast monitor, which developed in</p>
Airblast overpressure level (dB(Lin Peak))	Allowable exceedance											
115	5% of the total number of blasts over a period of 12 months											

Sch	Con	Requirement	Status	Comments						
		<table border="1"> <tr> <td>120</td> <td>0%</td> </tr> </table> <p><i>Table 12: Airblast overpressure impact assessment criteria</i></p>	120	0%		<p>August 2017 after the last calibration check in July 2017. (MB, 2017) WCPL completed this after the site visit and prior to the completion of this report.</p>				
120	0%									
		Ground Vibration Impact Assessment Criteria								
4	12	<p>The Applicant must ensure that the ground vibration level from blasting at the Wambo Mining Complex does not exceed the criteria in Table 13 at any residence on privately-owned land with the exception of property 13C (Skinner) (see condition 20 below).</p> <table border="1"> <thead> <tr> <th>Peak particle velocity (mm/s)</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>5% of the total number of blasts over a period of 12 months</td> </tr> <tr> <td>10</td> <td>0%</td> </tr> </tbody> </table> <p><i>Table 13: Ground vibration impact assessment criteria</i></p>	Peak particle velocity (mm/s)	Allowable exceedance	5	5% of the total number of blasts over a period of 12 months	10	0%	Compliant	<p>A review of blast monitoring results has been carried out, with acceptable results subject to the following comments. Monitoring results for the period 23/2/2017 to 29/3/2017 were reported incorrectly (overpressure and vibration levels were swapped in the results table). (MB, 2017). Recommend that all monitoring data is checked monthly to ensure results are reported correctly.</p>
Peak particle velocity (mm/s)	Allowable exceedance									
5	5% of the total number of blasts over a period of 12 months									
10	0%									
		Blasting Hours								
4	13	<p>The Applicant must only carry out blasting at the Wambo Mining Complex between 9 am and 5 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays or any other time without the written approval of EPA.</p>	Compliant	<p>Blast monitoring results in AEMR, Annual Review and other reports indicate compliance with this condition. (MB, 2017)</p>						
		Blasting Frequency								
	13A	<p>The Applicant may carry out a maximum of: (a) 3 blasts a day, unless an additional blast is required following a blast misfire; and (b) 15 blasts a week, for all operations at the Wambo Mining Complex.</p>	Compliant	<p>Blast monitoring results in AEMR, Annual Review and other reports indicate compliance with this condition. (MB, 2017)</p>						

Sch	Con	Requirement	Status	Comments
		This condition does not apply to blasts that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, or blasts required to ensure the safety of the mine or its workers. <i>Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.</i>		
		Public Notice		
4	14	During the life of the Wambo Mining Complex, the Applicant must: (a) operate a Blasting Hotline, or alternate system agreed to by the Secretary, to enable the public to get up-to-date information on blasting operations at the Wambo Mining Complex, and (b) notify the occupants of any land within 2 km of the site about this hotline or system on an annual basis	Compliant	(a) Confirmed Blasting Hotline in operation. Details of the Blasting Hotline details are on WCPL website and noted in 2014, 2015 and 2016 Annual Reviews. Website contains Hotline phone number (02) 8250 5205. Also viewed database of community members for notification last updated 26/09/2017. Viewed SMS notification to recipients which informs recipient of time of next blast. In this case the next blast was Tues 19/09/17 at 2pm. (b) Viewed letter dated 31/07/17 to residences 2km of site notifying about the blasting hotline and SMS service.
		Property Inspection		
4	15	Before carrying out any blasting, the Applicant shall advise all landowners within 2 km of the site that they are entitled to a property inspection.	Compliant	Previous audit confirmed compliant, cited notification letters sent to landholders dated 3/11/05. Section 5.3 of the BMP. Recommend this is redone to ensure current owners are aware of this entitlement.
4	16	If the Applicant receives a written request for a property inspection from any landowner within 2 km of the site, the Applicant must: (a) within 28 days of receiving the request, commission a suitably qualified person, whose appointment has been approved by the Secretary, to inspect the condition of any building or structure on	Not triggered	Not triggered in audit period (HE pers comm). Section 5.3 of the approved BMP confirms the process to be undertaken for property inspections, if required.

Sch	Con	Requirement	Status	Comments
		the land, and recommend measures to mitigate any potential blasting impacts; and (b) give the landowner a copy of this property inspection report within 14 days of receiving the report		
		Cumulative Impacts		
4	17	The Applicant must undertake all reasonable steps to co-ordinate blasting at the Wambo Mining Complex with the blasting at surrounding mines – such as Bulga, Mount Thorley, Warkworth, and Hunter Valley Operations – to minimise the cumulative impacts of blasting in the region.	Compliant	Section 5.1 of the approved BMP. Viewed email dated 31/08/17 from blast coordinator postponing blasts to other mines
		Operating Conditions		
4	18	During mining operations at the Wambo Mining Complex , the Applicant must : (a) implement best management practice to: protect the safety of people and livestock in the surrounding area; protect public or private infrastructure/property in the surrounding area from any damage; and minimise the dust and fume emissions of any blasting; (b) minimise the frequency and duration of any road closures, and avoid road closures during peak traffic periods; (c) co-ordinate the timing of blasting at the Wambo Mining Complex with the timing of blasting at nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative blasting impacts of these mines and the Wambo Mining Complex ; and (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule at the Wambo Mining Complex , to the satisfaction of the Secretary .	Compliant	(a) Covered in BMP Sections 5.8 to 5.10. (b) Covered in the road closure plan appended to the BMP. (c) Viewed email communications with neighbouring mines listing proposed blasting times. (d) Viewed the blast notification list covering email, phone and text message notifications to private receptors and staff at other mines. (MB, 2017)
4	19	The Applicant must not undertake blasting within 500 metres of: (a) any public road without the approval of the appropriate road authority; or (b) any land outside the site that is not owned by the Applicant, unless:	Not triggered	(a) Covered in the road closure plan appended to the BMP which includes an RMS approval letter. No blasting within 500 m of the Golden Highway, and no road closures, have occurred during the audit period.

Sch	Con	Requirement	Status	Comments
		<p>the Applicant has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Applicant has advised the Department in writing of the terms of this agreement, or the Applicant has:</p> <ul style="list-style-type: none"> demonstrated to the satisfaction of the Secretary that the blasting can be carried out closer to the land without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land. 		<p>(b) Land north of the golden Highway is owned by HVO and the Crown, however no blasting has occurred within 500 m of this land during the audit period.</p> <p>Recommendation: Seek written approval for blasting within 500 m of Crown and HVO land before blasting within 500 m of this land in the next audit period.</p> <p>(MB, 2017)</p>
		Blast Management Plan		
4	20	<p>The Applicant must prepare and implement a Blast Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must:</p> <p>(a) be submitted to the Secretary for approval by the end of June 2013;</p> <p>(b) propose and justify any alternative ground vibration limits for any public infrastructure in the vicinity of the Wambo Mining Complex;</p> <p>(c) describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> best management practice is being employed; compliance with the relevant conditions of this consent; <p>(d) include a road closure management plan for blasting within 500 metres of a public road, that has been prepared in consultation with the RMS and Council;</p> <p>(e) include measures to minimise, mitigate, and if necessary remediate the blasting impacts on property 13C (Skinner);</p> <p>(f) address the requirements of conditions 63 – 68 of schedule 4;</p> <p>(g) include a monitoring program for evaluating the performance of the Wambo Mining Complex, including:</p> <ul style="list-style-type: none"> compliance with the applicable criteria; and 	Compliant	<p>A review of the BMP was undertaken by Bridges Acoustics (see Appendix F). See Schedule 4, Condition 18 which confirmed that the BMP has been implemented.</p> <p>(a) Viewed approval letter from DP&E dated 10/07/17.</p> <p>(b) BMP Section 3</p> <p>(c) BMP Sections 5 and 6</p> <p>(d) BMP road closure plan approved 22/6/17.</p> <p>(e) This property is now owned by Wambo (ref previous audit report)</p> <p>(f) Addressed as further described for the relevant conditions below</p> <p>(g) BMP Section 6</p> <p>(h) BMP Section 5.1 (MB, 2017)</p>

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> Minimising the fume emissions from the Wambo Mining Complex; and <p>(h) include a protocol that has been prepared in consultation with the owners of nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative blasting impacts of these mines and the Wambo Mining Complex.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>		
	20A	The Applicant must not carry out more than 1 blast a day within 500 metres of Wallaby Scrub Road or the Golden Highway.	Not triggered	Sections 4.2 and 5.0 of the road closure plan attached to the BMP. No blasts within 500 m of roads during the audit period. (MB, 2017)
		Property Investigations		
4	21	<p>If any landowner within a 2 km radius of the site claims that his/her property has been damaged as a result of blasting at the development, the Applicant shall:</p> <p>(a) within 28 days of receiving this claim in writing, commission a suitably qualified person whose appointment has been approved by the Secretary to investigate the claim; and</p> <p>(b) give the landowner a copy of the property investigation report within 14 days of receiving the report.</p> <p>If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant shall repair the damages to the satisfaction of the Secretary.</p> <p>If the Applicant or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.</p> <p>If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process (See Appendix 2)</p>	Not triggered	Not triggered during audit period (HE pers comm). Property investigation procedure included in Sections 5.4 of the BMP.
		SUBSIDENCE - Subsidence Management Plan		

Sch	Con	Requirement	Status	Comments														
		Performance Measures – Natural and Heritage Features, etc																
4	22	<p>The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 14A, to the satisfaction of the Secretary.</p> <p>Table 14A: Subsidence Impact Performance Measures</p> <table border="1"> <thead> <tr> <th>Water</th> <th></th> </tr> </thead> <tbody> <tr> <td>Wollombi Brook</td> <td> <p>Negligible subsidence impacts</p> <p>Negligible environmental consequences</p> <p>Controlled release of excess site water only in accordance with EPL requirements</p> </td> </tr> <tr> <th>Biodiversity</th> <th></th> </tr> <tr> <td>Wollemi National Park</td> <td> <p>Negligible subsidence impacts.</p> <p>Negligible environmental consequences.</p> </td> </tr> <tr> <td>Warkworth Sands Woodland Community</td> <td> <p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences</p> </td> </tr> <tr> <td>White Box, Yellow Box, Blakely's Red Gum, Woodland/Grassy White Box Woodland Community</td> <td> <p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences</p> </td> </tr> <tr> <td>Other threatened species, populations or communities</td> <td> <p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences.</p> </td> </tr> </tbody> </table>	Water		Wollombi Brook	<p>Negligible subsidence impacts</p> <p>Negligible environmental consequences</p> <p>Controlled release of excess site water only in accordance with EPL requirements</p>	Biodiversity		Wollemi National Park	<p>Negligible subsidence impacts.</p> <p>Negligible environmental consequences.</p>	Warkworth Sands Woodland Community	<p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences</p>	White Box, Yellow Box, Blakely's Red Gum, Woodland/Grassy White Box Woodland Community	<p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences</p>	Other threatened species, populations or communities	<p>Minor cracking and ponding of the land surface or other impact.</p> <p>Negligible environmental consequences.</p>	Compliant	<p>Extraction Plan Report dated 31/07/17 for LW8-10A indicated no criteria exceedances under this condition (Table 4).</p> <p>Reviewed 'Annual Flora and Fauna Monitoring Report 2016 – Volume 1' (Eco Logical, 2017) confirming no impacts to Warkworth Sands Woodland Community or White Box as they do not occur within South Bates Underground or North Wambo Underground areas. Reported only minor cracking and negligible environmental consequences to 'other threatened species, populations or communities'.</p> <p>Viewed before and after photos of filling and remediation of larger cracks as per Eco Logical Report recommendations.</p>
Water																		
Wollombi Brook	<p>Negligible subsidence impacts</p> <p>Negligible environmental consequences</p> <p>Controlled release of excess site water only in accordance with EPL requirements</p>																	
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Sch	Con	Requirement	Status	Comments				
		<table border="1"> <tr> <td>Heritage</td> <td></td> </tr> <tr> <td>Wambo Homestead Complex</td> <td>Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister.</td> </tr> </table> <p><i>Notes:</i> 1) The Applicant will be required to define more detailed performance indicators for each of these performance measures in the various management plans that are required under this consent (see condition 22C below). 2) The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date of approval of modification 9. If the Applicant exceeds the performance measures in Table 14A and the Secretary determines that: (a) it is not reasonable or feasible to remediate the impact or environmental consequences; or (b) remediation measures implemented by the Applicant have failed to satisfactorily remediate the impact or environmental consequence, then the Applicant must provide a suitable offset to compensate for the impact or environmental consequence, to the satisfaction of the Secretary. <i>Note: An offset required under this condition must be proportionate with the significance of the impact or environmental consequence.</i></p>	Heritage		Wambo Homestead Complex	Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister.		
Heritage								
Wambo Homestead Complex	Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister.							
		Performance Measures – Built Features						

Sch	Con	Requirement	Status	Comments						
4	22A	<p>The Applicant must ensure that the development does not cause any exceedances of the performance measures in Table 14B, to the satisfaction of the DRE.</p> <p>Table 14B: Subsidence Impact Performance Measures</p> <table border="1"> <tr> <td>Built Features</td> <td></td> </tr> <tr> <td>All built features</td> <td>Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.</td> </tr> <tr> <td>Public Safety</td> <td>Public Safety No additional risk</td> </tr> </table> <p>Notes:</p> <p>1) The Applicant will be required to define more detailed performance indicators for each of these performance measures in Built Features Management Plans or Public Safety Management Plan (see condition 22C below).</p> <p>2) The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date of modification 9.</p> <p>3) Requirements regarding safety or serviceability do not prevent preventative or mitigatory actions being taken prior to or during mining in order to achieve or maintain these outcomes.</p> <p>4) Compensation required under this condition includes any compensation payable under the Mine Subsidence Compensation Act 1961 and/or the Mining Act 1992.</p>	Built Features		All built features	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.	Public Safety	Public Safety No additional risk	Compliant	<p>Reviewed Extraction Plan Report dated 31/07/17 for LW8-10A predicting no adverse impacts on built features or public safety.</p> <p>Performance against this criteria is reported in Table 20 of the Annual Reviews.</p> <p>No incidents or complaints recorded in relation to built features or public safety (HE pers comms) and none reported in community complaints registers for the audit period.</p>
Built Features										
All built features	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.									
Public Safety	Public Safety No additional risk									
4	22B	Any dispute between the Applicant and the owner of any built feature over the interpretation, application or implementation of the performance measures in Table 14B is to be settled by the DRE. The DRE may seek	Not triggered	No impacts to built features during the audit period as per Condition 22A above.						

Sch	Con	Requirement	Status	Comments
		the advice of the MSB on the matter. Any decision by the DRE shall be final and not subject to further dispute resolution under this consent		
		Extraction Plan		
4	22C	<p>The Applicant must prepare and implement an Extraction Plan for the second workings within each seam to be mined to the satisfaction of the Secretary. Each Extraction Plan must:</p> <p>(a) be prepared by a team of suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;</p> <p>(b) be approved by the Secretary before the Applicant carries out any of the second workings covered by the plan;</p> <p>(c) include detailed plans of the proposed first and second workings and any associated surface development;</p> <p>(d) include detailed performance indicators for each of the performance measures in Tables 14A and 14B;</p> <p>(e) provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since this consent;</p> <p>(f) describe the measures that would be implemented to ensure compliance with the performance measures in Tables 14A and 14B, and manage or remediate any impacts and/or environmental consequences;</p> <p>(g) include the following to the satisfaction of DRE:</p> <ul style="list-style-type: none"> • a coal resource recovery plan that demonstrates effective recovery of the available resource; • a subsidence monitoring program to: <ul style="list-style-type: none"> - provide data to assist with the management of the risks associated with subsidence; - validate the subsidence predictions; and - analyse the relationship between the subsidence effects and impacts under the plan and any ensuing environmental consequences; 	Compliant	<p>Reviewed approved North Wambo Extraction Plan for LWs 8-10A & LW 11-13. a-g contained in sections as follows:</p> <p>(a) Attachment 2 correspondence from DP&E dated 20/09/12 (LW 8-10A) and 10/08/2015 (LW 11-13) approving team.</p> <p>(b) Approval letter of EP LW8-10A dated 24/06/15. Approval letter of LW 11-13 dated 09/02/2016.</p> <p>(c) Section 1.3, Appendix G</p> <p>(d) Section 3, Appendix A, C, E and F</p> <p>(e) Section 2.1 and Technical Reports 1 to 3.</p> <p>(f) Section 3, Appendix A to Appendix F, H and I.</p> <p>(g) Appendix G (Coal resource recovery plan). Section 3.8 and Appendix H (Subsidence Monitoring Program). Appendix E (Built Features MP). Appendix F (Public Safety MP). Appendix I of MOP (Rehabilitation MP).</p>

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> a Built Features Management Plan to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings, and which: <ul style="list-style-type: none"> - addresses in appropriate detail all items of public infrastructure and all classes of other built features; and - has been prepared following appropriate consultation with the owner/s of potentially affected feature/s; a Public Safety Management Plan to ensure public safety in the mining area; and appropriate revisions to the Rehabilitation Management Plan required under condition 94C; and 		
		<p>(h) include a:</p> <ul style="list-style-type: none"> Water Management Plan, which has been prepared in consultation with EPA and DPI - Water, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on surface water resources, groundwater resources and flooding, and which includes: <ul style="list-style-type: none"> - surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality; - a program to monitor and report groundwater inflows to underground workings; and - a program to manage and monitor impacts on groundwater bores on privately-owned land; Biodiversity Management Plan, which has been prepared in consultation with DPI-Water and DRE, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on flora and fauna; Land Management Plan, which has been prepared in consultation with any affected public authorities, to manage the potential impacts 	Compliant	<p>Viewed letters from DP&E dated 24/06/15 and 09/02/16 approving the Extraction Plans LW8-10A and LW11-13 respectively and associated management documents. Viewed letters from DPI-Water dated 3/6/15 for LW8-10A. Viewed letters from DPI-Water and dated 6/6/17 for LW11-14. Viewed correspondence from EPA dated 11/1/17 for LW11-16. Water Management Plan included as Appendix A of the approved Extraction Plans (LW8-10A & LW11-13). The Water Management Plans have been reviewed and are broadly consistent with the content requirements. (RE, 2017) It is understood that a revised GWMP (version 12) is currently in preparation. This latest GWMP and WMP should be finalised as soon as is practical to include the recommended updates and changes required by Planning and Environment. (DB, 2017)</p>

Sch	Con	Requirement	Status	Comments
		<p>and/or environmental consequences of the proposed second workings on land in general;</p> <ul style="list-style-type: none"> Heritage Management Plan, which has been prepared in consultation with DPI-Water, the Department's Heritage Branch and relevant stakeholders for Aboriginal and non-Aboriginal heritage, to manage the potential environmental consequences of the proposed second workings on heritage sites or values; and 		<p>Biodiversity Management Plan included as Appendix C of the approved Extraction Plans.</p> <p>Land Management Plan included as Appendix B of the approved Extraction Plans.</p> <p>Heritage Management Plan included as Appendix D of the approved Extraction Plan.</p>
		<p>(i) include a program to collect sufficient baseline data for future Extraction Plans.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p> <p>Notes:</p> <p>1) An SMP approved by DRE prior to 30 July 2011 is taken to satisfy the requirements of this condition for the workings covered by this plan.</p> <p>2) Management plans prepared under condition 22C(h) should address all potential impacts of proposed underground coal extraction on the relevant features. Other similar management plans required under this consent (eg under conditions 30 - 35 and 44 - 48) are not required to duplicate these plans or to otherwise address the impacts associated with underground coal extraction.</p>	Compliant	<p>Included as Attachment 3 of approved Extraction Plans (LW8-10A and LW11-13).</p> <p>Reviewed management plans and confirmed contained all relevant features.</p> <p>1) Previous audit confirmed compliance.</p> <p>2) See condition 22C(h)</p>
	22D	<p>The Applicant shall ensure that the management plans required under condition 22C(h) above include:</p> <p>(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this consent;</p> <p>(b) a detailed description of the measures that would be implemented to remediate predicted impacts; and</p> <p>(c) a contingency plan that expressly provides for adaptive management.</p>	Compliant	<p>Viewed management plans appended to the approved Extraction Plans.</p> <p>Viewed Report 1 'Subsidence Predictions and Impact Assessment' of approved Extraction Plans. Viewed Contingency Plans and Appendices A-D in Extraction Plans.</p>
		First Workings		

Sch	Con	Requirement	Status	Comments
	22E	The Applicant may carry out first workings within the underground mining area, other than in accordance with an approved extraction plan, provided that DRE is satisfied that the first workings are designed to remain stable and non-subsiding in the long term, except insofar as they may be impacted by approved second workings. <i>Note: The intent of this condition is not to require an additional approval for first workings, but to ensure that first workings are built to geotechnical and engineering standards sufficient to ensure long term stability, with negligible resulting direct subsidence impacts.</i>	Compliant	Viewed DRE letter dated 13/01/2014 confirming satisfaction with condition 22E for LW9-10. Viewed DRE letter dated 12/05/2014 confirming satisfaction with condition 22E for LW10A. Viewed DRE letter dated 30/9/2014 confirming satisfaction with condition 22E for LW11-13. Viewed DRE letter dated 30/9/2014 confirming satisfaction with condition 22E for LW11-13.
		Payment of Reasonable Costs		
	22F	The Applicant shall pay all reasonable costs incurred by the Department to engage independent experts to review the adequacy of any aspect of an Extraction Plan.	Not triggered	No request has been made by DP&E (HE pers comm).
		REJECTS EMPLACEMENT STRATEGY		
4	22G	Within 6 months of this consent commencing, the Applicant shall prepare a Life of Mine Rejects Emplacement Strategy for the development, to the satisfaction of the DRE.	Not Compliant	Reviewed Rejects Emplacement Strategy dated September 2014, submitted for approval to DP&E in September 2014. No evidence that the Rejects Emplacement Strategy (RES) has been approved or that followup with the appropriate regulator has occurred. The RES should be submitted to DRG (not DP&E) and followed up to approval. It is noted that the plan is likely to require review following a positive determination of the United and Wambo Open Cut Coal Mine Project.
		SURFACE & GROUND WATER - Note: The Applicant is required to obtain licences for the development under the Water Act 1912 and the Protection of the Environment Operations Act 1997		See detailed response in Section 6.6.3
		Pollution of Waters		

Sch	Con	Requirement	Status	Comments
4	23	<p>Water Supply</p> <p>The Applicant must ensure that it has sufficient water during each stage of the development, and if necessary, adjust the scale of mining operations to match its available water supply.</p> <p><i>Note: The Applicant is required to obtain necessary licences for the development under the Water Act 1912 and Water Management Act 2000.</i></p>	Compliant	<p>Based on the MOD15 groundwater assessment by Hydrosimulations (2015), and the 2015/2016 Annual Reviews, the current licences held by WCPL are stated as sufficient to cover the predicted take of water from the water sources. (DB, 2017)</p> <p>The approved Site Water Management Plan includes a Site Water Balance which confirms appropriate measures and strategies to address water supply requirements. (RE, 2017)</p>
4	23A	<p>Except as may be expressly provided by an EPA licence, the Applicant shall comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i> during the carrying out of the development.</p>	Not Compliant	<p>A non-compliant unlicensed release of runoff occurred on 21 April 2015 from a sump located adjacent to Wollombi Creek at Hales Crossing. This release is not permitted under an EPA licence. It is recommended that the current Hales Crossing sump and pump arrangement is improved to remove the risk of sump inundation.</p> <p>WCPL to investigate relocating the sump and pump apparatus to a location outside the flood extents of Wollombi Brook.</p> <p>Failure of temporary sediment dam on resulting in the non-compliant unlicensed release of sediment and water to the Waterfall Creek catchment. This release is not permitted under an EPA licence. The sediment dam was a temporary structure and was not designed or constructed to an engineering standard. Following significant rainfall, a dam break occurred, resulting in the release of sediment affected water and embankment materials to the downstream drainage features. It is understood that WPCL reported the incident to the EPA and undertook an investigation of the</p>

Sch	Con	Requirement	Status	Comments									
				incident which concluded that the incident did not result in any significant environmental harm or impacts on the aquatic ecology of Waterfall Creek. It is also understood the ESCP was amended in order to address learnings from this incident. A review of topographic mapping data provided by WPCL indicates that runoff from the former sediment dam catchment now reports to the mine water management system via Montrose East open cut pit and therefore no additional mitigation measures are required. (RE, 2017)									
		Discharge Limits											
4	24	<p>Except as may be expressly provided by a EPA licence or the <i>Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002</i>, the Applicant shall:</p> <ul style="list-style-type: none"> not discharge more than 250 ML/day from the licenced discharge point/s at the development; ensure that the discharges from any licenced discharge point comply with the limits in Table 15: <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Units of measure</th> <th>100 percentile concentration limit</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>pH</td> <td>6.5 to 9.5</td> </tr> <tr> <td>Total suspended solids</td> <td>mg/litre</td> <td>120</td> </tr> </tbody> </table> <p><i>Table 15: Discharge Limits</i> Note: This condition does not authorise the pollution of waters by any other pollutants.</p>	Pollutant	Units of measure	100 percentile concentration limit	pH	pH	6.5 to 9.5	Total suspended solids	mg/litre	120	Compliant	Reviewed annual surface water discharge records and EPL annual returns for the audit period. (RE, 2017)
Pollutant	Units of measure	100 percentile concentration limit											
pH	pH	6.5 to 9.5											
Total suspended solids	mg/litre	120											
		Site Water Balance											
4	25	Each year, the Applicant must :	Not Compliant	(a) Section 6.7 of the 2016 and 2015 Annual Reviews provide a comparison of the water supply components of									

Sch	Con	Requirement	Status	Comments
		<p>(a) review the site water balance for the development against the predictions in the EIS;</p> <p>(b) re-calculate the site water balance for the development;</p> <p>(c) assess current and forecast compliance with the rules of the Hunter River Salinity Trading Scheme; and</p> <p>(d) report the results in the Annual Reviews</p>		<p>the site water balance with corresponding EIS predictions. Specifically the 2016 Annual Review provides a comparison of the measured and predicted water supplies as a proportion of the total water supply.</p> <p>The Annual Review does not provide:</p> <ul style="list-style-type: none"> - a comparison between the measured water balance (i.e. a 900 ML deficit) and the EIS water balance predictions; - a comparison between the measured 416 ML discharge requirement with the EIS water balance predictions; or - a comparison of the measured and predicted water demands, losses or water supplies from runoff (either as a proportion or volume). <p>It is recommended that the comparison presented in future Annual Reviews is expanded to address these points in order to provide a full comparison of the overall site water balance with the EIS predictions. If the differences between the EIS water management system and operations are such that a meaningful comparison of the predictions is not possible, or the EIS does not provide sufficient detail on the water balance predictions to allow a comparison of the water balance (which looks likely based upon Appendix E of the EIS), this should be acknowledged.</p> <p>(b) Section 6.7 of the 2016 and 2015 Annual Reviews provide a re-calculation of the site water balance. Interview with WPCL (Peter Jaeger pers.comm.) confirmed that the site water balance is reviewed monthly and annually.</p>

Sch	Con	Requirement	Status	Comments
				<p>(c) Section 6.7 of the 2016 and 2015 Annual Reviews provide an assessment of compliance with the HRSTS over the reporting period.</p> <p>Section 6.4.3 of the 2016 and 2015 Annual Reviews forecast that the mine will utilise all available HRSTS credits during the next reporting period. The Annual Reviews do not explicitly forecast compliance with the HRSTS rules. It is recommended that the forecast presented in future Annual Reviews is expanded to explicitly address forecast compliance.</p> <p>Interviews with WPCL (Peter Jaeger pers. comm.) confirmed that current and future compliance the HRSTS rules is reviewed monthly and annually.</p> <p>(d) Section 6.4.3 of the 2016 and 2015 Annual Reviews forecast that the mine will utilise all available HRSTS credits during the next reporting period. The Annual Reviews do not explicitly forecast compliance with the HRSTS rules. It is recommended that the forecast presented in future Annual Reviews is expanded to explicitly address forecast compliance.</p> <p>Improvements could be made in terms of the overall site water management if specific groundwater inflows to the open cut via alluvium and Permian could be pumped and metered separately. (DB, 2017)</p>
		North Wambo Creek Diversion		
4	26	The Applicant shall design, construct, maintain, and rehabilitate the temporary North Wambo Creek Bypass, the temporary North Wambo Creek Pipeline, and the North Wambo Creek Diversion in consultation with DRE, DPI-Water and to the satisfaction of the Secretary.	Compliant	Previous audit confirmed that the North Wambo Creek Bypass and temporary pipeline were approved in 2008 and are not assessed as part of this audit.

Sch	Con	Requirement	Status	Comments
		<i>Note: The Department accepts that the Applicant is not required to “rehabilitate” the temporary North Wambo Creek Bypass.</i>		<p>North Wambo Creek Diversion was completed late 2012 and was included as part of this audit. Previous audit confirmed that DP&E provided approval of the NWCD and mining of the original creek line on 01/07/13.</p> <p>The 2015 – 2020 MOP describes repair and stabilisation works that have recently been undertaken to address an erosion incident and maintain the diversion. These works were inspected during this audit and while these works effectively repaired the affected eroded area, several additional areas of erosion and instability have been observed. The Extraction Plans also present hydraulic modelling which confirms that the hydraulic conditions within the diversion are likely to result in erosion and instability in the long-term. Ongoing maintenance in the form of monitoring and stabilisation measures are therefore recommended to maintain the diversion and meet rehabilitation objectives.</p> <p>WPCL undertakes regular drone surveys and inspections of the diversion as part of the current monitoring and maintenance program. These were viewed during the audit.</p> <p>A comprehensive update to the monitoring and maintenance program has been described in the approved Extraction Plans and approved Site Water Management Plan. It is understood from site interviews (PJ pers comm) that WPCL plans to fully implement this program during 2018.</p> <p>The diversion is not yet compliant with the completion criteria for geomorphic function and stability. The updated diversion monitoring and maintenance program,</p>

Sch	Con	Requirement	Status	Comments
				when fully implemented, is expected to achieve a level of geomorphic function and stability that is consistent with the diversion completion criteria. (RE, 2017)
4	27	Within one month of completing the construction of the temporary North Wambo Creek Bypass, the temporary North Wambo Creek Pipeline, and the North Wambo Creek Diversion, the Applicant shall submit an as-executed report, certified by a practising registered engineer, to the Secretary.	Compliant	Stage 1 and 2 confirmed compliant in previous audit.
4	28	Prior to destroying the original creek line by open cut mining, the Applicant shall demonstrate that the relevant stage of the North Wambo Creek Diversion is operating successfully from a hydrological and biological point of view to the satisfaction of DRE and the Secretary. <i>Note: This condition does not apply to the temporary North Wambo Creek Bypass.</i>	Compliant	Letter of conditional approval from DP&E to Peter Baker (General Manager, WCPL) dated 28/06/13 was viewed during previous audit. (RE, 2017)
		Chitter Dump Dam		
	28A	Deleted	N/A	N/A
		South Wambo Dam		
	28B	The Applicant must design construct and operate the South Wambo Dam to the satisfaction of the DSC and DRE. The design of the dam must be accompanied by a detailed assessment of the potential operational and environmental risks associated with the dam, particularly in relation to potential subsidence-related impacts.	Compliant	Letter from DSC dated 05/11/09 in response to submission of documentation of South Wambo Dam viewed during previous audit. Viewed letter and Endorsement Schedule from DRE dated 13/11/13 approving the addition of the South Wambo Dam to CCL743 and ML1594. Site inspection as part of the current audit confirmed that the dam has been drained and is now disused (RE, 2017)
	28C	The South Wambo Dam must be fully, or substantially, drained prior to the commencement of mining in the underlying longwalls to the satisfaction of DSC to minimise the risk of operational or environmental impacts from subsidence.	Compliant	The South Wambo Dam was inspected during this audit and found to be substantially drained and effectively decommissioned (PJ pers comm.). PJ confirmed that these works were undertaken prior to undermining of the dam and have been undertaken in accordance with the strategy developed in consultation with DSC. (RE, 2017)

Sch	Con	Requirement	Status	Comments
		Monitoring		
4	29	<p>The Applicant must:</p> <p>(a) measure:</p> <ul style="list-style-type: none"> • the volume of water discharged from the site; • water use on the site; • dam and water structure storage levels, • water transfers across the site; and • water transfers between the site and surrounding mines; <p>(b) monitor the quality of the surface water:</p> <ul style="list-style-type: none"> • discharged from the licenced discharge point/s at the development; and • upstream and downstream of the development; <p>(c) monitor flows in the Wollombi Brook; and North Wambo, South Wambo, and Stony Creeks;</p> <p>(d) monitor the volume and quality of water inflows from each separate source to the underground and open cut workings; and</p> <p>(e) monitor regional ground water levels and quality in the alluvial and overburden aquifers during the development and at least 10 years after mining, and</p> <p>(f) periodically assess groundwater pressure response in the coal measures; to the satisfaction of EPA, DPI - Water and the Secretary.</p> <p>⁵ These calculations must exclude the clean water system, including any sediment control structures, and any dams in the mine lease area which fall under the Maximum Harvestable Right Dam Capacity; include any dams that are licensable under Section 205 of the <i>Water Act 1912</i>, and water harvested from any non-harvestable rights dam on the mine lease area; address balances of inflows, licenced water extractions, and transfers of water from the site to other sites; include an accounting system for water budgets; and include a salt budget.</p>	Not compliant	<p>(a) Reviewed surface water volume and quality data reported in 2015 and 2016 Annual Reviews during the audit period. Viewed current status of site water management system in Citec system. Equipment and procedures in place to collect the required measurements. However, a non-compliance with the requirements for discharge measurement occurred during the reporting period due to equipment failure. Measures observed during the site inspection have been implemented to prevent recurrence. (RE, 2017)</p> <p>(b) Reviewed EPL annual returns, monitoring data from discharge locations and receiving waters. It is recommended that WPCL also collect water quality data from sediment dams in order to characterise the quality of runoff from non-coal affected catchments. This data would be useful to support an investigation in the event of any uncontrolled discharge from these dams. This data would also be necessary to support any future passive drainage strategy for the management of runoff from rehabilitated areas to natural drainage features. (RE, 2017)</p> <p>(c) Reviewed Surface Water Monitoring Program and monitoring data for flow monitoring sites. (RE, 2017)</p> <p>(d) The volume of inflows to the underground and open cut workings are reported within the 2015 and 2016 Annual Reviews. (DB, 2017)</p> <p>Inflows to the open cut pits and underground workings may include groundwater seepage to pits and</p>

Sch	Con	Requirement	Status	Comments
				<p>underground workings, runoff from open cut pit catchments (including undisturbed areas and active/rehabilitated overburden emplacement areas), and water supplies. The quality of each of these sources of inflow is adequately monitored at representative locations in accordance with the SWMP and GWMP. (RE, 2017)</p> <p>(e) Regional groundwater levels and quality are reported and discussed in Section 6.2 and Appendix E of the 2015 Annual Reviews and Section 6.2 and Appendix G of the 2016 Annual Reviews. (DB, 2017)</p> <p>(f) Groundwater depressurisation is reported and discussed in the Appendix E of the 2015 Annual Reviews and Appendix G of the 2016 Annual Review. (DB, 2017)</p> <p>Recommendation: Consideration should be made to directly monitor the quality of groundwater seepage reporting to the underground and open-cut workings.</p> <p>It is understood that a salt balance model has been developed for the site for the United/Wambo project. It is suggested that this salt balance be updated annually to include the seepage quality monitoring data.</p> <p>There is no recommendation in terms of frequency of monitoring. WCPL should determine the frequency of monitoring to apply for the salt balance model. (DB, 2017)</p>
		Site Water Management Plan		
4	30	<p>Before carrying out any development, the Applicant shall prepare a Site Water Management Plan for the development in consultation with EPA and DPI-Water, and to the satisfaction of the Secretary.</p> <p>This plan must include:</p>	Not compliant	<p>Reviewed the site water management documents, including:</p> <ul style="list-style-type: none"> - Surface Water Monitoring Program (SWMP), October 2015. Approved 27/11/15 by DP&E.

Sch	Con	Requirement	Status	Comments
		<p>(a) the predicted site water balance; (b) the predicted salt balance for the site; (c) the North Wambo Creek Diversion Plan; (d) an Erosion and Sediment Control Plan; (e) a Surface Water Monitoring Program; (f) a Ground Water Monitoring Program; (g) a Surface and Ground Water Response Plan; and (h) a strategy for the decommissioning water management structures on the site.</p> <p>By the end of October 2009, the Applicant shall revise the Site Water Management Plan in consultation with DRE, EPA and DPI-Water, and to the satisfaction of the Secretary.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p> <p>Note: The North Wambo Creek Diversion Plan must also be prepared in consultation with NSW Fisheries.</p>		<p>- Groundwater Monitoring Program (GWMP), October 2015. Approved 27/11/15 by DP&E.</p> <p>- Surface and Groundwater Response Plan (SGRP), October 2015. Approved 27/11/15 by DP&E.</p> <p>Audit confirmed:</p> <p>(a) The site water balance is included in the Site Water Balance and annual updates are provided in the Annual Reviews. (RE, 2017)</p> <p>(b) A predicted salt balance is not provided in the Site Water Management Plan. The Site Water Balance notes that WPCL has undertaken a salt balance as part of the surface water assessment for the United and Wambo Open Cut Coal Mine Project. It is recommended that the Site Water Management Plan is updated to include the predicted salt balance. (RE, 2017)</p> <p>(c) The North Wambo Creek Diversion Plan is not a component of the Site Water Management Plan. (RE, 2017)</p> <p>(d) The Site Water Management Plan includes an Erosion and Sediment Control Plan, a Surface Water Monitoring Program and a Surface and Groundwater Response Plan. (RE, 2017)</p> <p>(e) Surface Water Monitoring Program (SWMP), October 2015. Approved 27/11/15 by DP&E.</p> <p>(f) Groundwater Monitoring Program (GWMP), October 2015. Approved 27/11/15 by DP&E.</p> <p>It is understood that a version of the groundwater monitoring program is currently under revision.</p> <p>Amendments and suggestions provided by NSW</p>

Sch	Con	Requirement	Status	Comments
				<p>government subsequent to approval of the GWMP in November 2015 should be incorporated into the GWMP and the plan should be resubmitted for review and approval.</p> <p>Improvements could be made in terms of the content of the groundwater water management program including:</p> <ul style="list-style-type: none"> • A more contemporary reference to groundwater sampling techniques; • Amendment of the text relating to purging of groundwater bores to be consistent with the latest guidelines; • Outline the methods of water quality data upload from the laboratory; • The bore labels in Figure 7 need to be clear for all bores; • General update of text relating to historical or proposed activities. (DB, 2017) <p>(g) Surface and Groundwater Response Plan (SGRP), October 2015. Approved 27/11/15 by DP&E.</p> <p>(h) Section 2.2.16 of the Site Water Management Plan outlines rehabilitation objectives for decommissioning water management structures on site. It is recommended that this section is improved by providing a high level strategy for the decommissioning of water management structures (including the management of water during the decommissioning process) as part of any future update of the Site Water Management Plan. (RE, 2017)</p>

Sch	Con	Requirement	Status	Comments
4	30A	The predicted salt balance for the site must : (a) include details of: <ul style="list-style-type: none"> • the sources of saline material on the site; • saline material and saline water management on site; • reporting procedures, including the preparation of an annual salt balance; and (b) describe the measures that would be implemented to minimise short term and long term discharge of saline water from the site.	Not compliant	A predicted salt balance is not provided in the Site Water Management Plan. However, the Site Water Balance notes that WPCL has undertaken a salt balance as part of the surface water assessment for the United and Wambo Open Cut Coal Mine Project. This assessment was reviewed and meets the content requirements of clause (a). It is recommended that the Site Water Management Plan is updated to include the predicted salt balance. (RE, 2017)
4	31	The North Wambo Creek Diversion Plan must include: (a) the detailed design and specifications of the creek diversion, including the flow control bund, cut off wall, and channel; (b) a revegetation program for the channel using a range of suitable native riparian and floodplain species; (c) the detailed design of the system that would return intercepted ground water to the alluvial aquifer downstream of the open cut; (d) a construction program for the creek diversion, describing how the work would be staged, and progressively integrated with the mining operations and the mine waste emplacement drainage system; (e) water quality, ecological and geomorphic performance criteria for the creek diversion; (f) a program to monitor water quality, ecological, and geomorphic integrity of the creek diversion; and (g) a program to inspect and maintain the creek diversion and revegetation works during the development <i>Note: The Applicant may prepare and submit the North Wambo Diversion Plan on a progressive basis to reflect the relevant stages of the proposed diversion.</i>	Compliant	Table 4 of 2015 IEA noted that the North Wambo Creek Diversion Plan was revised to address these content requirements following the previous IEA. (RE, 2017)
4	32	Erosion and Sediment Control Plan must :	Compliant	(a) Sections 4.1, Table 4, Section 5.1, Section 6.6, Section 6.6 and Section 6.8 of the approved Erosion and

Sch	Con	Requirement	Status	Comments
		<p>(a) be consistent with the requirements of the Department of Housing's Managing Urban Stormwater: Soils and Construction manual;</p> <p>(b) identify activities that could cause soil erosion and generate sediment;</p> <p>(c) describe the location, function, and capacity of erosion and sediment control structures; and</p> <p>(d) describe measures to minimise soil erosion and the potential for the migration of sediments to downstream waters.</p>		<p>Sediment Control Plan (ESCP) acknowledges these requirements. <i>"The scope and level of detail provided in the ESCP is commensurate with the erosion and sediment control issues at the mine and is consistent with the Landcom (2004) content requirements for a mine site ESCP"</i> (RE, 2018).</p> <p>(b) Section 2 of the approved ESCP.</p> <p>(c) and (d) Sections 5, 6 and Appendix D of the approved ESCP. (RE, 2017)</p> <p><i>"The Wambo ESCP has clearly been written as a reference/guidance document that provides a framework for future erosion and sediment control at the mine. (Peabody confirmed this is their general approach to the site water management documents during the audit). As a result, there is less emphasis on describing the existing ESC arrangements and limited information on known issues with the existing ESC arrangements and any associated action plans to address these issues. While not an explicit requirement of the Blue Book guidance:</i></p> <ul style="list-style-type: none"> • <i>A description of the existing as-built ESC arrangements for each sediment-affected catchment would enhance the current understanding of the site ESC arrangements; and</i> • <i>A description of the known issues and actions would be useful in demonstrating that the ESCP is operating effectively and areas for improvement."</i> (RE, 2018).

Sch	Con	Requirement	Status	Comments
				<p><i>“The ESCP structure and text would benefit from a review to improve the general readability of the document. This could involve ensuring that the plan structure is logical, the scope and progression of each section is clear, and overly lengthy or repetitious text is rationalised” (RE, 2018).</i></p> <p><i>“The 2016 ESCP contains a simple figure showing the existing ESC arrangements which has been improved in the 2018 version.” (RE, 2018)</i></p>
4	33	<p>The Surface Water Monitoring Program must include:</p> <ul style="list-style-type: none"> (a) detailed baseline data on surface water flows and quality in the Wollombi Brook, and North Wambo, South Wambo, and Stony Creeks; (b) surface water impact assessment criteria; (c) a detailed program to monitor surface water flows and quality in the Wollombi Brook; and North Wambo, South Wambo, and Stony Creeks; (d) a detailed program to monitor bank and bed stability in North Wambo, South Wambo, and Stony Creeks; (e) a detailed program to monitor the quantity and quality of the vegetation in the riparian zones adjacent to North Wambo, South Wambo, and Stony Creeks; and (f) a program to monitor the effectiveness of the Erosion and Sediment Control Plan 	Compliant	<ul style="list-style-type: none"> (a) Section 2 of the approved Surface and Groundwater Response Plan provides a detailed summary of the required data (b) Section 3 of the approved Surface and Groundwater Response Plan (c) Section 4 of the approved Surface and Groundwater Response Plan (d) and (e) Section 4 of the approved Surface and Groundwater Response Plan. Additional detail is provided in Section 4.3 of the Surface Water Technical Report for South Bates Underground Mine (Alluvium, 2016). These details should be incorporated into the Surface and Groundwater Response Plan. (e) Section 4 of the of the approved Surface and Groundwater Response Plan.
4	34	<p>The Ground Water Monitoring Program must include:</p> <ul style="list-style-type: none"> (a) detailed baseline data on ground water levels and quality, based on statistical analysis, to benchmark the pre-mining natural variation in groundwater levels and quality; (b) ground water impact assessment criteria; 	Compliant	<p>The GWMP (Version 10) includes the five requirements listed. These requirements are found in the following sections of the GWMP:</p> <ul style="list-style-type: none"> a) Section 2 b) Section 3

Sch	Con	Requirement	Status	Comments
		<p>(c) a comprehensive and detailed program to monitor the volume and quality of ground water seeping into the open cut and underground mining workings;</p> <p>(d) a detailed program to monitor regional ground water levels and quality in the alluvial and overburden aquifers; and</p> <p>(e) a program to investigate and monitor potential water loss from the Chitter Dump Dam and South Wambo Dam, and Montrose East Dam, including potential migration of stored water toward Wollombi Brook.</p>		<p>c) Section 4.1.4. Ongoing groundwater monitoring is conducted as prescribed within the GWMP. Review of the water level and quality results has been conducted through the Annual Reviews by a qualified hydrogeologist for the audit period. The Annual Reviews and extraction plan assessments also include review of model predictions against current monitoring data. Consideration should be made to directly monitor the quality of groundwater seepage reporting to the underground and open-cut workings.</p> <p>d) Section 4.1.1</p> <p>e) Section 4.1.6 However, the GWMP does not have reference to the Montrose East Dam which is understood to not have been constructed. (DB, 2017)</p>
4	34A	<p>Prior to submitting the first extraction plan for the Long wall Domains, the applicant must revise the Groundwater Monitoring Program to:</p> <p>(a) include the installation of paired monitoring bores for the South Wambo Underground Mine, in consultation with DPI-Water to assess potential fracture interconnections between the surface water resources, the alluvium and hard rock aquifers;</p> <p>(b) provide detailed information on the groundwater levels within the alluvial and hardrock aquifers within the longwall domains.</p>	Compliant	<p>a) The GWMP includes the paired combination of GW20, N2, N3 and N5 (Section 4.1.1 of the GWMP [Version 10])</p> <p>b) GW20 is completed within the alluvium whereas N2, N3 and N5 are VWP completions within the Permian coal seams and interburden/overburden (see Table 12 within Section 4.1.1 of the GWMP [Version 10]). (DB, 2017)</p>
4	35	<p>The Surface and Ground Water Response Plan shall include:</p> <p>(a) measures to mitigate any adverse impacts on existing water supply bores or wells, including trigger levels for the provision of suitable compensatory water supplies;</p> <p>(b) measures to mitigate the loss of surface water flows in the surface water streams or channel on the site;</p> <p>(c) deleted;</p>	Compliant	<p>(a) Section 2.3 of the approved Surface and Groundwater Response Plan</p> <p>(b) Section 2.4 of the approved Surface and Groundwater Response Plan</p> <p>(c) Not applicable</p> <p>(d) Section 2.6 of the approved Surface and Groundwater Response Plan</p>

Sch	Con	Requirement	Status	Comments
		<p>(d) measures to mitigate the long term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium if the potential for an downstream adverse impact is detected;</p> <p>(e) measures to address the decrease in through flow rates caused by the development within the Wollombi Brook alluvium downstream of the open cut;</p> <p>(f) measures to address any reduction in the stability or ecological quality of the North Wambo Creek Diversion below the established performance criteria;</p> <p>(g) measures to minimise and/or offset potential groundwater leakage from Wollombi Brook and associated alluvial aquifers; and</p> <p>(h) measures to mitigate adverse impacts on groundwater dependent ecosystems or riparian vegetation and offset any impacts above the predicted impacts;</p> <p>(i) trigger levels for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvials to open cut and underground mining workings;</p> <p>(j) the procedures that would be followed if any unforeseen impacts are detected during the development; and</p> <p>(k) response times for undertaking the above measures.</p>		<p>(e) Section 2.8 of the approved Surface and Groundwater Response Plan</p> <p>(f) Section 2.7 of the approved Surface and Groundwater Response Plan</p> <p>(g) Section 2.8 of the approved Surface and Groundwater Response Plan</p> <p>(h) Section 2.9 of the approved Surface and Groundwater Response Plan</p> <p>(i) Section 2.11 of the approved Surface and Groundwater Response Plan</p> <p>(j) Section 2.12 of the approved Surface and Groundwater Response Plan</p> <p>(k) Section 2.12 of the approved Surface and Groundwater Response Plan (RE, 2017)</p> <p>A Surface and Ground Water Response Plan has been prepared and includes the requirements specified in the conditions. (DB, 2017)</p>
		Surface & Sub-surface Investigation Program		
4	36	Deleted	N/A	N/A
		Independent Audit		
4	37	<p>Prior to seeking approval from the Department for an extraction plan in any coal seam not previously subject to second workings within the relevant longwall domain, unless the Secretary directs otherwise, the Applicant must commission a suitably qualified person, whose appointment has been approved by the Secretary, to conduct an independent audit of the subsidence, surface water, and ground water impacts of the development. This audit must:</p>	Compliant	<p>Viewed letter from DP&E for LW 8-10A EP dated 25/10/13 confirming that an independent audit under this condition was not required for that document.</p> <p>Viewed email to DP&E for LW 11-13 Extraction Plan with attached Independent Subsidence Audit dated 7/08/15.</p> <p>Viewed letter from DP&E dated 6/5/14 approving audit team. Viewed letter from DP&E dated 11/8/15 confirming</p>

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> (a) review the monitoring data for the development; (b) identify any trends in the monitoring data; (c) examine the subsidence, surface water, and ground water impacts of the development; (d) compare these impacts against the relevant impact assessment criteria and predictions in the EIS; and, if necessary; (e) recommend measures to reduce, mitigate, or remediate these impacts 		satisfaction with audit report and requirement to investigate GW08 & GW09. Viewed investigation report by Hydro Simulations dated 29/9/15 and email to DPI-Water confirming compliance with this request.
4	38	<p>If the independent audit determines that the subsidence, surface water, and/or ground water impacts resulting from the underground mining operations are greater than those predicted in the EIS, the Applicant must:</p> <ul style="list-style-type: none"> (a) assess the significance of these impacts; (b) investigate measures to minimise these impacts, including modifying subsequent mine plans; (c) describe what measures would be implemented to reduce, minimise, mitigate or remediate these impacts in the future; and (d) implement the measures as described in (c); <p>to the satisfaction of the Secretary</p>	Compliant	Refer to Condition 4 Schedule 37 above.
		Final Void Strategy		
4	39	<p>At the end of Year 7 of the development, or as directed otherwise by the Secretary, the Applicant must prepare a Final Void Management Plan for the development, in consultation with the DRE, the Secretary and Council, and to the satisfaction of the Secretary. This Plan must:</p> <ul style="list-style-type: none"> (a) investigate options for the future use of the final void; (b) re-assess the potential groundwater impacts of the development; and (c) describe what actions and measures would be implemented to: <ul style="list-style-type: none"> • minimise any potential adverse impacts associated with the final void; and 	Not compliant	<p>Final Void MP reported as currently under review in MOP dated May 2017.</p> <p>SP (pers comm) confirmed. Viewed submission email dated 30/6/16.</p> <p>No evidence of consultation with SSC.</p>

Sch	Con	Requirement	Status	Comments																				
		<ul style="list-style-type: none"> manage, and monitor potential impacts of, final void over time. <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>																						
		FAUNA & FLORA - Offset Strategy																						
4	40	<p>Within the limits of current technology and best practice flora and fauna management, the applicant must implement the biodiversity offset strategy summarise in Table 16 (including any subsequent revisions approved in writing by the Secretary) to the satisfaction of the Secretary.</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>Remnant Woodland Enhancement Area A</td> <td>424 ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area B</td> <td>454 ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area C</td> <td>211 ha</td> </tr> <tr> <td>Open Cut Woodland Revegetation</td> <td>1,570ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area D</td> <td>46 ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area D Extension</td> <td>2 ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area E</td> <td>41.6 ha</td> </tr> <tr> <td>Remnant Woodland Enhancement Area for the Wambo Coal Terminal</td> <td>As shown in Appendix 4</td> </tr> <tr> <td>Other Areas</td> <td>As identified under Condition 47(b)</td> </tr> </tbody> </table> <p>Table 16: Biodiversity Offset Strategy</p> <p>Notes:</p> <p>(a) The areas specified in table 16 are shown in Appendix 4.</p> <p>(b) The area of Open Cut Woodland Revegetation in Table 16 is based on the establishment of 50% woodland within the mixed woodland/pasture areas shown in the EIS, and with the agreement of the</p>	Area	Size	Remnant Woodland Enhancement Area A	424 ha	Remnant Woodland Enhancement Area B	454 ha	Remnant Woodland Enhancement Area C	211 ha	Open Cut Woodland Revegetation	1,570ha	Remnant Woodland Enhancement Area D	46 ha	Remnant Woodland Enhancement Area D Extension	2 ha	Remnant Woodland Enhancement Area E	41.6 ha	Remnant Woodland Enhancement Area for the Wambo Coal Terminal	As shown in Appendix 4	Other Areas	As identified under Condition 47(b)	Compliant	<p>Sections 3.3, 3.4, 4.2 of the Flora and Fauna Management Plan (FFMP) dated June 2014 provide procedures for RWEP offsets A - D. Viewed approval letter dated 27/3/14 for FFMP.</p> <p>Monitoring program for RWEP in Section 4.2 FFMP. Reviewed current MOP and rehabilitation plans and confirmed consistent.</p> <p>Offset area E is required to be secured under a conservation agreement by December 2017 and included in the Biodiversity Management Plan and MOP. A draft has been sent to OEH as per below. WCPL advised that OEH requested additional information which was provided in March 2018. OEH has not yet provided any further correspondence.</p> <p>This should be followed to finalisation by the due date.</p>
Area	Size																							
Remnant Woodland Enhancement Area A	424 ha																							
Remnant Woodland Enhancement Area B	454 ha																							
Remnant Woodland Enhancement Area C	211 ha																							
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Remnant Woodland Enhancement Area for the Wambo Coal Terminal	As shown in Appendix 4																							
Other Areas	As identified under Condition 47(b)																							

Sch	Con	Requirement	Status	Comments
		<p><i>Secretary, may vary depending on the shape of the final landform and the approved mine closure plan.</i></p> <p><i>(c) Should the Secretary determine that an additional offset is required under Condition 22, the Applicant will be required to provide this offset in addition to the specified offsets in Table 16. The size of any additional offset required must be determined in consultation with OEH and to the satisfaction of the Secretary.</i></p>		
		Conservation Agreement		
4	41	<p>By the end of December 2017, unless otherwise agreed by the Secretary, the Applicant must:</p> <p>(a) enter into a conservation agreement/s pursuant to section 69B of the <i>National Parks and Wildlife Act 1974</i> covering all offset areas listed in Table 16 (see condition 40) and which records the Applicant's obligations under the conditions of this consent in relation to the management of these areas, and register the agreement/s pursuant to section 69F of the <i>National Parks and Wildlife Act 1974</i>; or</p> <p>(b) where OEH has advised in writing that it is of the view that any such offset area or part of such an area should not be subject to a conservation agreement for a period of time, then the Applicant must by the same date cause to be registered against the land title(s) of the area/s a public positive covenant and/or restriction on the use of the land, in favour of the Secretary, requiring the Applicant to implement and observe all obligations under the conditions of this consent in relation to the management of these areas.</p> <p>The conservation agreement or the public positive covenant and/or restriction on the use of land, as the case may be, must remain in force in perpetuity in relation to the area.</p> <p><i>Note: Should the Secretary determine that the specified conservation mechanism is no longer appropriate, the Secretary may approve an</i></p>	Compliant	<p>(a) Viewed conservation agreement dated 4/4/17 for offset areas A, B, D and D. Viewed conservation agreement for rail terminal dated 4/4/17. Viewed email to OEH dated 23/8/17 of draft conservation agreement for Offset Area E (yet to be approved).</p> <p>(b) N/A</p>

Sch	Con	Requirement	Status	Comments
		<i>alternative conservation mechanism to satisfy this condition, in consultation with OEH.</i>		
		Offset Conservation		
	41A	The Applicant must not undertake any mining operations (except approved underground mining operations) or other activities within the offset areas listed in Table 16, other than: (a) activities under an approved Biodiversity Management Plan, Flora & Fauna Management Plan or Heritage Management Plan; (b) environmental management, environmental monitoring or other monitoring required under this consent or under an approved management plan or monitoring program; and (c) rehabilitation activities under an approved Extraction Plan.	Compliant	SP (pers comm) confirmed no mining activities occurred in biodiversity offsets other than approved LW 11-14 operations for gas drainage and dewatering.
		Hunter Coalfield Flora & Fauna Advisory Committee Contribution		
4	42	Deleted		
		Strategic Study Contribution (when established).		
4	43	If, during the development, the Department commissions a strategic study into the regional vegetation corridor stretching from the Wollemi National park to the Barrington Tops National Park, then the Applicant shall contribute a reasonable amount, up to \$20,000, towards the completion of this study.	Not triggered	The Study has not been commissioned and Wambo has not been requested to contribute any funds (SP pers comm).
		Flora & Fauna Management Plan		
4	44	Before carrying out any development, the Applicant shall prepare a Flora and Fauna Management Plan for the development, in consultation with the Hunter Coalfield Flora and Fauna Advisory Committee (<i>when established</i>), and to the satisfaction of the <i>Secretary</i> . This plan must include: (a) a Vegetation Clearance Protocol; (b) a Threatened Species Management Protocol; (c) a Remnant Woodland Enhancement Program; (d) a Flora and Fauna Monitoring Program;	Compliant	Viewed copy of the FFMP, approved by DP&E in letter dated 14/12/14. Included in the following sections of the approved FFMP: (a) Section 3.1 (b) Section 3.2 (c) Section 3.3 (d) Sections 4.1 - 4.2 (e) Sections 3.3.4, 4.2. See discussion in Section 6.9 . (f) Section 3.1.2. Approved by DP&E 14/12/14.

Sch	Con	Requirement	Status	Comments
		<p>(e) strategies to manage any subsidence impacts in the Remnant Woodland Enhancement Areas; and</p> <p>(f) strategies to avoid clearing of Warkworth Sands Endangered Ecological Community and minimise the extent of clearing in other ecological communities for gas drainage infrastructure in the Remnant Woodland Enhancement Areas, to the satisfaction of the Secretary;</p> <p>(g) strategies for the minimisation of impacts of exploration activity in the Remnant Woodland Enhancement Areas; and</p> <p>(h) a description of who would be responsible for monitoring, reviewing, and implementing the plan.</p> <p>By the end of March 2013, the applicant shall revise the Flora and Fauna Management Plan for the development to the satisfaction of the Secretary.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>		<p>(g) Section 3.3.3</p> <p>(h) Sections 4 & 6-7</p> <p>Schedule 4, Condition 40 provides evidence of implementation of the FFMP.</p> <p>Also viewed annual flora and fauna monitoring reports for 2015-17 and 2015 EPBC audit.</p> <p>Actions in response to the flora and fauna reports are reported in section 5.6 of the 2015 and 2016 annual reviews (e.g. weed management, revision of monitoring locations and programs).</p> <p>All actions were noted as completed in the 2016 Annual Review except for the installation of nest boxes. These are noted to be planned for installation in 2018.</p>
4	45	<p>The Vegetation Clearance Protocol shall include:</p> <p>(a) the delineation of areas of remnant vegetation to be cleared;</p> <p>(b) progressive clearing;</p> <p>(c) pre-clearance surveys;</p> <p>(d) identification of fauna management strategies;</p> <p>(e) collection of seed from the local area;</p> <p>(f) salvage and reuse of material from the site; and</p> <p>(g) control of weeds during clearing activities</p>	Compliant	<p>Included in the following sections of the FFMP:</p> <p>(a) Section 3.1.1</p> <p>(b) Section 3.1.5</p> <p>(c) Section 3.1.3</p> <p>(d) Section 3.1.4</p> <p>(e) Section 3.1.6</p> <p>(f) Section 3.1.7</p> <p>(g) Section 3.3.3</p>
4	46	<p>The key components of the Threatened Species Management Protocol shall include:</p> <p>(a) observations/surveys for threatened species (facilitated by the vegetation clearance surveys and Flora and Fauna Monitoring Program);</p> <p>(b) consultation with regulatory authorities; and</p>	Compliant	<p>Section 3.2 of the approved FFMP includes requirements under Condition 46(a-c).</p>

Sch	Con	Requirement	Status	Comments				
		(c) threatened species management strategies and reporting.						
4	47	<p>The Remnant Woodland Enhancement Program shall include:</p> <p>(a) a habitat assessment of all areas listed in Table 16, to obtain additional information on existing habitat resources and characteristics of each area;</p> <p>(b) investigation of other areas to be included in the Program, including the <i>Acacia anuera</i> Community (Community 15) and the Southern Area.</p> <p>(c) appropriate enhancement strategies to be implemented based on the habitat assessment including:</p> <ul style="list-style-type: none"> • the fencing of remnants to exclude livestock; • control measures to minimise the occurrence of weeds; • control measures to minimise the occurrence of feral pests; • limiting vehicular traffic; • selective planting of native vegetation; and the provision of roosting/nesting resources for fauna. 	Compliant	<p>(a-c) Sections 3.3, 4.2 of the FFMP include requirements under Condition 47(a-c).</p> <p>Note: b) <i>Acacia anuera</i> was identified to most likely be <i>Acacia pendula</i> in as per Terry Tame & Travis Peake (2004). Further investigations have been undertaken in 2006 (HLA) and 2008 with no conclusive identification of the species. WCPL follows the precautionary approach and treats the species as <i>Acacia pendula</i> due to its listing in the TSC Act and EPBC Act.</p> <p>Recommend that identification of ‘<i>Acacia anuera</i>’ is finalised and amended in the development consent to <i>Acacia pendula</i> at next modification, if required.</p>				
4	48	<p>The Flora and Fauna Monitoring Program must include:</p> <p>(a) a program to monitor revegetation of disturbance areas including:</p> <ul style="list-style-type: none"> • visual monitoring to determine the need for maintenance and/or contingency measures; and • monitoring of the quality of rehabilitation using Ecosystem Function Analysis (or a similar systems based approach) through the assessment of landscape function, vegetation dynamics and habitat complexity; and <p>(b) a program to monitor the effectiveness of offset strategy in accordance with the description in Table 17.</p>	Compliant	(a-b) Section 4 of the approved FFMP.				
		<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 20%;">Monitoring Component</th> <th style="width: 80%;">Monitoring Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Monitoring Component	Monitoring Description				
Monitoring Component	Monitoring Description							

Sch	Con	Requirement		Status	Comments
		Flora	A number of permanent flora survey quadrats (of varying sizes to survey tree, shrubs and ground cover) should be established in woodland enhancement areas to obtain quantitative data on plant species diversity and abundance.		
		Habitat Complexity	Habitat complexity should be monitored using a number of permanent transects established within woodland enhancement areas. Habitat complexity parameters such as canopy cover, shrub cover, ground vegetation cover, the amount of litter, fallen logs and rocks should be surveyed.		
		Terrestrial Fauna	Terrestrial fauna surveys should be conducted to monitor the usage of enhancement areas by vertebrate fauna. Monitoring may include fauna species diversity and abundance or, alternatively, the use of indicator species to measure the effectiveness of enhancement measures.		
		Aquatic Fauna	Freshwater macro-invertebrate monitoring, including an assessment of SIGNAL A values and water quality (e.g. temperature, pH, and salinity).		
		Specific Enhancement Initiatives	Monitoring of specific enhancement initiatives (e.g. the provision of nesting/ roosting boxes, weed control or feral animal control).		
Table 17: Flora & Fauna Monitoring Program					
		Annual Review			

Sch	Con	Requirement	Status	Comments
4	49	<p>The Applicant must:</p> <p>(a) review the performance of the Flora and Fauna Management Plan annually, in consultation with the Hunter Coalfield Flora & Fauna Advisory Committee; and</p> <p>(b) revise the document as necessary to take into account any recommendations from the annual review.</p>	Compliant	<p>The Advisory committee has not been established; therefore, the Plan is not reviewed annually in consultation with the Hunter Coalfield Flora and Fauna Advisory Committee.</p> <p>Section 7 confirms that the performance of the FFMP is required to be reviewed annually. The 2016 Annual Review states “<i>The Flora and Fauna Management Plan (FFMP) (to be renamed the Biodiversity Management Plan) was reviewed and revised during the reporting period. The Biodiversity Management Plan was submitted to DPE in October 2016</i>” (p.g. 11). It should be reviewed and/or revised as necessary in accordance with Sch 6 con 6.</p> <p>Permission to remove this condition was sought from DP&E but was rejected (HE pers comms).</p>
		Independent Audit		
4	50	<p>Within 5 years of the date of this consent, and every 5 years thereafter, unless the Secretary directs otherwise, the Applicant must commission, and pay the full cost of, an Independent Audit of the offset strategy. This audit must:</p> <p>(a) be conducted by a suitably qualified, experienced, and independent person whose appointment has been endorsed by the Secretary;</p> <p>(b) assess the performance of the offset strategy;</p> <p>(c) review the adequacy of the Flora & Fauna Management Plan; and, if necessary,</p> <p>(d) recommend actions or measures to improve the performance of the offset strategy, and the adequacy of the Flora & Fauna Management Plan.</p>	Not triggered	<p>EPBC Act Approval audit undertaken by Umwelt in May 2015. Next audit due in May 2020.</p> <p>(a) Viewed DP&E approval email dated 11/12/14</p> <p>(b) Section 4.4</p> <p>(c) Section 4.5</p> <p>(d) Section 4.6</p>
		<p>⁷ ABORIGINAL CULTURAL HERITAGE</p> <p>Note: The Applicant is required to obtain consent from OEH under the</p>		See discussion at Schedule 4 Condition 52.

Sch	Con	Requirement	Status	Comments
		<i>National Parks Wildlife Act 1974 to destroy Aboriginal sites and objects on the site.</i>		
		Conservation Agreement		
4	51	Within 12 months of the commencement of this consent, the Applicant must develop a conservation agreement (as part of the Deed of Agreement with the Minister referred to in condition 41 above) for the management of Aboriginal cultural heritage in Remnant Woodland Enhancement Area A in consultation with the Aboriginal Communities and OEH.	Compliant	Previous audit confirmed Deed of Agreement sent to Planning Minister in November 2005. Viewed a copy of OEH correspondence on consultation on the draft Conservation agreement dated 22/05/09, supported by workshop held with Aboriginal community on 02/04/09. Viewed a copy of the Conservation Agreement for the RWEA Area A, dated 4/4/17. Viewed mapping and register with the status of Aboriginal archaeological sites within WCPL consent boundary.
		Salvage		
4	52	Before making application for section 90 consents under the National Parks & Wildlife Act 1974, the Applicant must develop a targeted, strategic salvage program for the development in consultation with OEH and the Aboriginal communities.	Compliant	Previous audit confirmed consultation with Aboriginal community stakeholders during the approval process for AHIP #2222 and Care and Control permit #3130 granted by OEH.
4	53	Before the commencement of salvage operations, the Applicant must ensure that a keeping place is established to house objects recovered from the salvage program.	Compliant	Viewed Keeping Place during site inspection component of the audit. Updated signage of the Keeping Place to ensure that the area is well defined.
4	54	The Applicant must house the objects recovered during the salvage program in the keeping place established for the purpose.	Compliant	Section 3, Appendix A of the approved HMP outlines management of the keeping place under Care & Control Permit #3130.
		Further Investigations		

Sch	Con	Requirement	Status	Comments
4	55	The Applicant must : (a) investigate the cultural significance of the corridors A – Southern and B – Middle (see map in appendix 3) in consultation with the Aboriginal Communities; (b) examine the possible pathways between Remnant Woodland Enhancement Area A (which includes the camp ground associated with the bora) and Wollemi National Park to the east; and (c) investigate the feasibility of reserving from future mining operations, those areas identified as being of cultural significance to the Aboriginal Communities in consultation with OEH.	Not triggered	Previous audit confirmed compliance. Areas A and B are outside the disturbance boundary for the audit period.
		Trust Fund Contribution		
4	56	Before carrying out the development, or as agreed otherwise by the Secretary , the Applicant must contribute \$50,000 to the Hunter Aboriginal Cultural Heritage Trust Fund for further investigations into Aboriginal cultural heritage, as defined by the Trust Deed.	Compliant	Previous audit confirmed contribution made on 7/11/05.
		Aboriginal Cultural Heritage Management		
4	56A	The Applicant must continue to consult with and involve all the registered local Aboriginal representatives in the ongoing management of the Aboriginal Cultural Heritage values at the Wambo Mining Complex. Evidence of this consultation must be collated and provided to the Secretary on request.	Compliant	Reviewed MOD15 EA 2015 Appendix D, Section 2 and documentation and cultural heritage consultation. Evidence of consultation provided in Appendix 1 and Appendix 2. Reviewed MOD14 EA 2015 Appendix D, Section 2. Evidence of consultation in Appendix 1 and Appendix 2. Viewed example distribution letters to two RAPs dated 3/3/17, 25/1/16, 8/9/15 and 19/1/17.
4	56B	In the event that surface disturbance reveals a new Aboriginal object(s) at the Wambo Mining Complex, all work must halt in the immediate area to prevent any further impacts to the object(s). The Applicant shall contact a suitably qualified archaeologist and the registered Aboriginal representatives to determine the significance of the object(s) and to develop an appropriate management strategy. The management strategy	Not triggered	No new objects have been identified in the audit period (SP pers comm).

Sch	Con	Requirement	Status	Comments
		must be developed in accordance with the <i>National Parks and Wildlife Act 1974</i> . Management may include avoiding impact, additional investigations and/or submission of an Aboriginal Heritage Impact Permit application. The Applicant must register the site in the Aboriginal Heritage Information Management System (AHIMS) (managed by the OEH). The management outcome for the site must be included in the information provided to the AHIMS.		
4	56C	In the event that surface disturbance reveals human remains at the Wambo Mining Complex, all works must halt in the immediate area to prevent any further impacts to the remains. The Applicant shall immediately notify Police. No further work must be undertaken until Police provide written authorisation. If the remains are Aboriginal, the Applicant must also notify the OEH and the registered Aboriginal representatives. In the case of Aboriginal remains, no further work must be undertaken until Police and the OEH provide written authorisation.	Not triggered	Described in Section 5 of the approved HMP. No remains found during audit period.
4	56D	The Applicant must prepare and implement an Aboriginal Cultural Education Program in consultation with the registered Aboriginal representatives for the induction of all personnel and contractors involved in construction at the Wambo Mining Complex. The Applicant must keep a register of personnel and contractors that have been inducted according to the program.	Compliant	Viewed Wambo site induction documentation. This includes content outlining Aboriginal heritage sites, notification process and liabilities. Viewed site induction Register containing 2,749 assignees. Recommend that aerial on page 8 of the induction is updated to current.
		⁸ Wambo Homestead complex		
		Section 60 Approval		
4	57	An application under section 60 of the Heritage Act must be submitted to and approved by the Heritage Council prior to the commencement of any development on land within the State Heritage Register listing boundary for the Wambo Homestead Complex. In this regard a mine management plan shall be required to accompany the application which demonstrates	Compliant	No works undertaken during the audit period (SP pers comms) Viewed Wambo Homestead Complex Conservation MP Review. Required to be reviewed every 5 years (last reviewed July 2012). A review has commenced this year (SP pers comms).

Sch	Con	Requirement	Status	Comments
		that the proposed underground mining shall not have adverse heritage impacts on the WHC due to land subsidence		
		Conservation Measures		
4	58	Within 12 months of the commencement of this consent, the Applicant must prepare a conservation management plan for the Wambo Homestead Complex in accordance with Heritage Office guidelines for the consideration of the Heritage Council of NSW.	Compliant	Previous audit stated that Wambo Homestead Conservation Management Plan (CMP) was prepared within 12 months of the commencement of the consent (i.e. 14 November 2005) and submitted to the NSW Heritage Office for review on 9 November 2006. Latest revision to CMP completed in July 2012. Viewed email to Heritage Council dated 15/5/13.
4	59	The conservation policies and an interpretation strategy contained in the conservation management plan are to be implemented in accordance with a timetable to be contained in the conservation management plan.	Compliant	Viewed conservation policy in Section 6 of the CMP. Viewed evidence of conservation and maintenance works at the Wambo Homestead in site review component of audit.
4	60	A suitably qualified and experienced consultant is to be engaged by the applicant to record an oral history of the Wambo Homestead Complex having regard to the strong associations of members of the local community with the site.	Compliant	Oral History reported as submitted in Annual Reviews. Viewed email to OEH dated 5/5/2015.
4	61	In circumstances where safe access to the Wambo Homestead Complex is able to be provided, opportunities are to be offered to the local community to visit the site during and after its conservation.	Compliant	Viewed photos of Jerry's Plains school attending site. Viewed minutes of CCC meetings held every four months. Viewed community newsletter dated June 2015 advising six-monthly drop-in community information sessions.
4	62	Prior to the commencement of mining operations, and then at yearly intervals prior to the approved structural engineer's inspections, a photographic record is to be prepared of all elevations of all structures within the Wambo Homestead Complex. The photographs are to be of archival quality in accordance with the Heritage Office guidelines, How to Prepare Archival Records of Heritage Items 1994, and Guidelines for Photographic Recording of Heritage	Compliant	2011 audit confirmed compliance prior to commencement. Confirmation of inspections were noted in Section 5.8 of the Annual Reviews. Viewed copy of the latest annual photographic record dated 28/10/2016 and letters of submission to NSW Heritage, DP&E and SSC dated 9/11/16.

Sch	Con	Requirement	Status	Comments
		Items, 1994. The photographic record is to be lodged with the NSW Heritage Office, the Department and the Council. <i>The photographic record is to be lodged with NSW Heritage Office, and a copy is to be submitted to the Department and the Council.</i>		
		Blasting		
4	63	Ground vibration and air blast levels are to be monitored and recorded at a blast monitoring station to be established within the Wambo Homestead Complex for each blast within 2 km of the Wambo Homestead Complex.	Compliant	All blast monitored including those over 2 km from this location. Monitoring data viewed, no exceedances of conservative residential amenity criteria. (MB, 2017)
4	64	A suitably qualified and experienced structural engineer, with expertise in vibration and blast monitoring is to be appointed to examine all monitoring records from the Wambo Homestead Complex blast monitoring station. The appointment of the structural engineer is to be approved in writing by the Director of the NSW Heritage Office.	Compliant	Viewed email from DP&E dated 19/10/16 approving Bill Jordan to examine relevant monitoring records. Viewed latest blast vulnerability engineering inspection by Bill Jordan and Associates dated 22/8/17. This report includes a review and comment on blast monitoring records for the Wambo Heritage blast monitoring site.
4	65	Ground vibration and air blast levels experienced at the Wambo Homestead Complex blast monitoring station are not to exceed the structural damage assessment criteria prescribed by <i>Australian Standard AS 2187.2-1993 (or its latest version) "Explosives – Storage Transport and Use" for Sensitive and Heritage Structures</i> to prevent damage to the heritage items.	Compliant	Conservative residential amenity criterion of 5 mm/s adopted as described in Section 3.3 of the BMP. Viewed monitoring data indicating no exceedances of criteria. (MB, 2017)
4	66	The approved structural engineer is to report to the Applicant on the monitoring results each month for blasting within 2 km of the Wambo Homestead Complex and 6 monthly for the remainder of the open cut mining operation and make recommendations to ensure the conservation and prevention of damage to the significant heritage structures. Copies of these reports are to be forwarded to the NSW Heritage Office.	Compliant	Viewed 6 monthly reports most recent dated 22/8/17. Viewed email to structural engineer dated 11/10/16 for blast within 2 km of Wambo Homestead. Engineer advised no damage would result.
4	67	The approved structural engineer is to inspect the Wambo Homestead Complex structures annually and as soon as practical, but no later than 3	Compliant	Viewed 6 monthly reports most recent dated 22/8/17.

Sch	Con	Requirement	Status	Comments
		days after blasting monitoring which exceeds the structural damage assessment criteria prescribed by AS 2187.2-1993 (or its latest version). During the period between blasting monitoring being recorded which exceeds the criteria in AS 2187.2-1993 (or its latest version) and the engineer's inspection, ground vibration from blasting is to be limited to a level which will prevent further blasting damage. The structural engineer is to advise the applicant and the NSW Heritage Office of any action required to repair the damage.		No exceedances of structural damage assessment criteria during IEA period.
4	68	The approved structural engineer is to make an assessment of whether blasting within 2km of the Wambo Homestead Complex is to cease or be managed in order to stabilise or repair the damage, and so advise the applicant and the Director of the NSW Heritage Office. If blasting has been required to cease, it is not to resume until the damage has been stabilised or repaired, and the written approval for resumption has been issued by the Director of the NSW Heritage Office	Not triggered	See response to Schedule 4, Condition 66 above.
		Rehabilitation		
4	69	Following the cessation of the use of the coal haulage road which traverses the Wambo Homestead Complex property, the land is to be returned to its former condition (pre1999) and the half palisade fence on the southern alignment of the mounting yard, which was removed, is to be reinstated as required by the approval of the Heritage Council for the construction of the road on 12 Feb 1999.	Not triggered	Coal haulage on the road has not yet ceased (SP pers comms).
		Movable Heritage Items		
4	70	The Applicant must liaise with the Power House Museum and Museums and Galleries Foundation regarding the significance of movable heritage which shall be displaced by the proposed open cut mining and suitable repositories for the conservation and storage of any significant items.	Not triggered	No moveable Non-Indigenous heritage items were impacted by open cut mining during the audit period. The Non-Aboriginal Heritage Impact Statement for the Wambo EIS lists the following sites outside of the Wambo Homestead Complex with items that have potential to be moved: <ul style="list-style-type: none"> • Site 3, Abandoned Homestead A;

Sch	Con	Requirement	Status	Comments
				<ul style="list-style-type: none"> Site 9, Abandoned Tractor. It is recommended that these items be identified in the field. Then correspondence as required in the condition should occur to close out this item.
		TRAFFIC & TRANSPORT		
		New Access Intersection <i>Note: The Applicant requires RMS approval under the Roads Act 1993 for the new intersection.</i>		
4	71	The Applicant must design and construct the proposed new access intersection with the Golden Highway to the satisfaction of the RMS.	Not Compliant	2011 audit confirmed that the Golden Highway intersection has not been impacted by Wambo approvals and that RMS advised that they did not require the new intersection to be constructed. However, no documentation was available to the previous audit or the 2011 audit. No evidence to confirm that RMS was consulted. Recommend correspondence with RMS is sought confirming the new intersection is not required and condition is removed at next modification or written confirmation from DPE sought confirming not required.
		¹⁰ Road Closure		
4	72	Prior to closing Pinegrove Road, the Applicant must prepare and implement a Road Closure Management Plan in consultation with the affected landowners, and to the satisfaction of Council. This plan must describe the alternate access arrangements for any affected landowners.	Compliant	Previous audit confirm compliance
		Parking		
4	73	The Applicant must provide sufficient parking on-site for all mine-related traffic to the satisfaction of the Secretary .	Compliant	Viewed DP&E letter dated 24/05/11 confirming adequate parking provided on site. 393 vehicle spaces on site for workforce of approximately 320 personnel.

Sch	Con	Requirement	Status	Comments
				Site visit confirmed adequate space available.
		Coal Haulage		
4	74	Deleted	N/A	N/A
4	75	The Applicant must ensure that all product coal is transported from the site by rail except in an emergency, and as agreed by the Secretary in consultation with Council.	Compliant	Confirmed in Section 3.1 of the 2016 Annual Reviews and SP (pers comms)
4	76	Deleted	N/A	N/A
4	77	Deleted	N/A	N/A
4	78	Deleted	N/A	N/A
		Monitoring		
4	79	The Applicant must: <ul style="list-style-type: none"> (a) Keep records of the: <ul style="list-style-type: none"> • amount of coal transported from the site each year; and • number of coal haulage truck movements generated each day by the development; and (b) include these records in the Annual Review. 	Compliant	Required records provided in: <ul style="list-style-type: none"> • Section 3.1 of 2015 Annual Review • Section 3.1 of 2016 Annual Review
		Traffic Management Plan		
4	80	The Applicant must prepare and implement a Traffic Management Plan in consultation with Council, and to the satisfaction of the RMS for the proposed blasting activities that require the temporary periodic closure of the Golden Highway. This plan must ensure that adequate warning is given to road users prior to blasting, and that follow up inspections are made to ensure that public roads are safe and clear of debris.	Compliant	TMP included in Appendix E of the BMP. Viewed road occupancy licence #784784 from RMS expires 30/12/17. Viewed letter to SCC dated 22/6/17. The Golden Highway was not closed for blasting during the audit period. Notification procedures are outlined in Section 4.1 of the WCPL Road Closure Management Procedure for any blasts to be undertaken within 500 m of the Golden Highway. Notifications are to be undertaken at least 24 hrs prior to the scheduled blast event. Notification timing is outlined in Section 5. Section

Sch	Con	Requirement	Status	Comments
				4.3 of the WCPL Road Closure Management Procedure states "Prior to reopening, an inspection of the road will be undertaken by WCPL to check for fly rock and other hazards". Road closures are scheduled to commence in January 2018.
		VISUAL IMPACT - Visual Amenity		
4	81	The Applicant must implement measures to mitigate visual impacts including: (a) design and construction of development infrastructure in a manner that minimises visual contrasts; and (b) progressive rehabilitation of mine waste rock emplacements (particularly outer batters), including partial rehabilitation of temporarily inactive areas.	Compliant	Reviewed infrastructure siting / cladding and progressive rehabilitation during site component of the audit. Visual impact mitigation and rehabilitation progress generally in accordance with EIS and MOP.
4	82	The Applicant must investigate and where feasible implement the following measures at locations assessed in the EIS as having a high potential visual impact: (a) implement landscaping works in consultation with affected rural residents (see Condition 83); and/or (b) place and maintain visual screens between development infrastructure and the viewing location.	Not Compliant	(a) See Schedule 4 Condition 83. (b) Reviewed location of infrastructure areas in relation to private viewing locations and confirmed vegetation and topographic screening. The Montrose Tree Screen has been commenced however is not well established. Recommend it requires attention to ensure effectiveness in mitigating visual impacts (see Plate 15). Updates to be provided in the Annual Review.
4	83	If a landowner of any dwelling assessed in the EIS as having a high potential visual impact requests the Applicant in writing to investigate ways to minimise the visual impact of the development on his/her dwelling, the Applicant must : (a) within 28 days of receiving this request, commission a suitably qualified person whose appointment has been approved by the Secretary , to investigate ways to minimise the visual impacts of the development on the landowner's dwelling; and	Compliant	Visual complaint received from Murphy regarding Montrose East Pit on 7/12/16. Viewed response dated 20/12/16 and Terras report dated February 2017. Viewed email to Murphy with copy of report dated 20/2/17. Viewed email to DP&E dated 20/2/17. Area was rehabilitation (reshaped and germinated) three months after complaint received (SP pers comms).

Sch	Con	Requirement	Status	Comments
		<p>(b) give the landowner a copy of the visual impact mitigation report within 14 days of receiving this report.</p> <p>If both parties agree on the measures that should be implemented to minimise the visual impact of the development, then the Applicant must implement these measures to the satisfaction of the Secretary. If the Applicant and the landowner disagree on the measures that should be implemented to minimise the visual impact of the development, then either party may refer the matter to the Secretary for resolution.</p> <p>If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process (see Appendix 2).</p>		
		Overburden Dumps		
4	84	The Applicant must construct the overburden emplacements generally in accordance with the EIS, and to the satisfaction of DRE .	Compliant	Reviewed the location and extent of OEAs during the site inspection component of the audit and confirmed general consistency with the EIS and approved MOP plans. Compared the mine plans (Figure 2-8 to Figure 2-9 in the Wambo EIS and Plan 3C of the current MOP) to an aerial dated April 2017.
		Lighting Emissions		
4	85	The Applicant must take all practicable measures to mitigate off-site lighting impacts from the development.	Compliant	Received 8 complaints during the audit period for lighting impacts according to the complaints registers due to wind (SP pers comms). The Annual Review for 2016 reports 6 lighting complaints for the period however only 5 are reported in the register. Viewed actions register in response to Multiskilled Resources lighting audit dated 24/7/17. All recommended actions were implemented (SP pers comms).
4	86	Unless otherwise agreed to by the Secretary, all external lighting associated with the development shall comply with Australian Standard	Compliant	Compliance of external lighting at the site confirmed in Multiskilled Resources lighting audit dated 24/7/17.

Sch	Con	Requirement	Status	Comments
		AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting (or its latest version).		
		GREENHOUSE GAS		
4	87	For the life of the development, the Applicant must : (a) monitor the greenhouse gas emissions generated by the development; (b) investigate ways to reduce greenhouse gas emissions generated by the development; and (c) report on greenhouse gas monitoring and abatement measures in the Annual Review, to the satisfaction of the Secretary	Not compliant	Greenhouse gas emissions and minimisation were not reported in 2013-14 Annual Review. However, it has been confirmed they are contained in the 2015 and 2016 Annual Reviews. 2014 Audit that recommended this reporting was added to next Annual Review.
		WASTE MINIMISATION		
4	88	For the life of the development, the Applicant must : (a) monitor the amount of waste generated by the development; (b) investigate ways to minimise waste generated by the development; (c) implement reasonable and feasible measures to minimise waste generated by the development; and (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary	Compliant	Waste volumes, minimisation measures and reporting included in the following: <ul style="list-style-type: none"> Section 5.11 of the 2014-2015 Annual Review; and Section 5.11 of the 2015-2016 Annual Review.
		HAZARDS MANAGEMENT		
		Spontaneous Combustion		
4	89	The Applicant must : (a) take the necessary measures to prevent, as far as is practical, spontaneous combustion on the site; and (b) manage any spontaneous combustion on-site to the satisfaction of DRE.	Not Compliant	Only minor (< 1 m) spontaneous combustion detected during 2017 which has been managed and monitored on site (SP pers comm). Spontaneous Combustion is reported in section 5.17 of the 2015 and 2016 Annual Reviews. The 2015 and 2016 Annual Reviews note the ongoing monitoring for signs of spontaneous combustion in Section 5.17. The minor incident of spontaneous combustion in 2017 was reported in Section 5.17 of the 2017 Annual Review submitted to DPE on 31/03/18.

Sch	Con	Requirement	Status	Comments
				No evidence to confirm that DRE is satisfied with spontaneous combustion management. No comments have been received from DRE following the 2017 Annual Review. However, recommend that when each Annual Review is submitted to DRE, a specific request is made to request DRE's satisfaction with this condition.
		Dangerous Goods		
4	90	The Applicant must ensure that the storage, handling, and transport of: (a) dangerous goods is done in accordance with the relevant <i>Australian Standards</i> , particularly <i>AS1940</i> and <i>AS1596</i> , and the <i>Dangerous Goods Code</i> ; and (b) explosives are managed in accordance with the requirements of DRE .	Compliant	(a) Viewed work cover licence dated 25/1/13 valid to 10/1/18. Viewed internal Dangerous Goods and Hazardous Substances Management Plan last updated in May 2015 which includes management in accordance with AS 1940 and AS 1596. Recommend this is reviewed and revised in next audit period. (b) No incidences have occurred and no requests from DRE in this regard in the audit period (SP pers comms) Viewed daily magazine inspections reports from 16/08/17, 17/08/17, 31/08/17, 4/09/17, 27/09/17 and 28/09/17 and monthly magazine inspection checklist from January, March and June 2017. Viewed weekly magazine stocktake forms from 29/12/17. Field inspection did not opportunistically note any dangerous good stored inappropriately.
4	91	Before carrying out any development, the Applicant shall update the Safety Management System covering all operations on the site, including the safe storage of ammonium nitrate, to the satisfaction of the Secretary .	Compliant	Viewed internal WCPL safety management procedures for transport, handling and storage of explosives on site. Noted in the 2011 IEA as compliant (Trevor Brown & Associates).
		BUSHFIRE MANAGEMENT		
4	92	The Applicant must :	Compliant	(a) Site operates under an approved Bushfire Management Plan. Some mining equipment (e.g. water

Sch	Con	Requirement	Status	Comments										
		(a) ensure that the development is suitably equipped to respond to any fires on-site; and (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire on-site during the development.		carts, graders) are able to be used to respond to bushfire events, as needed. (b) No fires occurred on site during audit period.										
4	93	Before carrying out any development, the Applicant must prepare a Bushfire Management Plan for the site, to the satisfaction of Council and the Rural Fire Service.	Compliant	Viewed Bushfire Management Plan dated August 2013 and correspondence with RFS and SSC. RFS provided comment and approval via email dated 28/09/14. SSC did not comment on the revised plan as provided on 28/08/13.										
		REHABILITATION												
		Rehabilitation Objectives												
4	94	The Applicant must rehabilitate the Wambo Mining Complex to the satisfaction of DRE . The rehabilitation must be generally in accordance with the proposed rehabilitation strategy described by the documents listed in Condition 2 of Schedule 3 and the objectives in Table 18. Table 18: Rehabilitation Objectives <table border="1"> <thead> <tr> <th>Area/Domain</th> <th>Rehabilitation Objectives</th> </tr> </thead> <tbody> <tr> <td>Mine site (as a whole), including the final void</td> <td>Safe, stable & non-polluting</td> </tr> <tr> <td>Surface infrastructure</td> <td>To be decommissioned and removed, unless the Executive DRE agrees otherwise</td> </tr> <tr> <td>Community</td> <td>Ensure public safety Minimise the adverse socio-economic effects associated with mine closure</td> </tr> <tr> <td>Landforms</td> <td>Final landforms are consistent with and complement topography of the surrounding region to minimise prominence of the final landforms in the post mine landscape</td> </tr> </tbody> </table>	Area/Domain	Rehabilitation Objectives	Mine site (as a whole), including the final void	Safe, stable & non-polluting	Surface infrastructure	To be decommissioned and removed, unless the Executive DRE agrees otherwise	Community	Ensure public safety Minimise the adverse socio-economic effects associated with mine closure	Landforms	Final landforms are consistent with and complement topography of the surrounding region to minimise prominence of the final landforms in the post mine landscape	Compliant	Reviewed current rehabilitation against EIS concept plans (Figures 2-8 to 2-9 of the Wambo EIS), Plans 4-6 of the Open Cut MOP (June 2010 – June 2016), RMP and relevant sections of the Annual Reviews during the audit period. Compared to rehabilitation observed in site visit and aerial dated 26/6/17 and confirmed performance to date is generally consistent with the before mentioned MOP and the EIS figures. Rehabilitation is being undertaken generally in accordance with consent required objectives and management commitments. The current rehabilitation status of the North Wambo Creek diversion was established through a review of the Surface Water Technical Report for South Bates Underground Mine (Alluvium, 2016) and drone footage collected on 3 August 2017, and a site inspection undertaken on 20 August 2017. These findings were compared to the rehabilitation strategy outlined in Section 5.4 of Appendix B of the SEE (Sept 2006), Table ES-3 of
Area/Domain	Rehabilitation Objectives													
Mine site (as a whole), including the final void	Safe, stable & non-polluting													
Surface infrastructure	To be decommissioned and removed, unless the Executive DRE agrees otherwise													
Community	Ensure public safety Minimise the adverse socio-economic effects associated with mine closure													
Landforms	Final landforms are consistent with and complement topography of the surrounding region to minimise prominence of the final landforms in the post mine landscape													

Sch	Con	Requirement	Status	Comments
		<p>All watercourses subject to subsidence impacts</p> <p>Hydraulically and geomorphologically stable, with riparian vegetation established that is the same or better than prior to commencement of mining</p>		<p>the South Bates (Wambo Seam) Underground Mine Modification – Environmental Assessment, Section 2.9 of the North Wambo Underground Mine Modification 13 (Dec 2012) and Sections 6 and 7 of the 2015 and 2016 Annual Reviews.</p> <p>Recommend, pending the outcome of the United Wambo Open Cut Project, currently being assessed by DP&E, that the woodland corridors in the RL 160 dump areas are developed further to join the existing areas and the MOP is amended to show defined corridors.</p> <p>The current rehabilitation status of the North Wambo Creek diversion was established through a review of the Surface Water Technical Report for South Bates Underground Mine (Alluvium, 2016) and drone footage collected on 3 August 2017, and a site inspection undertaken on 20 August 2017. These findings were compared to the rehabilitation strategy outlined in Section 5.4 of Appendix B of the SEE (Sept 2006), Table ES-3 of the South Bates (Wambo Seam) Underground Mine Modification – Environmental Assessment, Section 2.9 of the North Wambo Underground Mine Modification 13 (Dec 2012) and Sections 6 and 7 of the 2015 and 2016 Annual Reviews.</p> <p>These investigations confirmed that the North Wambo Creek diversion and adjacent reaches of the watercourse do not yet meet the final rehabilitation objectives for hydraulic and geomorphic stability.</p> <p>The recently updated diversion monitoring and maintenance program, when fully implemented, is</p>

Sch	Con	Requirement	Status	Comments
				<p>expected to achieve a level of geomorphic function and stability that is consistent with the rehabilitation objectives.</p> <p>Prior to completion of the next audit period, WPCL must undertake all monitoring and maintenance measures arising from the approved program and ensure that the North Wambo Creek diversion and adjacent reaches of the watercourse are hydraulically and geomorphically stable and a suitable level of riparian vegetation is established. (RE, 2017)</p>
4	94A	Operating Conditions		
		<p>The Applicant must:</p> <p>(a) develop a detailed soil management protocol that identifies procedures for:</p> <ul style="list-style-type: none"> • comprehensive soil surveys prior to soil stripping; • assessment of top-soil and sub-soil suitability for mine rehabilitation; and • annual soil balances to manage soil handling including direct respreading and stockpiling; <p>(b) maximise the salvage of suitable top-soils and sub-soils and biodiversity habitat components such as bush rocks, tree hollows and fallen timber for rehabilitation of disturbed areas within Wambo Mining Complex and for enhancement of biodiversity offset areas;</p> <p>(c) ensure that coal reject or any potentially acid forming interburden materials must not be emplaced at elevations within the pit shell or out of pit emplacement areas where they may promote acid or sulphate species generation and migration beyond the pit shell or out of pit emplacement areas; and</p> <p>(d) ensure that no dirty water can drain from an out of pit emplacement area to any offsite watercourse or to any land beyond the lease boundary.</p>	Not Compliant	<p>(a) Section 3.3.6 and Table 16 of current MOP. Table 16 outlines the soil resource management strategies to be undertaken prior, during and after soil stripping (during stockpiling). This includes surveys and characterisation of soil for rehabilitation and undertaking annual soil balances as per this condition.</p> <p>However, no evidence was provided to show soils surveys were undertaken in audit period. Recommend this is undertaken and section in Soil management Protocol updated for any remaining areas to be stripped showing specific depths for specific areas.</p> <p>Viewed examples of completed disturbance permit (including a soil management component) required prior to disturbance (SDP No. 525).</p> <p>(b) Section 3.3.6 of MOP</p> <p>(c) Section 2.3.4 and 2.3.5 of the MOP</p> <p>(d) Reviewed site Water Management Plan, CITEC system and water management measures in the field to</p>

Sch	Con	Requirement	Status	Comments
				confirm appropriate measures are in place to restrict any potential for drainage offsite from active OEAs.
		Progressive Rehabilitation		
	94B	The Applicant must rehabilitate the Wambo Mining Complex progressively, that is, as soon as reasonably practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim rehabilitation strategies shall be employed when areas prone to dust generation cannot yet be permanently rehabilitated. <i>Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the project.</i>	Compliant	See condition 4.94. Reviewed current rehabilitation against EIS concept plans, Open Cut MOP (June 2010 – June 2016), RMP and relevant sections of Annual Reviews during the audit period (JC 2017).
		Rehabilitation Management Plan		
	94C	The Applicant must prepare and implement a Rehabilitation Management Plan for the Wambo Mining Complex to the satisfaction of DRE. This plan must: (a) be prepared in consultation with the Department, DPI-Water, OEH, Council and the CCC; (b) be submitted to the DRE by the end of June 2013; (c) be prepared in accordance with any relevant DRE guideline; (d) describe how the rehabilitation of the site would be integrated with the implementation the biodiversity offset strategy; (e) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary); (f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, and final land use;	Compliant	Viewed approval letter from DP&E dated 4/5/15 to include RMP in MOP. a-k addressed in each section of the RMP as follows: (a) Consultation with relevant departments outlines in Section 1.5.1 and with CCC in Section 1.5.2 of the MOP. (b) Approval letter from DP&E dated 4/5/15 (c) Approval letter from DP&E dated 4/5/15 (d) Section 3.3.7 (e) Sections 6 and 9 (f) Section 1.3.2 pertains to conditions. All else is addressed throughout document. (g) Section 2.3.5 (h) Section 8.4 (i) Sections 2.3.9 & 2.3.10 (j) Sections 8 & 10. (k) Section 3.4

Sch	Con	Requirement	Status	Comments
		(g) include a detailed tailings management strategy that includes timing for rehabilitation of all tailings storage facilities, in order that final land form and land use objectives can be achieved in a timely manner; (h) include a plan that describes proposed grazing carrying capacity across the post mining landscape; (i) include interim rehabilitation where necessary to minimise the area exposed for dust generation; (j) include a program to monitor, independently audit and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and (k) build to the maximum extent practicable on the other management plans required under this consent.		
		MINE EXIT STRATEGY		
4	95	The Applicant must work with the Council to investigate the minimisation of adverse socio-economic effects of a significant reduction in local employment levels and closure of the Wambo Mining Complex at the end of its life.	Not Triggered	Wambo complex still operating. The current development consent expires on 1 March 2025 (i.e. in 7 years). It would be reasonable to expect this done within 5 years of closure (possibly within the next audit period). Noted that MOD 17 and a Joint Venture operation is currently being progressed with United Collieries to extend operations until 2032.
		SCHEDULE 5 ADDITIONAL PROCEDURES FOR AIR QUALITY & NOISE MANAGEMENT		
		Notify Landowners		
5	1	If the air dispersion and/or noise model predictions in the documents listed in condition 2 of schedule 3 identify that the air pollution and/or noise generated by the development are likely to be greater than the air quality and/or noise impact assessment criteria in conditions of schedule 4, then the Applicant must notify the relevant landowners and/or existing	Compliant	Previous audit confirmed landholders assessed to be impacted in the Wambo EIS were notified as per condition. Viewed an example of tenant notification of rights, provision of fact sheet and reference to Wambo website

Sch	Con	Requirement	Status	Comments
		or future tenants (including tenants of mine-owned properties) accordingly before it carries out any development.		dated 3/11/14 distributed by WCPL-commissioned real estate agent. Tenants are also advised of management documents and monitoring results available on the Wambo website. Recommended this internally updated at regular intervals (suggested 4-5 yearly).
5	2	If the results of the air quality and/or noise monitoring required in schedule 4 identify that the air pollution and/or noise generated by the development are greater than the air quality and/or noise impact assessment criteria in schedule 4, then the Applicant must notify the relevant landowners and/or existing or future tenants (including tenants of mine-owned properties) as soon as practicable after identifying the exceedance.	Not triggered	No exceedances of criterion at private land holders or tenants.
5	3	Before carrying out any development, the Applicant must develop a procedure in consultation with EPA and NSW Health and approved by the Secretary , for notifying landowners and tenants referred to in condition 1. This procedure must ensure that: (a) all existing and future tenants are advised in writing about: <ul style="list-style-type: none"> • air quality impacts likely to occur at the residence during the operational life of the mine; and • likely health and amenity impacts associated with exposure to particulate matter; (b) the written advice in (a) is based on current air quality monitoring data, dispersion modelling results, research and literature; and there is an ongoing process for providing current air quality monitoring data, dispersion modelling results, research and literature to the tenants	Compliant	See comments on Schedule 5, Condition 1.
		Independent Review		
5	4	If a landowner considers the development to be exceeding the air quality and/or noise impact assessment criteria listed in schedule 4 at his/her dwelling, or at any proposed dwelling on his/her vacant land, then he/she	Not triggered	One review was requested for Noise in March 2017, however the Secretary has reviewed available data supplied by Wambo and determined a more detailed

Sch	Con	Requirement	Status	Comments
		<p>may ask the Applicant for an independent review of the air pollution and/or noise impacts of the development on his/her dwelling, or proposed dwelling.</p> <p>If the Secretary is satisfied that an independent review is warranted, the Applicant must:</p> <p>(a) consult with the landowner to determine his/her concerns; and</p> <p>(b) commission a suitably qualified person – whose appointment has been approved by the Secretary – to conduct air quality and/or noise monitoring at the relevant dwelling to determine whether the development is complying with the relevant impact assessment criteria, and identify the source(s) and scale of any air quality and/or noise impact at the dwelling, and the development’s contribution to this impact.</p> <p>Within 14 days of receiving the results of this independent review, the Applicant must give a copy of these results to the Secretary and landowner.</p>		<p>review and/or additional monitoring is not warranted in this case. (MB, 2017)</p> <p>No review under this condition was requested during the audit period for Air Quality (JC 2017)</p>
5	5	<p>If the independent review (referred to in condition 4) determines that the development is complying with the relevant impact assessment criteria listed in schedule 4 at the dwelling, then the Applicant may discontinue the independent review with the approval of the Secretary.</p>	Not triggered	See response to Schedule 5 Condition 4
5	6	<p>If the independent review (referred to in condition 4) determines that the development is not complying with the relevant impact assessment criteria listed in schedule 4 at the dwelling, and that the development is primarily responsible for this non-compliance, then the Applicant shall:</p> <p>(a) take all practicable measures, in consultation with the landowner, to ensure that the development complies with the relevant impact assessment criteria; and conduct further air quality and/or noise monitoring at the dwelling to determine whether these measures ensure compliance; or</p>	Not triggered	See response to Schedule 5 Condition 4

Sch	Con	Requirement	Status	Comments
		<p>(b) secure a written agreement with the landowner to allow exceedances of the air quality and/or noise impact assessment criteria listed in schedule 4.</p> <p>If the additional monitoring referred to above subsequently determines that the development is complying with the relevant impact assessment criteria listed in schedule 4 at the dwelling, then the Applicant may discontinue the independent review with the approval of the Secretary. If the measures referred to in (a) do not ensure compliance with the air quality and/or noise land acquisition criteria listed in schedule 4 at the dwelling, and the Applicant cannot secure a written agreement with the landowner to allow exceedances of the air quality and/or noise impact assessment criteria listed in schedule 4, then the Applicant shall, upon receiving a written request from the landowner, acquire all or part of the landowner's land in accordance with the procedures in conditions 9-11 below</p>		
5	7	<p>If the independent review determines that the development is not complying with the air quality and/or noise impact assessment criteria listed in schedule 4 at the dwelling, but that several mines are responsible for this non-compliance, then the Applicant shall, with the agreement of the landowner and other mine(s) prepare and implement a Cumulative Air Quality and/or Noise Impact Management Plan for the land to the satisfaction of the Secretary. This plan must provide the joint approach to be adopted by the Applicant and other mine(s) to manage cumulative air quality and/or noise impacts at the landowner's dwelling, and the acquisition of any land.</p> <p>If the Applicant is unable to finalise an agreement with the landowner and/or other mine(s), and/or prepare a Cumulative Air Quality and Noise Impact Management Plan, then the Applicant or landowner may refer the matter to the Secretary for resolution.</p>	Not triggered	See response to Schedule 5 Condition 4

Sch	Con	Requirement	Status	Comments
		If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process. If, following the Independent Dispute Resolution Process, the Secretary decides that the Applicant shall acquire all or part of the landowner's land, then the Applicant shall acquire this land in accordance with the procedures in conditions 9-11 below.		
5	8	If the landowner disputes the results of the independent review (referred to in condition 4), either the Applicant or the landowner may refer the matter to the Secretary for resolution. If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process	Not triggered	See response to Schedule 5 Condition 4
		Land Acquisition		
5	9	Within 6 months of receiving a written request from the landowner, the Applicant shall pay the landowner: (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development the subject of the DA, having regard to the: <ul style="list-style-type: none"> • existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and • presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date; (b) the reasonable costs associated with: <ul style="list-style-type: none"> • relocating within the Singleton local government area, or to any other local government area determined by the Secretary; • obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and 	Not triggered	None received (SP pers comms).

Sch	Con	Requirement	Status	Comments
		<p>(c) reasonable compensation for any disturbance caused by the land acquisition process.</p> <p>However, if within 6 months of receiving this written request, the Applicant and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution.</p> <p>Upon receiving such a request, the Secretary shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute, to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.</p> <p>If either party disputes the independent valuer's determination, then the independent valuer must refer the matter back to the Secretary.</p> <p>Upon receiving such a referral, the Secretary shall appoint a panel to determine a fair and reasonable acquisition price for the land, and/or the terms upon which the land is to be acquired, comprising the:</p> <ul style="list-style-type: none"> (i) appointed independent valuer, (ii) Secretary or nominee, and (iii) President of the Law Society of NSW or nominee. <p>Within 14 days of receiving the panel's determination, the Applicant shall make a written offer to purchase the land at a price not less than the panel's determination.</p> <p>If the landowner refuses to accept this offer within 6 months of the date of the Applicant's offer, the Applicant's obligations to acquire the land shall cease, unless otherwise agreed by the Secretary.</p>		
5	10	The Applicant shall bear the costs of any valuation or survey assessment requested by the independent valuer, panel, or the Secretary and the costs of determination referred to in Condition 9.	Not triggered	N/A

Sch	Con	Requirement	Status	Comments
5	11	If the Applicant and landowner agree that only part of the land should be acquired, then the Applicant shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision, and registration of the plan at the Office of the Registrar-General	Not triggered	N/A
		SCHEDULE 6 – ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING & REPORTING		
		ENVIRONMENTAL MANAGEMENT STRATEGY		
6	1	<p>Before carrying out any development, the Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:</p> <p>(a) provide the strategic context for environmental management of the development;</p> <p>(b) identify the statutory requirements that apply to the development;</p> <p>(c) describe in general how the environmental performance of the development would be monitored and managed during the development;</p> <p>(d) describe the procedures that would be implemented to:</p> <ul style="list-style-type: none"> • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance; • manage cumulative impacts; and • respond to emergencies; and <p>(e) describe the role, responsibility, authority, and accountability of all the key personnel involved in environmental management of the development.</p> <p>The Applicant must implement the approved strategy as approved from time to time by the Secretary</p>	Compliant	Reviewed approved EMS dated January 2009 and confirmed content is compliant with requirements. Viewed email to DP&E dated 31/6/17 for revised EMS (not yet approved).

Sch	Con	Requirement	Status	Comments
6	2	<p>Within 14 days of the Secretary approval, the Applicant shall:</p> <p>(f) send copies of the approved strategy to the relevant agencies, Council, and the CCC; and</p> <p>(b) ensure the approved strategy is publicly available during the development.</p>	Compliant	<p>Previous audit confirmed submission of the EMS within required timeframe.</p> <p>Viewed EMS on Wambo website.</p> <p>Once the revised EMS is approved it must be sent to the relevant agencies, Council and CCC within 14 days.</p>
		Adaptive Management		
6	3	<p>The Applicant must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 4. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.</p> <p>Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:</p> <p>(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;</p> <p>(b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and</p> <p>(c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.</p>	Not Compliant	<p>Reviewed environmental incident register for the audit period. Two exceedances occurred within the audit period as follows:</p> <p>HRSTS flow meter failure: WCPL notified EPA 12/2/15.</p> <p>Sediment Dam Wall Failure 3/1/16-6/1/16: WCPL notified EPA on 16/1/16 and sent report to DP&E (viewed during audit). Actions and prevention measures outlined in Section 6 of report. WCPL updated Sections 3 & 4 of the ESCP in response. Still ongoing issue with a court date scheduled for 1/11/17.</p>
		Management Plan Requirements		
6	4	<p>The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <p>(a) detailed baseline data;</p> <p>(b) a description of:</p> <ul style="list-style-type: none"> the relevant statutory requirements (including any relevant consent, licence or lease conditions); 	Compliant	<p>Approved management plans prepared in accordance with relevant guidelines, plans and impact criteria, with performance measures included as required.</p>

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> • 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; <p>(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p> <p>(d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> • impacts and environmental performance of the Wambo Mining Complex; • effectiveness of any management measures (see c above); <p>(e) a contingency plan to manage any unpredicted impacts and their consequences;</p> <p>(f) a program to investigate and implement ways to improve the environmental performance of the Wambo Mining Complex over time;</p> <p>(g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and 34 <p>(h) a protocol for periodic review of the plan.</p>		
		ANNUAL REVIEW		
6	5	<p>By the end of March each year, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:</p> <p>(a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;</p>	Compliant	<p>Viewed Annual Reviews for the two years since previous audit. Viewed email submission to DP&E 3/3/17.</p> <p>(a) Annual Reviews document mining activities and rehabilitation for each reporting period (Section 7).</p> <p>(b) Tables 10, 12 & 16</p>

Sch	Con	Requirement	Status	Comments
		<p>(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against:</p> <ul style="list-style-type: none"> the relevant statutory requirements, limits or performance measures/criteria; the monitoring results of previous years; and the relevant predictions in the EIS; <p>(c) identify any non-compliance over the previous calendar year, and describe what actions were (or are being) taken to ensure compliance;</p> <p>(d) identify any trends in the monitoring data over the life of the development;</p> <p>(e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and</p> <p>(f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.</p>		<p>(c) Annual Reviews document non-compliances and remedial actions (Section 4).</p> <p>(d) Compliant; Annual Reviews review and identify trends in monitoring data.</p> <p>(e) See subsection (b) above.</p> <p>(f) Compliant; Environmental performance measures and improvements are described.</p>
		REVISION OF STRATEGIES, PLANS AND PROGRAMS		
6	6	<p>Within 3 months of:</p> <p>(a) the submission of an annual review under Condition 5 above;</p> <p>(b) the submission of an audit report under Condition 7 below;</p> <p>(c) the submission of an incident report under Condition 10 below; or</p> <p>(d) any modification to the conditions of this consent, (unless the conditions require otherwise), the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.</p> <p><i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.</i></p>	Not Compliant	<p>Viewed email to DP&E dated 29/6/17 with attached spreadsheet of management plan updates either submitted for approval or currently being revised.</p> <p>Evidence was not available during this audit to confirm that all plans were reviewed after every Annual Review, incident and IEA and revised if necessary.</p> <p>Recommend that a register or internal memo is kept to confirm reviews and/or revisions of strategies, plans, and programs (after each Annual Review, this IEA, or incident) required under this condition are undertaken following triggers specified in a-d.</p>
		INDEPENDENT ENVIRONMENTAL AUDIT		

Sch	Con	Requirement	Status	Comments
6	7	<p>Every 3 years, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:</p> <p>(a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;</p> <p>(b) include consultation with the relevant agencies;</p> <p>(c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these consents/approvals);</p> <p>(d) review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals;</p> <p>(e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and</p> <p>f) be conducted and reported to the satisfaction of the Secretary.</p> <p><i>Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.</i></p> <p>Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.</p>	Compliant	<p>(a) Letter approving audit team in Appendix A dated 24/8/17.</p> <p>(b) Consultation with relevant agencies discussed in main volume.</p> <p>(c) This audit.</p> <p>(d) AQGGMP reviewed by PEL. NMP and BMP reviewed by Bridges Acoustics. ESCP reviewed by RE. WMP reviewed by AGE. See assessment and recommendations in Appendix F.</p> <p>(e) This audit. See Table 9.</p> <p>(f) Previous audit undertaken by Hansen Bailey submitted to DP&E on 30/1/2015 (site visit commenced 6/11/2014).</p>
		COMMUNITY CONSULTATIVE COMMITTEE		
6	8	<p>Before carrying out any development, the Applicant must establish a new Community Consultative Committee to oversee the environmental performance of the development. This committee must:</p> <p>(a) be comprised of:</p> <ul style="list-style-type: none"> • 2 representatives from the Applicant, including the person responsible for environmental management at the mine; • 1 representative from Council; and 	Compliant	Viewed examples of Wambo CCC minutes dated 8 August 2017, 11 April 2017, 7 December 2016, 12 April 2017, December 2016, September 2015 and July 2015 on website.

Sch	Con	Requirement	Status	Comments
		<ul style="list-style-type: none"> • at least 3 representatives from the local community, whose appointment has been approved by the Secretary in consultation with the Council; (b) be chaired by the representative from Council or by a third party as approved by the Secretary; (c) meet at least twice a year; and (d) review and provide advice on the environmental performance of the development, including any construction or environmental management plans, monitoring results, audit reports, or complaints. 		
6	9	<p>The Applicant must, at its own expense:</p> <ul style="list-style-type: none"> (a) ensure that 2 of its representatives attend the Committee's meetings; (b) provide the Committee with regular information on the environmental performance and management of the development; (c) provide meeting facilities for the Committee; (d) arrange site inspections for the Committee, if necessary; (e) take minutes of the Committee's meetings; (f) make these minutes available to the public for inspection within 14 days of the Committee meeting, or as agreed to by the Committee; (g) respond to any advice or recommendations the Committee may have in relation to the environmental management or performance of the development; (h) forward a copy of the minutes of each Committee meeting, and any responses to the Committee's recommendations to the Secretary within a month of the Committee meeting. 	Compliant	See Schedule 6 Condition 8 above.
		REPORTING		
		Incident Reporting		
6	10	The Applicant must notify at the earliest opportunity, the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident	Compliant	See Schedule 6 Condition 8 above. Self-reported incidents.

Sch	Con	Requirement	Status	Comments
		associated with the project, the Applicant must notify the Secretary and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.		
6	11	Regular Reporting		
		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.	Compliant	Viewed the Wambo Coal website on 25 September 2017, which provides monitoring data for environmental performance on meteorology, blasting, air quality, noise, incidents and community complaints.
		ACCESS TO INFORMATION		
6	12	<p>From the end of June 2011, the Applicant must:</p> <p>(a) make copies of the following publicly available on its website:</p> <ul style="list-style-type: none"> • the documents referred to in Condition 2 of Schedule 3; • all current statutory consents for the development; • all approved strategies, plans and programs required under the conditions of this consent; • a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; • a complaints register, updated on a monthly basis; • minutes of CCC meetings; • the annual reviews of the development; • 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 <p>(b) keep this information up-to-date, to the satisfaction of the Secretary.</p>	Not Compliant	Viewed the Wambo Coal website on 25 September 2017. Letter (c) and (d) in Schedule 3 Condition 2 not publicly available at time of audit. WCPL has been unable to locate a copy of these documents.

Sch	Con	Requirement	Status	Comments
		Online Communication of Operational Responses and Noise and Air Quality Monitoring		
6	13	<p>The Applicant must, by the end of June 2013:</p> <p>(a) make the following information for the Wambo Mining Complex publicly available on its website, on a daily basis and in a clearly understandable form:</p> <ul style="list-style-type: none"> • daily weather forecasts for the coming week; • proposed operational responses to these weather forecasts; • real-time noise and air quality monitoring data (subject to any necessary caveats); and • any operational responses that were taken in response to the noise and air quality monitoring data, and <p>(b) make provision on its website for the provision of on-line and/or email comments by members of the community regarding this information, to the satisfaction of the Secretary.</p>	Compliant	<p>(a) Wambo website provides required daily weather and real-time noise and air monitoring data.</p> <p>(b) Contact details are available on the Wambo website to allow community feedback.</p>

Table D2
DA 177-8-2004 Consolidated Conditions of Approval

Blue type represents Notice of Modification 15 December 2006 (126-10-2006)

Pink type represents 2012 modification

Sch	Con	Requirement	Status	Comment
		Development Application: DA 177-8-2004		
		SCHEDULE 3 ADMINISTRATIVE CONDITIONS		
		Obligation to Minimise Harm to the Environment		
3	1	The Applicant must implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.	Compliant	There were some reportable incidents and environmental non-compliances recorded during the audit period.
		Terms of Approval		
3	2	The Applicant must carry out the development generally in accordance with the: (a) SEE; (b) SEE (Mod 1) (c) EA (Mod 2); and (d) conditions of this consent.	Compliant	Reviewed development consent conditions (this table) and confirmed operations generally in accordance with consent requirements and activities described in relevant environmental assessment documents. See discussion in Section 6 of the main IEA report.
3	3	If there is any inconsistency between the above documents, the more recent document must prevail over the former to the extent of the inconsistency. However, the conditions of this consent must prevail over all other documents to the extent of any inconsistency.	Not triggered	No inconsistencies were noted during the IEA by the auditor or noted by WCPL.
3	4	The Applicant must comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (a) any reports, plans or correspondence that are submitted in accordance with this consent; and (b) the implementation of any actions or measures contained in these reports, plans or correspondence.	Compliant	Management plans and Annual Reviews were updated during the audit period as described below. SP (pers comm) confirmed no additional requests made under this condition.
		Limits on Approval		

Sch	Con	Requirement	Status	Comment
3	5	This consent lapses 21 years after the date it commences.	Not triggered	Lapses 2025.
3	6	<p>The Applicant must:</p> <p>(a) not transport more than 15 million tonnes of product coal via this development each year;</p> <p>(b) only permit trains being loaded with coal at the Wambo loading facilities to utilise the refuelling infrastructure; and</p> <p>(c) restrict the number of trains utilising the refuelling infrastructure to a maximum of six trains on any day.</p> <p><i>Note: For the purposes of this condition, each train entering and exiting the site is classified as 2 train movements and a day refers to the 24 hours from midnight to midnight the next day.</i></p>	Compliant	<p>(a) Confirmed in Section 3.1 of Annual Reviews</p> <p>(b) ND (pers comm) confirmed that only trains loading coal from Wambo used the refuelling facility.</p> <p>(c) Viewed internal Train Weight Spreadsheet dated 17/5/17 documenting train movements. ~3 per day.</p>
		Structural Adequacy		
3	7	<p>The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirement of the BCA and MSB.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works. Part 8 of the EP&A Regulation sets out the requirements for the certification of development. The development is located in the Patrick Plains Mine Subsidence District. Under section 15 of the Mine Subsidence Compensation Act 1961, the Applicant is required to obtain the Mine Subsidence Board's approval before constructing or relocating any improvements on the site. 	Not triggered	No new structures (SP pers comms).
		Demolition		
3	8	The Applicant must ensure that all demolition work is carried out in accordance with AS 2601-2001: <i>The Demolition of Structures</i> , or its equivalent latest version.	Not triggered	No demolition works undertaken during audit period.
		Protection of Public Infrastructure		

Sch	Con	Requirement	Status	Comment								
		development comply with the predictions in the SEE, and the relevant conditions in this consent, at any residence on this land, to the satisfaction of the Director-General.										
		¹ NOISE										
		Noise Impact Assessment Criteria										
4	3	<p>The Applicant must ensure that noise generated by the development, combined with noise generated by any development in the Wambo Mining Complex, does not exceed the noise criteria provided in Table 2, unless higher noise criteria are specified in the consent for the Wambo Coal Mine (DA 305-7-2003).</p> <p>Table 2: Noise impact assessment criteria dB(A)</p> <table border="1"> <thead> <tr> <th>Day LAeq(15 minute)</th> <th>Evening/Night LAeq(15 minute)</th> <th>Night LA1(1 minute)</th> <th>Land Number</th> </tr> </thead> <tbody> <tr> <td>35</td> <td>35</td> <td>50</td> <td>All private residential or sensitive receptors, excluding the receptors listed in Table 1</td> </tr> </tbody> </table> <p>Notes:</p> <ul style="list-style-type: none"> Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. For this condition to apply, the exceedance of the criteria must be systemic. 	Day LAeq(15 minute)	Evening/Night LAeq(15 minute)	Night LA1(1 minute)	Land Number	35	35	50	All private residential or sensitive receptors, excluding the receptors listed in Table 1	Compliant	Covered in DA 305-7-2003 Schedule 4 Condition 6 which includes equal or higher noise criteria. (MB, 2017)
Day LAeq(15 minute)	Evening/Night LAeq(15 minute)	Night LA1(1 minute)	Land Number									
35	35	50	All private residential or sensitive receptors, excluding the receptors listed in Table 1									
		Construction Hours										
4	4	The Applicant must ensure that all construction work is carried out from 7 am to 6 pm Monday to Saturday (inclusive) and 8 am to 6 pm Sundays and Public Holidays.	Not triggered	None in period (SP pers comms).								
		Operating Hours										

Sch	Con	Requirement	Status	Comment
4	5	The Applicant must: (a) take all practicable measures to minimise train movements at the development on Friday evening (6 pm-9 pm) and Sunday morning (9 am-12 am); (b) report on the implementation and effectiveness of these measures, to the satisfaction of the Director-General.	Not Compliant	(a) Viewed internal Train Weight Spreadsheet reporting times of train movements and confirmed compliance. (b) No evidence of reporting on measures to minimise loading outside specified hours to DP&E's approval. Recommended that a summary of train movement times is added to future Annual Reviews.
		Rail Noise		
4	6	The Applicant must seek to ensure that its rail spur is only accessed by locomotives that are approved to operate on the NSW rail network in accordance with noise limits L6.1 to L6.4 in RailCorp's EPL (No. 12208) and ARTC's EPL (No. 3142) or a Pollution Control Approval issued under the former <i>Pollution Control Act 1970</i> .	Compliant	Reviewed ARTC EPL 3142 and email from Matt Pearce of Aurizon dated 12/09/13. Email confirms that locomotives are required to be tested by the rail operator for compliance with noise requirements. Recommend that this is updated.
		Noise Monitoring		
4	7	The Applicant must monitor the noise generated by the development, and noise generated by the Wambo Mine, in general accordance with the Noise Management Plan for the Wambo Mining Complex and the <i>NSW Industrial Noise Policy</i> .	Compliant	See Condition 4 Schedule 9 of DA 305-7-2003.
4	7A	By 31 May 2012, the Applicant must review and update the Noise Management Plan for the Wambo Mining Complex, including a noise monitoring protocol for evaluating compliance with the criteria in condition 3 above.	Compliant	Previous IEA assessed as compliant "Current Noise Management Plan notes revision made in May 2012 to include rail consent modification (this condition)" See sch 4 con 9 in DA 305-7-2003.
4	7B	During the first 12 months of operation of the Rail Refuelling Facility, the Applicant must conduct attended noise monitoring at the nearest private receptor during refuelling events, no less often than every three months.	Compliant	Section 4.6-4.7 of the 2014 Annual Review provide results for attended noise monitoring, confirmed compliance.
		² BLASTING AND VIBRATION		

Sch	Con	Requirement	Status	Comment						
		Airblast Overpressure Criteria								
4	8	<p>The Applicant must ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 3 at any residence on privately owned land.</p> <p><i>Table 3: Airblast overpressure impact assessment criteria</i></p> <table border="1"> <thead> <tr> <th>Airblast Overpressure Level (dB(Lin Peak))</th> <th>Allowable Exceedance</th> </tr> </thead> <tbody> <tr> <td>115</td> <td>5% of total number of blasts over 12 months</td> </tr> <tr> <td>120</td> <td>0%</td> </tr> </tbody> </table>	Airblast Overpressure Level (dB(Lin Peak))	Allowable Exceedance	115	5% of total number of blasts over 12 months	120	0%	Not triggered	No blasting has occurred within the rail loop during the audit period. (MB, 2017)
Airblast Overpressure Level (dB(Lin Peak))	Allowable Exceedance									
115	5% of total number of blasts over 12 months									
120	0%									
		Ground Vibration Impact Assessment Criteria								
4	9	<p>The Applicant must ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 4 at any residence on privately owned land.</p> <p><i>Table 4: Ground vibration impact assessment criteria</i></p> <table border="1"> <thead> <tr> <th>Peak Particle Velocity (mm/s)</th> <th>Allowable Exceedance</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>5% of total number of blasts over 12 months</td> </tr> <tr> <td>10</td> <td>0%</td> </tr> </tbody> </table> <p>For St Philip's Church, the Applicant must ensure that ground vibration peak particle velocity generated by the development does not exceed 2.5 mm/s.</p>	Peak Particle Velocity (mm/s)	Allowable Exceedance	5	5% of total number of blasts over 12 months	10	0%	Not triggered	No blasting has occurred within the rail loop during the audit period. (MB, 2017)
Peak Particle Velocity (mm/s)	Allowable Exceedance									
5	5% of total number of blasts over 12 months									
10	0%									
		Structural Assessment								
4	10	<p>Within 3 months of this consent, the Applicant must:</p> <p>(a) engage a suitably qualified, experienced, and independent structural engineer, whose appointment has been approved by the Director-General, to undertake a structural assessment of the St Philip's Church, and recommend measures required to reduce the impacts of the development on the church; and</p>	Compliant	Previous audit confirmed structural inspections completed by GHD on 17/10/07.						

Sch	Con	Requirement	Status	Comment						
		(b) advise the Director-General of any measures required to be implemented to reduce the impacts of the development on the church.								
4	11	The Applicant must implement these measures to the satisfaction of the Director-General.	Not triggered	See comment Schedule 4 Condition 10.						
		Vibration Monitoring								
4	12	The Applicant must monitor the vibration from the operation of the rail spur and the rail line at least 4 times a year, or as directed by the Director-General.	Not Compliant	Vibration monitoring has been discontinued since December 2008 according to previous audit. (MB, 2017). No evidence sited that the cessation of vibration monitoring was approved by the Director General. Recommend this correspondence is sought.						
4	13	Within 3 months of this consent, the Applicant must prepare a Vibration Monitoring Program for the development to the satisfaction of the Director-General.	Not Compliant	Vibration monitoring has been discontinued since December 2008 according to previous audit. (MB, 2017). See Schedule 4, Condition 12.						
		AIR QUALITY								
		Impact Assessment Criteria								
4	14	The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the Wambo Mining Complex do not exceed the criteria listed in tables 5, 6 or 7 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, unless higher air quality criteria is specified in the consent for the Wambo Coal Mine (DA 305-7-2003). <i>Table 5: Long term impact assessment criteria for particulate matter</i>	Compliant	See Response to 4(5) under DA 305-7-2003 (JC, 2017)						
		<table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate matter (TSP)</td> <td>Annual</td> <td>90 µg/</td> </tr> </tbody> </table>	Pollutant	Averaging Period	Criterion	Total suspended particulate matter (TSP)	Annual	90 µg/		
Pollutant	Averaging Period	Criterion								
Total suspended particulate matter (TSP)	Annual	90 µg/								

Sch	Con	Requirement	Status	Comment																	
		<table border="1"> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>30 µg/ 3</td> </tr> </table> <p><i>Table 6: Short term impact assessment criterion for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>4 hours</td> <td>50 µg/m3</td> </tr> </tbody> </table> <p><i>Table 7: Long term impact assessment criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Max. increase in dust level</th> <th>Max. total deposited dust</th> </tr> </thead> <tbody> <tr> <td>Deposited Dust</td> <td>Annual</td> <td>2g/m2/mth</td> <td>4g/m2/mth</td> </tr> </tbody> </table> <p><i>Notes to Tables 5-7:</i> a Total impact (i.e. incremental increase in concentrations due to the Wambo Mining Complex plus background concentrations due to all other sources); b Incremental impact (i.e. incremental increase in concentrations due to the Wambo Mining Complex on its own); c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method; d Excludes extraordinary events such as bushfires, prescribed burning, dust storms sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with OEH.</p>	Particulate matter < 10 µm (PM10)	Annual	30 µg/ 3	Pollutant	Averaging Period	Criterion	Particulate matter < 10 µm (PM10)	4 hours	50 µg/m3	Pollutant	Averaging Period	Max. increase in dust level	Max. total deposited dust	Deposited Dust	Annual	2g/m2/mth	4g/m2/mth		
Particulate matter < 10 µm (PM10)	Annual	30 µg/ 3																			
Pollutant	Averaging Period	Criterion																			
Particulate matter < 10 µm (PM10)	4 hours	50 µg/m3																			
Pollutant	Averaging Period	Max. increase in dust level	Max. total deposited dust																		
Deposited Dust	Annual	2g/m2/mth	4g/m2/mth																		
		Operating Conditions																			
4	15	The Applicant must: (a) ensure any visible air pollution generated by the development is assessed regularly, and that operations are modified, and/or stopped as required to minimise air quality impacts on privately owned land;	Compliant	(a) Section 5 of the approved Air Quality and Greenhouse Gas Management Plan. SP (pers comm) confirmed process of reviewing visible dust emissions (both on site and from off-site																	

Sch	Con	Requirement	Status	Comment
		(b) implement all practicable measures to minimise air pollutant emissions from the development; and (c) report on the effectiveness of these measures in the Annual Review , to the satisfaction of the Director-General		using cameras) and modifying operations in specific areas if required. (b) Section 5 of the approved AQGGMP. (c) Reviewed Annual Reviews for the reporting period and confirmed reporting on air quality performance (Section 5.3).
		SOIL AND WATER MANAGEMENT		
		<i>Note: The Applicant is required to obtain licences for the development under the Rivers and Foreshores Improvement Act 1948 and the Protection of the Environment Operations Act 1997.</i>		
		Pollution of Waters		
4	16	Except as may be expressly provided by a OEH licence, the Applicant must comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i> during the carrying out of the development.	Compliant	No incidences under this consent.
		³ Soil and Water Management Plan		
4	17	Prior to carrying out any development associated with the proposed refuelling facility, the Applicant must review and update the Soil and Water Management Plan for the development, to the satisfaction of the Director-General. This plan must include: (a) an Erosion and Sediment Control Plan that: <ul style="list-style-type: none"> • is consistent with the requirements of <i>Managing Urban Stormwater: Soils and Construction</i> manual; • identifies activities that could cause soil erosion and generate sediment; • describes the location, function and capacity of erosion and sediment control structures; and • describes measures to minimise soil erosion and the potential for the migration of sediments to downstream waters; 	Compliant	(a) See Schedule 4, Condition 32 of DA 32-7-2003. (b) The Site Water Balance provides details of the dirty water management system. Section 2.2.5 of the Surface Water Monitoring Program describes measures to prevent contamination. (c) Section 2.2.6 of the Surface Water Monitoring Program meets the content requirements. (d) Section 2.2.16 of the Site Water Management Plan outlines rehabilitation objectives for decommissioning water management structures on site. It is recommended that this section is improved by providing a high level strategy for the decommissioning of water management structures (including the

Sch	Con	Requirement	Status	Comment
		(b) details of the dirty water management system to be implemented for the development including measures to prevent contamination from diesel and oil spills; (c) a Surface Water Monitoring Program; and (d) a strategy for decommissioning the water management structures on the site.		management of water during the decommissioning process) as part of any future update of the Site Water Management Plan. See Schedule 4 Condition 32 of DA 305-7-2003.
	17B	The Applicant must ensure any above-ground storage tanks containing materials likely to cause environmental harm are: (a) imperviously banded with capacity 110% that of the largest container stored within the bund; (b) designed and constructed in a manner which prevents the ingress of rain water into the tanks; and (c) clearly labelled to identify contents.	Compliant	Reviewed infrastructure layout plans and inspected storage facilities in the field. Confirmed compliance with this condition.
		TRANSPORT		
		Monitoring of Coal Transport		
4	18	The Applicant must: (a) keep records of the: <ul style="list-style-type: none"> amount of coal loaded at the development each year; and number of coal haulage train movements generated by the development (on a daily basis); and (b) include these records in the Annual Review .	Compliant	(a) Train movements and coal volumes recorded in internal spreadsheet. (b) Reported in section 3.1 of Annual Reviews
		⁴ Road Works		
4	19	The Applicant must upgrade the Golden Highway/Wallaby Scrub Road intersection to the satisfaction of the RMS by the end of June 2013, or as otherwise agreed by the RMS. The intersection must be designed and constructed to a standard agreed to by the RMS, recognising both existing traffic usage and the proposed future closure of part of Wallaby Scrub Road.	Not Compliant	2011 audit confirms that Wambo consulted with RMS regarding the realignment and was advised that this work was not required. Works have not been undertaken as at the time of the audit. Reviewed emails between Wambo and RMS / DP&E (most recent being 13/01/14 email update from TF to Scott Brooks of DP&E.

Sch	Con	Requirement	Status	Comment
				No action has occurred since previous audit. Recommend that this correspondence on this issue is sought from RMS.
4	20	The Applicant must design and construct the underpass beneath Wallaby Scrub Road to the satisfaction of Council. Detailed design plans must be approved by Council prior to carrying out any development associated with the underpass.	Not triggered	See comment on Schedule 4, Condition 19 above.
4	21	Before carrying out any development in the Wallaby Scrub Road or Golden Highway road reserves, the Applicant must prepare and implement a Traffic Management Plan for the road and railway works to the satisfaction of the RMS and Council.	Not triggered	See comment on Schedule 4, Condition 19 above.
4	22	All road works associated with the development must be at the full cost of the Applicant.	Not triggered	See comment on Schedule 4, Condition 19 above.
		⁵ Road Safety		
4	23	The Applicant must take all practicable measures to minimise road safety impacts from train headlight glare on motorists using the Golden Highway and Wallaby Scrub Road, including consideration of appropriate screening measures, to the satisfaction of the RMS and Council.	Compliant	Previous audit noted design of rail loop and tree screens in rehabilitation in place to minimise glare issues. Confirmed screening in place during site inspection and that no complaints or incidents occurred as a result of rail loop lighting during the audit period. Correspondence with RMS no longer required as Mount Thorley Warkworth have approval to mine through Wallaby Scrub Road. Recommend this condition is revised to remove at next modification when condition 19 resolved.
		Access		

Sch	Con	Requirement	Status	Comment
4	24	The Applicant must construct suitable and safe access to the rail refuelling facility, consistent with the access route shown in Figure 3 of Appendix 4. All tankers must enter and exit the site in a forward direction.	Compliant	Safe access in accordance with approved plans confirmed during site inspection of rail loop.
4	24A	The Applicant must implement all reasonable and feasible measures to avoid dirt from the site being tracked onto the Golden Highway.	Compliant	Construction is complete in this area and entrance road has been resealed, therefore dirt tracking unlikely. No dirt viewed on the road at time of audit and no complaints in this regard were received during audit period. Use of light vehicle wash down facility when needed. Recommend that internal inspections and photographs of dirt tracking in this area are taken so that compliance with condition can be confirmed in future.
		Parking		
4	25	The Applicant must provide sufficient parking on-site or at the Wambo coal mine for all construction-related traffic generated by the development to the satisfaction of the D-G.	Compliant	Viewed parking on site and confirmed adequate. 393 vehicle spaces on site for workforce of approximately 320 personnel.
		VISUAL		
		Visual Amenity		
4	26	The Applicant must implement all practicable measures to mitigate the visual impacts of the development to the satisfaction of the Director-General.	Compliant	2011 audit confirmed implementation of treatments recommended by EDAW (2006). Confirmed vegetation screening remains in place during site inspection.
4	27	The Applicant must investigate and where feasible implement the following measures at locations within the Warkworth Village: (a) implement landscaping works in consultation with affected rural residents; and/or (b) place and maintain visual screens between development infrastructure and the viewing location.	Compliant	2011 audit confirmed implementation of vegetative screening and landscape amelioration treatments as proposed in the EDAW (2006) report. Confirmed vegetation screening remains in place during site inspection.

Sch	Con	Requirement	Status	Comment
4	28	<p>If a landowner in the Warkworth Village requests the Applicant in writing to investigate ways to minimise the visual impact of the development on his/her dwelling or land, the Applicant must:</p> <p>(a) within 14 days of receiving this request, commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to investigate ways to minimise the visual impacts of the development on the landowner's dwelling or land; and</p> <p>(b) give the landowner a copy of the visual impact mitigation report within 14 days of receiving this report.</p> <p>If both parties agree on the measures that should be implemented to minimise the visual impact of the development, then the Applicant must implement these measures to the satisfaction of the Director-General.</p> <p>If the Applicant and the landowner disagree on the measures that should be implemented to minimise the visual impact of the development, then either party may refer the matter to the Director-General for resolution.</p> <p>If the matter cannot be resolved within 21 days, the Director-General must refer the matter to an Independent Dispute Resolution Process (see Appendix 2)</p>	Not triggered	2011 audit confirmed implementation of visual amelioration at Hawke property "Springwood". No additional requests during audit period.
		Lighting Emissions		
4	29	The Applicant must take all practicable measures to mitigate off-site lighting impacts from the development, including measures to minimise the impacts of train headlight glare on privately owned land and the Golden Highway, to the satisfaction of the Director-General.	Compliant	Photos of rail loop and site visit confirmed orientation / hooding / tree screens in place to minimise external impacts. Landownership map dated January 2015 confirmed that the Hawkes and Henderson properties adjacent to the rail loop have been acquired by RTCA and Glencore, respectively.
4	30	All external lighting associated with the development must comply with <i>Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting</i> .	Compliant	Viewed lighting audit dated 24/7/17 prepared by Multiskilled Resources.

Sch	Con	Requirement	Status	Comment
				Audit confirms compliance of rail loop lighting with AS requirements.
		FLORA & FAUNA		
4	31	The Applicant must take all practicable measures to minimise vegetation clearing during the development.	Not triggered	No additional disturbance during audit period. Confirmed no disturbance during site inspection.
4	32	Before carrying out the development, the Applicant must prepare, and then subsequently implement, a Flora and Fauna Management Plan for the development to the satisfaction of the Director-General. This plan must include: (a) a Vegetation Clearance Protocol; and (b) Revegetation and Landscaping Plan for the area marked on the map in Appendix 3.	Compliant	Reviewed the approved FFMP and confirmed protocols in place.
4	33	The Vegetation Clearance Protocol must include: (a) the delineation of areas of remnant vegetation to be cleared; (b) progressive clearing; (c) the identification of fauna management strategies; (d) the collection of seed from the local areas; (e) the salvage and reuse of material from the site; and (f) the control of weeds during clearing activities;	Compliant	Section 3.1 of the approved FFMP.
4	34	The Revegetation and Landscaping Plan must: (a) describe the measures that would be implemented to revegetate the area marked on the map in Appendix 3, including: <ul style="list-style-type: none"> • measures to control the occurrence of weeds; • measures to minimise the occurrence of feral pests; • selective planting of native vegetation; • the provision of roosting/nesting resources for fauna; and • describe the measures that would be implemented to: • landscape the new Wallaby Scrub Road/Golden Highway intersection; and 	Compliant	Appendix E of the approved FFMP.

Sch	Con	Requirement	Status	Comment
		<ul style="list-style-type: none"> maintain this landscaping during the life of the development; (b) include a program to monitor the effectiveness of the plan during the development.		
		⁶ ABORIGINAL HERITAGE <i>Note: Under the National Parks and Wildlife Act 1974, the Applicant is required to obtain approvals for any impacts to Aboriginal objects.</i>		
		Conservation		
4	35	The Applicant must take all practicable measures to ensure that the following sites or objects are not damaged by the development: 17, 18, 24, 25, 26, and 28. <i>Note: For more information on the sites and objects, see Figure 12 of the SEE for the Alterations to the Wambo Development Project – Rail and Train Loading Infrastructure.</i>	Compliant	Sites 17, 18, 24 and 26 are all listed as extant in the WCPL Heritage Register updated in 2017. Site 28 is listed as salvaged in the RPS 2014 Salvage Report a copy of which was provided by WCPL and is kept in the WCPL keeping place.
		Consent to Destroy	N/A	
4	36	Deleted		
		Salvage	N/A	
4	37	Deleted		
4	38	Before the commencement of salvage operations, the Applicant must establish a keeping place to house objects recovered from the salvage program.	Compliant	Viewed OEH approval of temporary keeping place dated 14/07/09. Viewed Keeping Place during site inspection component of the audit.
4	39	The Applicant must house the objects recovered during the salvage program in the keeping place established for that purpose.	Compliant	Viewed Keeping Place during site inspection component of the audit.
		HERITAGE		
4	40	The Applicant must take all practicable measures to avoid non-Aboriginal heritage sites 5 and 6 during the development. However, if this is not practicable, the Applicant must record the sites to an archival standard, in accordance with the requirements of the NSW Heritage Office, and provide	Compliant	Previous audit confirmed that site 5 (abandoned homestead) and site 6 (piggery and butchers hut) were avoided during rail construction SP (pers comm) confirmed no subsequent disturbance to these sites.

Sch	Con	Requirement	Status	Comment
		these records to a suitable institution, to the satisfaction of the Director-General.		
		ELECTRICITY TRANSMISSION LINE		
4	41	The Applicant must ensure that all development in the easement under TransGrid's 330kV Transmission Line No. 81 is carried out strictly in accordance with the relevant safety guidelines for works under or near high voltage transmission lines, in consultation with TransGrid, and to the satisfaction of the Director-General.	Compliant	2011 audit confirmed rail construction occurred in consultation with TransGrid. No additional works undertaken during audit period.
		BUSHFIRE MANAGEMENT		
4	42	By 31 May 2012, the Applicant must review and update the Bushfire Management Plan for the Wambo Mining Complex. The plan must include: (a) mitigation measures including ongoing landscape management in the asset protection zone setbacks surrounding the rail refuelling facility; and (b) details of a static water supply suitable for firefighting by the RFS in the immediate vicinity of the rail refuelling facility.	Compliant	(a) Approved Bushfire Management Plan includes required measures Section 3.1.3. (b) Section 3.1.3 of the approved Bushfire Management Plan.
		SCHEDULE 5 ADDITIONAL PROCEDURES		
		NOTIFICATION OF LANDOWNERS		
5	1	As soon as practicable following obtaining monitoring results showing an exceedance of the relevant criteria in schedule 4, the Applicant must notify the affected landowner and/or tenants in writing of the exceedance, and provide regular monitoring results to each of these parties until the development is complying with the relevant criteria again.	Not Compliant	No significant exceedances of relevant criteria, however minor exceedances of 1 dBA against noise occurred at N16 (Muller) monitor in June and August 2017. WCPL advises that notifications were not sent due to the minor nature of the exceedance. Neighbours should be notified for all future exceedances of criteria with context included.
		Independent Review		
5	2	If an owner of privately-owned land considers the development to be exceeding the relevant criteria in schedule 4, then he/she may ask the Director-General in writing for an independent review of the impacts of the development on his/her land.	Not triggered	See response to Schedule 5 Condition 1.

Sch	Con	Requirement	Status	Comment
		<p>If the Director-General is satisfied that an independent review is warranted, then within 2 months of the Director-General's decision the Applicant must:</p> <p>(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to:</p> <ul style="list-style-type: none"> • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the development is complying with the relevant criteria in schedule 4; and • if the development is not complying with these criteria then: <ul style="list-style-type: none"> ○ determine if more than one mine is responsible for the exceedance, and if so the relative share of each mine regarding the impact on the land; ○ identify the measures that could be implemented to ensure compliance with the relevant criteria; and <p>(b) give the Director-General and landowner a copy of the independent review.</p>		
5	3	<p>If the independent review determines that the development is complying with the relevant criteria in schedule 4, then the Applicant may discontinue the independent review with the approval of the Director-General.</p> <p>If the independent review determines that any relevant acquisition criteria in schedule 4 are being exceeded and that the project is primarily responsible for this non-compliance, then the Applicant must:</p> <p>(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until the development complies with the relevant criteria; or</p> <p>(b) secure a written agreement with the landowner to allow exceedances of the relevant criteria, to the satisfaction of the Director-General.</p> <p>If the independent review determines that any relevant acquisition criteria in schedule 4 are being exceeded, and that the development is primarily responsible for this non-compliance, then upon receiving a written request</p>	Not triggered	See response to Schedule 5 Condition 1.

Sch	Con	Requirement	Status	Comment
		from the landowner, the Applicant must acquire all or part of the landowner's land in accordance with the procedures in conditions 6-7 below.		
5	4	<p>If the independent review determines that any relevant criteria in schedule 4 are being exceeded, but that more than one mine is responsible for this non-compliance, then together with the relevant mine/s, the Applicant must:</p> <p>(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until there is compliance with the relevant criteria; or</p> <p>(b) secure a written agreement with the landowner and other relevant mines to allow exceedances of the relevant criteria, to the satisfaction of the Director-General.</p> <p>If the independent review determines that any relevant acquisition criteria in schedule 4 are being exceeded, but that more than one mine is responsible for this non-compliance, then upon receiving a written request from the landowner, the Applicant must acquire all or part of the landowner's land on as equitable a basis as possible with the relevant mine/s, in accordance with the procedures in conditions 6-7 below.</p>	Not triggered	See response to Schedule 5 Condition 1.
		Land Acquisition		
5	5	<p>Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on:</p> <p>(a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the:</p> <ul style="list-style-type: none"> • existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and • presence of improvements on the land and/or any approved building or structure which has been physically commenced on the land at the date of the landowner's written request, and is due to be completed 	Not triggered	See response to Schedule 5 Condition 1.

Sch	Con	Requirement	Status	Comment
		<p>subsequent to that date, but excluding any improvements that have resulted from the implementation of any additional mitigation measures by the Applicant on the land;</p> <p>(b) the reasonable costs associated with:</p> <ul style="list-style-type: none"> • relocating within the Singleton or Muswellbrook local government areas, or to any other local government area determined by the Director-General; and • obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and <p>(c) reasonable compensation for any disturbance caused by the land acquisition process.</p> <p>If the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired within 28 days after the Applicant makes its written offer, then either party may refer the matter to the Director-General for resolution.</p> <p>Upon receiving such a request, the Director-General will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:</p> <ul style="list-style-type: none"> • consider submissions from both parties; • determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above; • prepare a detailed report setting out the reasons for any determination; and • provide a copy of the report to both parties. <p>Within 14 days of receiving the independent valuer's report, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.</p>		

Sch	Con	Requirement	Status	Comment
		<p>However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Director-General for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Director-General will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report disputing the independent valuer's determination, and any other relevant submissions.</p> <p>Within 14 days of this determination, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the Director-General's determination.</p> <p>If the landowner refuses to accept the Applicant's binding written offer under this condition within 6 months of the offer being made, then the Applicant's obligations to acquire the land must cease, unless the Director-General determines otherwise.</p>		
5	6	<p>The Applicant must pay all reasonable costs associated with the land acquisition process described in condition 6 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.</p>	Not triggered	See response to Schedule 5 Condition 1.
		SCHEDULE 6 ENVIRONMENTAL MANAGEMENT, MONITORING & REPORTING		
		CONSTRUCTION MANAGEMENT PLAN		
6	1	<p>Before carrying out any development, the Applicant must prepare, and subsequently implement, a Construction Management Plan for the development to the satisfaction of the Director-General. This plan must:</p> <p>(a) describe the proposed construction works;</p> <p>(b) outline the program for the proposed works;</p> <p>(c) describe the procedures that would be implemented to:</p>	Not triggered	<p>Previous audit confirmed that the Construction Management Plan had been prepared and approved.</p> <p>No additional works were undertaken during the audit period.</p>

Sch	Con	Requirement	Status	Comment
		<ul style="list-style-type: none"> • keep the local community and relevant agencies informed about the proposed • construction works; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the proposed construction works; • respond to any non-compliance; • respond to emergencies; <p>(d) describe what measures would be implemented to minimise the dust and noise impacts of the development;</p> <p>(e) include the relevant management plans required in schedule 4 of this consent; and</p> <p>(f) describe the role, responsibility, authority, and accountability of all key personnel involved in the environmental management of the development.</p> <p><i>Note: The Applicant may prepare a Construction Management Plan for each stage of the proposed construction works. This condition does not apply in respect of minor works undertaken consequent to construction of the principle development, such as exempt and complying development, and the rail refuelling facility.</i></p>		
		ENVIRONMENTAL MONITORING PROGRAM		
6	2	Before carrying out any development, the Applicant must prepare, and subsequently implement, an Environmental Monitoring Program for the development, in consultation with the relevant agencies, and to the satisfaction of the Director-General. This program must consolidate the various monitoring requirements in schedule 4 of this consent into a single document.	Compliant	Previous audit confirmed EMP for rail works had been completed an integrated into the existing Wambo EMP.
6	3	The Applicant must regularly review, and if necessary update, this program to the satisfaction of the Director-General	Compliant	Approved EMP includes revisions approved by DP&E.
		ANNUAL REPORTING		

Sch	Con	Requirement	Status	Comment
6	4	<p>Within 1 year of the date of this consent, and annually thereafter, the Applicant must submit an Annual Review on the development to the Director-General and relevant agencies. This report must:</p> <p>(a) identify the standards and performance measures that apply to the development;</p> <p>(b) include a summary of the complaints received during the last year, and compare this to the complaints received in previous years;</p> <p>(c) include a summary of the monitoring results on the development during the last year;</p> <p>(d) include an accurate record of the amount of product coal transported on the development over the last year on a weekly basis;</p> <p>(e) include an analysis of these monitoring results against the relevant:</p> <ul style="list-style-type: none"> • impact assessment criteria; • monitoring results from previous years; and • predictions in the SEE; <p>(f) identify any trends in the monitoring over the life of the development;</p> <p>(g) identify any non-compliance during the last year; and, if necessary,</p> <p>(h) describe what actions were, or are being taken, to ensure compliance.</p>	Compliant	Confirmed reporting of environmental monitoring and performance for rail line impacts included in Annual Reviews since previous audit.
		REPORTING		
		Incident Reporting		
6	5	<p>The Applicant must notify the Director-General and any other relevant agencies of any incident that has caused, or has the potential to cause, significant risk of material harm to the environment, at the earliest opportunity. For any other incident associated with the development, the Applicant must notify the Director-General and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant must provide the Director-General and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.</p>	Compliant	Reviewed incident register and confirmed no incidents were noted associated with the Rail Loop.
		Regular Reporting		

Sch	Con	Requirement	Status	Comment
6	6	The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any condition of this consent.	Compliant	Viewed the Wambo Coal website, which provides monitoring data for environmental performance on meteorology, blasting, air quality, noise, incidents and community complaints.
		INDEPENDENT ENVIRONMENTAL AUDIT		
6	7	The Applicant must ensure that the development is included in the Independent Environmental Audit of the Wambo Mining Complex.	Compliant	This audit.
		ACCESS TO INFORMATION		
6	8	<p>From 31 May 2012, the Applicant must:</p> <p>(a) make copies of the following publicly available on its website:</p> <ul style="list-style-type: none"> • the SEE, SEE (Mod 1) and EA (Mod 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 complaints register, which is to be updated on a monthly basis; • the annual reviews (over the last 5 years); • any independent environmental audit, and the Applicant's response to the recommendations in any audit; • any other matter required by the Director-General; and <p>(b) keep this information up to date, to the satisfaction of the Director-General.</p>	Compliant	Viewed Wambo website on 26/9/17 and confirmed access to required documentation.

Table D3
Other Licences & Approvals

Instrument	Status	Comments
EPL 529	Not compliant	<p>A2.1) Premises maps updated in April 2017.</p> <p>A4) Activities carried out in accordance with licence application.</p> <p>P1.1-1.4) Viewed figure dated 18/9/17 and site visit confirmed location/parameters of monitors consistent with EPL.</p> <p>L2-3) No exceedances of concentration limits of flow identified however some failures to monitor flow as per below.</p> <p>L4) No exceedances to receivers during IEA period.</p> <p>L5) No exceedances of blasting however some failures to monitor as per below.</p> <p>O1) Sediment Dam Failure Incident as described in Section 6.15.1.</p> <p>O2) Viewed Invoice dated 30/03/17 of sewerage treatment service</p> <p>O3) Confirmed compliant in site visit.</p> <p>O4) Effluent is treated and fluid discharged to STPD1 where it is evaporated. Solids are stored in tank and pumped out as required. No discharge of septic water or material to land from the EPL licensed STPD1 (HE pers comm).</p> <p>O5) Viewed approved Pollution Incident Response Management Plan (PIRMP) June 2016. Practice run of PIRMP was undertaken on 11/2/16.</p> <p>O6) Confirmed on site visit.</p> <p>M1) Viewed surface water records dated 30/8/17 and groundwater records dated 19/4/17. Records included a-d in condition M1.3.</p> <p>M2.3) Viewed surface water and groundwater databases and confirmed all parameters were tested and recorded.</p> <p>M3.1) Failure to monitor dust deposition in April 2016, November 2016 and March 2016 at D07, D20 and D23 respectively due to vial being broken. Failure to monitor dust deposition in January 2015 at D17, cause is unknown.</p> <p>M4.1) Failure to continuously monitor weather data between 25 May 2016 and 31 May 2016 due to a software failure. New weather monitoring station was installed as a result as reported in the Annual Review 2016.</p> <p>M5) Viewed complaint records from Fenwick dated 24/2/16 and LeBroq dated 5/12/16. Viewed records from 2013.</p> <p>M6) See Condition 4 Schedule 14 of DA 305-7-2003 Consent.</p> <p>M7) Failure to monitor stream flow at three locations in South Wambo Creek (FM5, FM6 and FM9) throughout 2016 and 2015 due to damaged loggers. Failure to monitor stream flow in Stoney Creek (FM7 and FM8) also occurred in 2015 and were replaced.</p> <p>M8.1) Failure to capture all blast data. During 2015 a capture rate of 90% for overpressure and 97% for vibration was obtained due to technical issues During 2016 a capture rate of 97% for overpressure was obtained. The blast monitoring system was replaced in June 2016 and since its installation, capture rate has been 100%.</p> <p>M9.1) Failure to monitor HRSTS discharge volumes from Eagle's Nest Dam six times in January 2016 and six times in April 2015. April 2015 discharge occurred due to a storm. January 2016 incident occurred due to an unidentified technical issue. Although</p>

Instrument	Status	Comments
		<p>there was no in-line flow monitoring, the volume of discharge could be calculated using the vertical flow trajectory method which demonstrated that the volume of water discharged was within criteria (i.e. the non-compliance was of no environmental consequence). These non-compliances were assessed as “low” risk non-compliances in the 2015 and 2016 Annual Reviews and these assessments were accepted by DP&E.</p> <p>M9.4) Failure to record 24-hour PM10 data at Monitoring Point 13 on five occasions during 2016 due to hardware failures and local power outages. One instance occurred in 2016 at Monitoring Point 15. During each outage, consultants, involved with monitoring units’ maintenance and operation, provided calculated 24hr averages to supplement WCPL’s missing data. On none of these days were PM10 levels elevated above a PM10 24hr average of 50 µg/m³. This indicates that there was little potential for environmental consequences. These non-compliances were assessed as “low” risk non-compliances in the 2016 Annual Review and this assessment was accepted by DP&E.</p> <p>R1) Viewed past three EPL returns from 2013-2016. All were publicly available as at 11/10/17.</p> <p>R2-R3) Notification sent to EPA for Sediment Dam Failure and flow meter failure in 2016 as discussed in Section 6.15 Incidents.</p> <p>R4) Viewed three reports for HRSTS sent to the EPA on 29/8/17. Viewed noise compliance assessment report sent 28/2/17 to the EPA.</p> <p>E1) Viewed spreadsheet for Wollombi Brook flow and HRSTS discharges. Only discharged when flow exceeded 500 ML/day e.g. discharged on 6/1/16 when flow was 16,000 ML/day and on 9/1/15 when flow was 5,000 ML/day. Viewed HRSTS discharge procedure.</p>
ML1572	Not compliant	<p>1) Landownership figure confirmed WCPL own all the land.</p> <p>2-4) Reviewed MREMP (MOP), Annual Reviews and Subsidence Management Plan (Extraction Plans) and confirmed that they address requirements under conditions 2-4 of ML1572.</p> <p>5) Currently 670 employees and contractors. SP (pers comms) confirmed spending over \$717,500 per annum on operations.</p> <p>6) Not Triggered (SP pers comms).</p> <p>7) Viewed consolidated report for all MLs dated 12/10/16. a) included in Section 5.5. b) Section 3.2 c) Section 5.5 d) pg. 2 e) viewed plans.</p> <p>8-10) Compliant</p> <p>11) No exceedances.</p> <p>12) North Wambo Operations sealed to the standard of the Director-General.</p> <p>13) Confirmed rehabilitation generally consistent with EIS and current MOP as discussed in Condition 4 Schedule 94 of DA 305-7-2003 Consent.</p> <p>14) Not triggered.</p> <p>15) Viewed email to DPI water dated 10/1/17 for the commencement of bores and drilling procedure dated January 2017.</p>

Instrument	Status	Comments
		16) Confirmed compliant during site visit. 17-19) Not triggered. 20) Access tracks for mine maintenance purposes only. No new or extensions to tracks during IEA period. 21) Not triggered as all land owned by WCPL. 23-24) Not triggered. 26) Viewed security deposit of \$75,051,000 dated 30/8/16 27) No mining within ML1572 encroached upon any prescribed dams (HE pers comms).

APPENDIX E
Plates from Site Inspection



Plate 1
Administration and OC Workshop



Plate 2
CHPP



Plate 3
Glen Munro Pit



Plate 4
Montrose Pit



Plate 5
Montrose East Pit



Plate 6
South Bates Underground



Plate 7
Train Load Out Facility



Plate 8
Offset Area Fencing and Signage



Plate 9
Rehabilitation North of Montrose Pit



Plate 10
Wollemi Workshop



Plate 11

Watercarts Viewed During Site Visit



Plate 12

Diesel Storage Container at Rail Loop



Plate 13

Wambo Homestead Complex Viewed During Site Visit



Plate 14

Wambo Homestead Complex Viewed During Site Visit



Plate 15
Montrose Tree Screen

APPENDIX F
Technical Specialist Reports

Dianne Munro
Principal Environmental Scientist
Hansen Bailey
DMunro@hansenbailey.com.au

27 November 2017

Dear Dianne

Re: Wambo Audit – Air Quality

Wambo Coal Mine is required to complete an Independent Environmental Audit (IEA) every three years in accordance with Schedule 6, Conditions 7 of the current Development Consent DA 305-7-2003.

Pacific Environment were engaged to complete the audit of compliance against the air quality requirements.

Appendix A provides the determination of compliance/non-compliance together with relevant observations, for each of the air quality components.

Recommendations from the audit are

- Non-compliance
 - Confirmation that former and new meteorological record(ed) all parameters required
- Best Practice:
 - Annual reviews include all relevant details on any blast fume events.
 - Analysis of dust deposition results are limited to comparison of the annual average against the criterion, as the single monthly values above this are not strictly exceedances.
 - 2014 Audit recommended that Annual Reviews do not discuss exceedances of criterion on mine owned land. These are still included in the 2016 version. I am not aware if there is a reason for this but agree they should be removed unless they are for compliance purposes.
 - 2014 Audit also recommended consideration of removing dust deposition (DD) gauges as long as next closest receiver has a DD between them and operation. As far as can be ascertained, all DD gauges still present and could be consolidated.
 - Whilst not an item listed in the condition, it is recommended that, upon installation of new monitoring equipment, a suitable qualified person is engaged to ensure the placement

and operation of all air quality monitoring equipment complies with the relevant standards.

Yours sincerely



Judith Cox

Principal Consultant - Certified Air Quality Professional (CAQP)

Pacific Environment an ERM Company

Appendix A: Findings of air quality audit

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments																					
		AIR QUALITY																							
		Odour																							
4	2	The Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the Wambo Mining Complex.	Compliant	It is noted that the recommended action from the 2014 Audit to provide regular training on this issue with relevant personnel to ensure pre-blast checks are undertaken has been adopted.																					
		Greenhouse Gas Emissions																							
4	3	The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the Wambo Mining Complex to the satisfaction of the Secretary .	Compliant	Section 6 of the approved AQGGMP (2014) (AQGGMP) describes management controls. It was confirmed that other measures in place to minimise emissions from equipment fleet (i.e. low emissions diesel, vehicle maintenance program). The recommendation from the 2014 audit to include comment in the Annual review has been adopted and contained in Section 5.4 of the 2015 and 2016 AEMRs.																					
		Air Quality Criteria																							
4	4	<p>Except for the air quality affected land in Table 1, the Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the Wambo Mining Complex do not exceed the criteria listed in Tables 2, 3 and 4 at any residence on privately owned land, or on more than 25 percent of any privately owned land.</p> <p><i>Table 2: Long term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>a 90 µg/m3</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>a 30 µg/m3</td> </tr> </tbody> </table> <p><i>Table 3: Short term impact assessment criterion for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>D Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>24 our</td> <td>a 50 µg/m3</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase2</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Pollutant	Averaging period	d Criterion	Total suspended particulate (TSP) matter	Annual	a 90 µg/m3	Particulate matter < 10 µm (PM10)	Annual	a 30 µg/m3	Pollutant	Averaging period	D Criterion	Particulate matter < 10 µm (PM10)	24 our	a 50 µg/m3	Pollutant	Averaging period	Maximum increase2				Compliant	<p>Viewed copy of approved AQGGMP dated February 2014.</p> <p>Best practice proactive and reactive management measures for air impacts were observed at site. Cameras in use clearly showed minimal dust generation and active use of water carts</p> <p>Viewed WeatherZone predictive meteorological forecast, alerts of adverse conditions to environmental and operational staff.</p> <p>TARPs in place to respond to adverse conditions.</p>
Pollutant	Averaging period	d Criterion																							
Total suspended particulate (TSP) matter	Annual	a 90 µg/m3																							
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Section	Sub-section	Requirement				2017 Audit Status	2017 Audit Comments
		Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum total ¹ deposited dust level		
		c Deposited dust	Annual	b 2 g/m ² /mon h	a 4 g/m ² /month		<p>Results above 24 hour PM₁₀ criteria at private land included:</p> <ul style="list-style-type: none"> • 2014 <ul style="list-style-type: none"> ○ PM₁₀ - Section 4.4.3.2 – and Appendix H - 2014 AEMR 2014. Three exceedances (16/1; 24/11; 17/12); Whilst the AEMR states, there was a bush fire event on 16 January 2014 and a review of meteorological conditions indicated extreme dry and hot periods contributed to all exceedances, no specific details are provided to support this. The register maintained by WCPL was observed and noted to contain the detail required. • 2015 <ul style="list-style-type: none"> ○ PM₁₀ – Section 5.3.2. Section 10.6.1 and Appendix C - 2015 Annual Review 2015. Six exceedances (6/5 – 2 locations; 17/10; 26/11; 15/12 – 2 locations. As stated in the AEMR, these exceedances were deemed to be as result of regional dust days, not as a result of WCPL activities. However, per the 2014 Annual Review, no specific details are provided to support this. The register maintained by WCPL was observed and noted to contain the detail required. • 2016 <ul style="list-style-type: none"> ○ No exceedances <p>• It is recommended that details of any exceedances are explained</p>
		<p><i>Notes to Tables 2-4</i></p> <p><i>a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);</i></p> <p><i>b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);</i></p> <p><i>c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and</i></p> <p><i>d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.</i></p>					

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments																										
				in the Annual Reviews. This includes referencing any local bushfires/RFS activity/extreme weather events that may have been the cause																										
		Air Quality Acquisition Criteria																												
4	5	<p>If particulate matter emissions generated by the Wambo Mining Complex exceed the criteria in Tables 5, 6, and 7 at any residence on privately-owned land, or on more than 25 percent of any privately owned land, then upon written request for acquisition from the landowner, the Applicant shall acquire the land in accordance with the procedures in conditions 9 - 11 of schedule 5.</p> <p><i>Table 5: Long term land acquisition criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>d Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>a 90 µg/m3</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>a 30 µg/m3</td> </tr> </tbody> </table> <p><i>Table 6: Short term land acquisition criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>da Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>24 hour</td> <td>a 150 µg/m3</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>4 hour</td> <td>b 50 µg/m3</td> </tr> </tbody> </table> <p><i>Table 7: Long term land acquisition criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase² in deposited dust level</th> <th>Maximum total¹ deposited dust level</th> </tr> </thead> <tbody> <tr> <td>c Deposited dust</td> <td>Annual</td> <td>b 2 g/m²/mo h</td> <td>a 4 g/m²/month</td> </tr> </tbody> </table> <p><i>Notes to Tables 5-7</i> a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources); b Incremental impact (i.e. incremental increase in concentrations due to the development on its own); c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.</p>	Pollutant	Averaging period	d Criterion	Total suspended particulate (TSP) matter	Annual	a 90 µg/m3	Particulate matter < 10 µm (PM10)	Annual	a 30 µg/m3	Pollutant	Averaging period	da Criterion	Particulate matter < 10 µm (PM10)	24 hour	a 150 µg/m3	Particulate matter < 10 µm (PM10)	4 hour	b 50 µg/m3	Pollutant	Averaging period	Maximum increase ² in deposited dust level	Maximum total ¹ deposited dust level	c Deposited dust	Annual	b 2 g/m ² /mo h	a 4 g/m ² /month	Not triggered	No exceedances of acquisition criteria during the audit period.
Pollutant	Averaging period	d Criterion																												
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Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments
		Mine-owned Land		
	5A	The Applicant shall ensure that particulate matter emissions generated by the Wambo Mining Complex do not exceed the criteria listed in Tables 2, 3 and 4 at any occupied residence on any mine-owned land (including land owned by adjacent mines) unless: (a) the tenant and landowner has been notified of health risks in accordance with the notification requirements under schedule 5 of this consent; (b) the tenant on land owned by the Applicant can terminate their tenancy agreement without penalty, subject to giving reasonable notice, and the Applicant uses its best endeavours to provide assistance with relocation and sourcing of alternative accommodation; (c) air mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning) are installed at the residence, if requested by the tenant and landowner (where owned by another mine other than the Applicant); (d) particulate matter air quality monitoring is undertaken to inform the tenant and landowner of potential health risks; and (e) monitoring data is presented to the tenant in an appropriate format, for a medical practitioner to assist the tenant in making an informed decision on the health risks associated with occupying the property, to the satisfaction of the Secretary .	Not triggered	No exceedances of air quality criteria occurred at residences on mine-owned land.
		Air Quality Operating Conditions		
	5B	The Applicant shall: 10 (a) implement best management practice to minimise the off-site odour, fume and dust emissions from the Wambo Mining Complex, including best practice coal loading and profiling and other measures to minimise dust emissions from coal transportation by rail; (b) operate a comprehensive air quality management system at the Wambo Mining Complex that uses a combination of predictive meteorological forecasting, predictive and real time air dispersion modelling and real-time air quality monitoring data to guide the day to day planning of mining operations and implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent; (c) manage PM2.5 levels in accordance with any requirements of any EPL; (d) minimise the air quality impacts of the Wambo Mining Complex during adverse meteorological conditions and extraordinary events (see noted above under Tables 5-7); (e) minimise any visible off-site air pollution; (f) minimise the surface disturbance of the site generated by the Wambo Mining Complex; and (g) co-ordinate air quality management at the Wambo Mining Complex with the air quality management at nearby mines (HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative air quality impacts of these mines and the Wambo Mining Complex, to the satisfaction of the Secretary .	Compliant	a) See response to Schedule 4, Condition 2 above on management procedures and best practice management measures. b) Confirmed dust minimisation controls and coal profiling at Train Loading Facility. c) Viewed updated draft AQGGMP (Version 5 dated 24 August 2017) submitted to EPA for comment. d) Viewed predictive 'WeatherZone' system in use on site for air noise and blast impacts and outputs for each. This system is used as an operational tool to in combination with the real-time Sentinex monitoring network. e) Confirmed that the Singleton UHAQMN site is deemed representative of WCPL for 24

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments
				<p>hour PM2.5. This is noted in Section 7.3 of the currently approved AQGGMP.</p> <p>f) Section 5 of the currently approved AQGGMP. Confirmed process of reviewing visible dust emissions (both on site and from off-site) and modifying operations in specific areas if required. Viewing on camera showed water carts in operation and dust controls in place for equipment and haul roads in active mining areas.</p> <p>g) Viewed the WCPL Surface Disturbance Permit, required to be completed prior to any clearance work on site. Environmental signoff of the permit is required.</p>
		Air Quality and Greenhouse Gas Management Plan		
	5C	<p>The Applicant shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval by the end of June 2013;</p> <p>(b) describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> • best management practice is being employed; • the air quality impacts of the Wambo Mining Complex are minimised during adverse meteorological conditions and extraordinary events; and • compliance with the relevant conditions of this consent. <p>(c) describe the proposed air quality management system;</p> <p>(d) include a risk/response matrix to codify mine operational responses to varying levels of risk resulting from weather conditions and specific mining activities;</p> <p>(e) include commitments to provide summary reports and specific briefings at CCC meetings on issues arising from air quality monitoring;</p> <p>(f) include an air quality monitoring program that:</p> <ul style="list-style-type: none"> • uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development; • adequately supports the proactive and reactive air quality management system; • includes PM2.5 monitoring; 	Compliant	<p>h) Viewed approval letter from DP&E dated 22/03/14 approving management plan.</p> <p>i) Section 5, Table 14 of approved AQGGMP</p> <p>j) Sections 5 -6 of the approved AQGGMP</p> <p>k) Section 8.3.2 of the approved AQGGMP (e) Section 11.5 of the approved AQGGMP</p> <p>l) Sections 7, 11.7 of the approved AQGGMP</p> <p>m) Section 7.2.6 of the approved AQGGMP</p> <p>n) Also viewed updated draft AQGGMP (Version 5 dated 24 August 2017) submitted to EPA for comment.</p>

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments																																																		
		<ul style="list-style-type: none"> includes monitoring of occupied development-related residences and residences on air quality-affected land listed in Table 1, subject to the agreement of the tenant; evaluates and reports on the effectiveness of the air quality management system; and includes a protocol for determining any exceedances of the relevant conditions in this consent; and (g) include a protocol that has been prepared in consultation with the owners of nearby mines (HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative air quality impacts of these mines and the Wambo Mining Complex. The Applicant must implement the approved management plan as approved from time to time by the Secretary.																																																				
		²METEOROLOGICAL MONITORING																																																				
4	10	Applicant must establish a permanent meteorological station at a location approved by the DECCW, and to the satisfaction of the Secretary, to monitor the parameters specified in Table 11, using the specified units of measure, averaging period, frequency, and sampling method in the table. <table border="1"> <thead> <tr> <th>Parameter</th> <th>Units</th> <th>Averaging period</th> <th>Frequency</th> <th>Sampling method¹</th> </tr> </thead> <tbody> <tr> <td>Lapse rate</td> <td>°C /100m</td> <td>1 hour</td> <td>Continuous</td> <td>Note²</td> </tr> <tr> <td>Rainfall</td> <td>mm/hr</td> <td>1 hour</td> <td>Continuous</td> <td>AM-4</td> </tr> <tr> <td>Sigma Theta @ 10 m</td> <td>°</td> <td>1 hour</td> <td>Continuous</td> <td>AM-2</td> </tr> <tr> <td>Siting</td> <td>-</td> <td>-</td> <td>-</td> <td>AM-1</td> </tr> <tr> <td>Temp @ 10 m</td> <td>K</td> <td>1 hour</td> <td>Continuous</td> <td>AM-4</td> </tr> <tr> <td>Temp @ 2 m</td> <td>K</td> <td>1 hour</td> <td>Continuous</td> <td>AM-4</td> </tr> <tr> <td>Total Solar Radiation @ 10m</td> <td>W/m²</td> <td>1 hour</td> <td>Continuous</td> <td>AM-4</td> </tr> <tr> <td>Wind Direction @ 10 m</td> <td>°</td> <td>1 hour</td> <td>Continuous</td> <td>AM-2</td> </tr> <tr> <td>Wind Speed @ 10 m</td> <td>m/s</td> <td>1 hour</td> <td>Continuous</td> <td>AM-2</td> </tr> </tbody> </table> Table 11: Meteorological monitoring	Parameter	Units	Averaging period	Frequency	Sampling method ¹	Lapse rate	°C /100m	1 hour	Continuous	Note ²	Rainfall	mm/hr	1 hour	Continuous	AM-4	Sigma Theta @ 10 m	°	1 hour	Continuous	AM-2	Siting	-	-	-	AM-1	Temp @ 10 m	K	1 hour	Continuous	AM-4	Temp @ 2 m	K	1 hour	Continuous	AM-4	Total Solar Radiation @ 10m	W/m ²	1 hour	Continuous	AM-4	Wind Direction @ 10 m	°	1 hour	Continuous	AM-2	Wind Speed @ 10 m	m/s	1 hour	Continuous	AM-2	Compliant	Viewed Novecom siting report dated 19/12/16 confirming installed sensors (wind speed & direction, temperature @10m, humidity and rainfall) are operating within parameters listed in the Australian Standard (AS3580.14-2011). Whilst this only shows one temperature sensor and no solar radiation sensor, as this was a new installation, all equipment would have been under factory-warranted calibration. In addition, a calibration report from Sentinex, dated 4 September 2017 (outside this audit period) has been observed and confirms all equipment required are installed and operating correctly. As station has not been in place for 12 months, no maintenance reports are available. Maintenance reports and data for period prior to installation of new station were observed (letters from AECOM dated 10 June 2015 for six monthly audit on 21 & 22 May 2015 and dated 19 February 2016 for six
Parameter	Units	Averaging period	Frequency	Sampling method ¹																																																		
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Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments
				monthly audit on 30 November 2015)
		GREENHOUSE GAS		
4	87	For the life of the development, the Applicant must: (a) monitor the greenhouse gas emissions generated by the development; (b) investigate ways to reduce greenhouse gas emissions generated by the development; and (c) report on greenhouse gas monitoring and abatement measures in the Annual Review , to the satisfaction of the Secretary	Compliant	Greenhouse gas emissions and minimisation were not reported in 2014 AEMR, however they are contained in the 2015 and 2016 Annual Reviews.
5	4	If a landowner considers the development to be exceeding the air quality and/or noise impact assessment criteria listed in schedule 4 at his/her dwelling, or at any proposed dwelling on his/her vacant land, then he/she may ask the Applicant for an independent review of the air pollution and/or noise impacts of the development on his/her dwelling, or proposed dwelling. If the Secretary is satisfied that an independent review is warranted, the Applicant must: (a) consult with the landowner to determine his/her concerns; and (b) commission a suitably qualified person – whose appointment has been approved by the Secretary – to conduct air quality and/or noise monitoring at the relevant dwelling to determine whether the development is complying with the relevant impact assessment criteria, and identify the source(s) and scale of any air quality and/or noise impact at the dwelling, and the development's contribution to this impact. Within 14 days of receiving the results of this independent review, the Applicant must give a copy of these results to the Secretary and landowner.	Not triggered	No review under this condition was requested during the audit period.

Table D2

DA 177-8-2004 Consolidated Conditions of Approval

Blue type represents Notice of Modification 15 December 2006 (126-10-2006)

Pink type represents 2012 modification

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments
		AIR QUALITY		
		Impact Assessment Criteria		
4	14	The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the Wambo Mining Complex do not	Compliant	See Response to 4(5) under DA 305-7-2003

Section	Sub-section	Requirement	2017 Audit Status	2017 Audit Comments																							
		<p>exceed the criteria listed in tables 5, 6 or 7 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, unless higher air quality criteria is specified in the consent for the Wambo Coal Mine (DA 305-7-2003).</p> <p><i>Table 5: Long term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate matter (TSP)</td> <td>Annual</td> <td>90 µg/</td> </tr> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>Annual</td> <td>30 µg/ 3</td> </tr> </tbody> </table> <p><i>Table 6: Short term impact assessment criterion for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM10)</td> <td>4 hours</td> <td>50 µg/m3</td> </tr> </tbody> </table> <p><i>Table 7: Long term impact assessment criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Max. increase in dust level</th> <th>Max. total deposited dust</th> </tr> </thead> <tbody> <tr> <td>Deposited Dust</td> <td>Annual</td> <td>2g/m2/mth</td> <td>4g/m2/mth</td> </tr> </tbody> </table> <p><i>Notes to Tables 5-7:</i></p> <p><i>a Total impact (ie incremental increase in concentrations due to the Wambo Mining Complex plus background concentrations due to all other sources);</i></p> <p><i>b Incremental impact (ie incremental increase in concentrations due to the Wambo Mining Complex on its own);</i></p> <p><i>c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method;</i></p> <p><i>d Excludes extraordinary events such as bushfires, prescribed burning, dust storms sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with OEH.</i></p>	Pollutant	Averaging Period	Criterion	Total suspended particulate matter (TSP)	Annual	90 µg/	Particulate matter < 10 µm (PM10)	Annual	30 µg/ 3	Pollutant	Averaging Period	Criterion	Particulate matter < 10 µm (PM10)	4 hours	50 µg/m3	Pollutant	Averaging Period	Max. increase in dust level	Max. total deposited dust	Deposited Dust	Annual	2g/m2/mth	4g/m2/mth		
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Deposited Dust	Annual	2g/m2/mth	4g/m2/mth																								
4	15	<p>Operating Conditions</p> <p>The Applicant must:</p> <p>(a) ensure any visible air pollution generated by the development is assessed regularly, and that operations are modified, and/or stopped as required to minimise air quality impacts on privately owned land;</p> <p>(b) implement all practicable measures to minimise air pollutant emissions from the development; and</p> <p>(c) report on the effectiveness of these measures in the Annual Review, to the satisfaction of the Director-General</p>	Compliant	See Response to 4(5b) under DA 305-7-2003																							

18 October 2017
Ref: J0130-120-L1

Hansen Bailey Pty Ltd
P.O. Box 473
SINGLETON NSW 2330

Attn: Mrs Dianne Munro

Dear Dianne,

RE: ENVIRONMENTAL COMPLIANCE AUDIT – WAMBO COAL MINE

INTRODUCTION

Wambo Coal Pty Limited (Wambo Coal) operates Wambo Coal Mine, a combined open cut and underground coal mine located near the village of Warkworth approximately 15 km west of Singleton in the Hunter Valley of NSW. Wambo Coal Mine is operated according to Development Consent 305-7-2003 which was granted in February 2004 and last modified in October 2016.

Wambo Coal also operates rail loading infrastructure adjacent to Wambo Coal Mine according to Development Consent 177-8-2004 which was granted in December 2004 and last modified in 2012.

Hansen Bailey was engaged by Wambo Coal to complete an Independent Environmental Audit as required by Schedule 6, Condition 7 of each Development Consent, which are reproduced below:

DA 305-7-2003

7. *Every 3 years, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:*

- (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;*
- (b) include consultation with the relevant agencies;*
- (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these consents/approvals);*
- (d) review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals;*
- (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and*
- (f) be conducted and reported to the satisfaction of the Secretary.*

Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.

DA 177-8-2003

7. *The Applicant shall ensure that the development is included in the Independent Environmental Audit of the Wambo Mining Complex.*

Bridges Acoustics was engaged by Hansen Bailey to provide specialist advice regarding acoustic issues associated with the audit, in consultation with the Secretary.

INITIAL DOCUMENT REVIEW

A number of relevant documents were supplied by Wambo Coal and Hansen Bailey for initial review, or obtained from Wambo Coal's website, including:

- DA 305-7-2003 Wambo Coal Mine Development Consent;
- Various EA, EIS and SEE reports including acoustic assessments where relevant;
- Noise Management Plan dated February 2014;
- Annual Environmental Monitoring Report (AEMR) 2014;
- Annual Review 2015;
- Annual Review 2016;
- Environmental Monthly Reports January – August 2017;
- Example Weatherzone meteorological forecast report for 18-24 September 2017;
- Attended noise monitoring reports prepared by Global Acoustics for Q4 2014 to July 2017;
- Blast Management Plan dated July 2017;
- Blast monitoring summary reports for January – July 2017; and
- DA 177-8-2004 Wambo Rail Loop Development Consent.

SITE VISIT

Wambo Coal Mine was visited by Hansen Bailey's audit team from Wednesday 20 to Thursday 21 September 2017 and by Bridges Acoustics on Thursday 21 September 2017. The acoustic site visit included the following components:

- Meeting with Wambo Coal Mine Environment and Community staff including a brief presentation regarding recent and current mining operations;
- A detailed question and answer session with one of Wambo Coal's Environmental Advisors, with part of the session including Wambo Coal's Environment and Community Manager, to obtain additional information and view various documents and data to address issues not resolved in the initial document review. Additional documents and data viewed during this session included:
 - Draft Noise Management Plan dated August 2017;
 - Example shift reports describing active noise management actions taken in response to real time noise monitoring results, including shutting down or relocating equipment to ensure compliance with noise criteria at receptors;
 - Attended noise monitoring report for August 2017, received by Wambo Coal a few days before the site visit;
 - Blast monitoring results for Wambo Homestead; and

- Blast notification/contact list and sample notification, including to relevant staff at nearby mines;
- A review of additional documents supplied during the previous session, including the revised and updated Noise Management Plan that is currently being reviewed by the Department of Planning & Environment; and
- A closing meeting with Hansen Bailey auditors and Wambo Coal staff to summarise the findings of the acoustic audit.

The active and helpful cooperation of Wambo Coal staff during the site visit is acknowledged and appreciated.

OUTCOMES

Information gathered during the document reviews and site visit indicated Wambo Coal is substantially complying with relevant development consent conditions and is strongly focussed on minimising and controlling environmental noise and blasting impacts.

The blast monitoring network is appropriate and indicates no exceedances of the blast criteria have occurred during the audit period. Blast management procedures, including control of vibration, overpressure and flyrock, are appropriate.

The noise monitoring network during the audit period was acceptable, however a review of the noise monitoring locations would normally have been recommended as it seemed likely that more appropriate locations may be possible. In this case the noise management plan revised in August 2017 that is currently before the Department of Planning & Environment for approval includes revised noise monitoring locations, which address this issue.

The existing real time noise monitoring system is acceptable and the active noise management system based on results from the real time monitors is commendable. The system as it stands is capable of managing the mining operation to maintain acceptable noise levels at representative receptors. No amendments to monitoring or management systems are required to maintain compliance with noise criteria.

Two minor administrative non-compliances were identified:

- Schedule 4 Condition 8f requires Wambo Coal to coordinate noise management at Wambo Coal Mine with noise management at other nearby mines, however no such coordination currently occurs in any consistent manner. Staff at nearby mines are notified by email or telephone if Wambo Coal's real time noise monitoring system indicates noise from another mine is exceeding relevant criteria, however there is no formal procedure in place to provide an agreed coordinated response to such events. There is no evidence that exceedances of cumulative noise criteria have occurred and such criteria exceedances are unlikely to occur in the future; and
- Schedule 4 Condition 9e requires Wambo Coal's Noise Management Plan to include a protocol prepared in consultation with other nearby mines to minimise the cumulative noise impacts of these mines and Wambo Coal Mine. A protocol satisfying this condition is not included in the current or revised draft Noise Management Plan. There is no evidence that exceedances of cumulative noise criteria have occurred and such criteria exceedances are unlikely to occur in the future.

There is evidence to show Wambo Mine's response to noise and blasting related complaints is appropriate.

Environment Protection Licence (EPL) 529 issued by the Environment Protection Authority (EPA) includes similar and equivalent noise and blasting conditions to those listed in DA 305-7-2003, therefore noise and blasting levels during the audit period complied with the acoustic conditions of the EPL.

RECOMMENDATIONS

A number of recommendations, to correct minor issues or to improve noise and blasting outcomes, have been developed during the course of the audit investigation.

To Correct Identified Non-Compliances

- Blasts within 500 m of the Golden Highway are planned in the near future and will require closing the Golden Highway for short periods of time, according to the completed and approved road closure plan. Blasts within 500 m of land not owned by Wambo Coal, on the northern side of the Golden Highway, did not occur during the audit period but are planned to occur in the near future. Such land is owned by Hunter Valley Operations, a nearby mining company, and the Crown. At present Wambo Coal does not have written approval to blast within 500 m of this land as required by Schedule 4 Condition 19b of Consent 305-7-2003 and such approval will be required in the near future.
- An amendment to the Noise Management Plan is recommended to include a protocol to minimise potential cumulative noise impacts, prepared in consultation with adjoining mines as required by Schedule 4 Condition 9e;

Other Recommendations

- A regular review of the noise and blast monitoring systems, including monitoring locations, is recommended to ensure the optimum monitoring locations are used to represent noise levels at the closest and potentially most affected private residences while minimising extraneous noise from other sources such as road traffic or other mines;
- Blast monitoring data are not always reported correctly, such as occurred in March 2017 when the ground vibration and overpressure levels were swapped. Additional care is required to avoid this outcome; and
- A review of blast monitoring data indicated a typical overpressure level difference in the range 6 to 8 dB between the Muller and Thelander monitors, primarily due to differences in topography between the blast sites and the two monitors. However, in August 2017 a difference generally in the range 25 to 30 dB was noted between these two monitors, with overpressure levels reported by the Thelander monitor being lower. This indicates a potential calibration problem with the microphone attached to the Thelander blast monitor and a prompt investigation into this issue is recommended.

CONCLUSION

This audit of Wambo Coal's environmental performance from 1 November 2014 to 31 August 2017 has indicated compliance with the relevant development consent and environment protection licence conditions, with only minor administrative non-compliances arising in relation to management of cumulative noise levels in conjunction with other mines.

Yours faithfully,



MARK BRIDGES BE (Mech) (Hons) MAAS
Principal Consultant

**Table D1 - DA 305-7-2003 Conditions of Approval
 For Audit Period 1 November 2014 to 31 August 2017**

Section	Sub-section	Requirement	Status	Comments
SCHEDULE 3 ADMINISTRATIVE CONDITIONS				
		Terms of Approval		
3	2	<p>The Applicant shall carry out the development generally in accordance with the:</p> <p>(a) DA 305-7-2003;</p> <p>(b) EIS titled Wambo Development Project, volumes 1-5, dated July 2003, and prepared by Resource Strategies Pty. Ltd.;</p> <p>(c) letter from Holmes Air Sciences to the Department, dated 3 September 2003, and titled Wambo Development Project - Response Air Quality Assessment;</p> <p>(d) letter from Wambo Coal Pty. Ltd. to the Department, dated 24 October 2003, and titled Wambo Development Project – Development Application Amendment (DA 305-7-2003-i);</p> <p>(e) Statement of Environmental Effects titled Wambo Development project – Wambo Seam Underground Mine Modification, dated January 2005, and prepared by Wambo Coal Pty Ltd;</p> <p>(f) document titled Wambo Development Project – Modification of DA 305-7-2003-I, dated 24 October 2005;</p> <p>(g) document titled Wambo Development Project – Modification of DA 305-7-2003-I; dated 23 January 2006;</p> <p>(h) document titled Wambo Development Project – Modification of DA 305-7-2003-I; dated 27 July 2006;</p> <p>(i) document titled Wambo Coal Mine Modification Statement of Environmental Effects; dated September 2006;</p> <p>(j) document titled Wambo Coal Mine Statement of Environmental Effects on Proposed Modification, dated March 2009;</p> <p>(k) document titled Wambo Coal Mine Modification Statement of Environmental Effects, dated June 2009 and the response to submissions dated July 2009;</p> <p>(l) the modification application DA 305-7-2003 MOD 9 and accompanying letter prepared by Wambo Coal Pty Ltd; and (m) conditions of this consent.</p> <p>(m) the modification application DA 305-7-2003 MOD 11 and accompanying documents titled <i>Wambo Montrose Water Storage Modification Environmental Assessment</i> dated June 2012 and <i>Wambo Montrose Water Storage Modification Response to Submissions</i> dated 4 September 2012;</p> <p>(n) the modification application DA 305-7-2003 MOD 13 and accompanying documents entitled <i>North Wambo Mine Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwalls 9 and 10</i> dated December 2012 and</p>	Compliant	Mining operations were undertaken generally according to the documents referred to in this condition in relation to noise and blast impacts.

Section	Sub-section	Requirement	Status	Comments																						
		<p><i>North</i> <i>Wambo Underground Mine Modification - Response to Submissions</i> dated April 2013; (o) the modification application DA 305-7-2003 MOD 14 and accompanying documents entitled <i>North Wambo Underground Mine Longwall 10A Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwall 10A</i>, dated September 2014, and associated <i>Response to Submissions</i> dated December 2014; and (p) the modification application DA 305-7-2003 MOD 15 and accompanying documents entitled <i>South Bates (Wambo Seam) Underground Mine Modification Environmental Assessment – The addition of South Bates (Wambo Seam) Underground Mine Longwalls 14 to 16</i>, dated August 2015, and associated <i>Response to Submissions</i> dated September 2015 and letter from Peabody Energy to the Department titled <i>Modification 15 to DA 305-7-2003 – Supplementary Request to Include Revised Portal Location</i>, dated 2 November 2015; (q) the modification application DA 305-7-2003 MOD 12 and accompanying documents entitled <i>South Wambo Underground Mine Modification Environmental Assessment</i>, dated April 2016, associated <i>Response to Submissions</i> dated June 2016 and letter from Peabody Energy to the Department titled <i>Modification 12 to DA 305-7-2003 – Request to Revise First Workings Layout</i>, dated 13 July 2016; and (r) <i>Approved Layout</i>, shown in Appendix 5.</p>																								
SCHEDULE 4 SPECIFIC ENVIRONMENTAL CONDITIONS																										
		¹ NOISE																								
4	6	<p>Noise Impact Assessment Criteria The Applicant must ensure that the noise generated by the development does not exceed the noise impact assessment criteria presented in Table 9.</p> <table border="1"> <thead> <tr> <th>Day</th> <th>Evening/ Night</th> <th>Night</th> <th>Land Number</th> </tr> <tr> <th>L_{Aeq}(15 minute)</th> <th>L_{Aeq}(51minute)</th> <th>L_{AI}(1 minute)</th> <th></th> </tr> </thead> <tbody> <tr> <td>35</td> <td>41</td> <td>50</td> <td>94 – Curlewis</td> </tr> <tr> <td rowspan="7">35</td> <td rowspan="7">40</td> <td rowspan="7">50</td> <td>3 – Birrell</td> </tr> <tr> <td>4B – Circosta</td> </tr> <tr> <td>15B - McGowen/Caslick</td> </tr> <tr> <td>16 – Cooper</td> </tr> <tr> <td>23C – Kannar</td> </tr> <tr> <td>25 – Fenwick</td> </tr> <tr> <td>28A & B – Garland</td> </tr> </tbody> </table>	Day	Evening/ Night	Night	Land Number	L _{Aeq} (15 minute)	L _{Aeq} (51minute)	L _{AI} (1 minute)		35	41	50	94 – Curlewis	35	40	50	3 – Birrell	4B – Circosta	15B - McGowen/Caslick	16 – Cooper	23C – Kannar	25 – Fenwick	28A & B – Garland	Not Compliant	<p>Attended noise monitoring results were reviewed. Minor (1 dBA) exceedances of the noise limits occurred on two occasions (June and August 2017) at N16 Muller, however the minor exceedances were not sustained and were within the 2 dB tolerance recommended in Section 11.1.3 of the INP. The two minor exceedances did not coincide with noise-related complaints.</p> <p>Noise monitoring locations N01 and N03 have been reassessed and relocated in the revised noise management plan prepared at the end of the audit period. The revised monitoring locations are considered appropriate.</p>
Day	Evening/ Night	Night	Land Number																							
L _{Aeq} (15 minute)	L _{Aeq} (51minute)	L _{AI} (1 minute)																								
35	41	50	94 – Curlewis																							
35	40	50	3 – Birrell																							
			4B – Circosta																							
			15B - McGowen/Caslick																							
			16 – Cooper																							
			23C – Kannar																							
			25 – Fenwick																							
			28A & B – Garland																							

Section	Sub-section	Requirement	Status	Comments								
		<i>Notes: Noise generated by the Wambo Mining Complex is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy</i>										
		Land Acquisition Criteria										
4	7	<p>If the noise generated by the Wambo Mining Complex exceeds the criteria in Table 10, the Applicant must, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 9-11 of schedule 5.</p> <table border="1"> <thead> <tr> <th>Day/Evening/ Night L_{Aeq}(15 minute)</th> <th>Property</th> </tr> </thead> <tbody> <tr> <td rowspan="3">43</td> <td>94 - Curlewis</td> </tr> <tr> <td>23C – Kannar</td> </tr> <tr> <td>254A - Algie</td> </tr> <tr> <td>40</td> <td>All other residential or sensitive receptor, excluding the receptors listed in condition 1 above</td> </tr> </tbody> </table> <p><i>Table 10: Land acquisition criteria dB(A) Note: Noise generated by the Wambo Mining Complex is to be measured in accordance with the notes presented below Table 9 above. Property 23C – Kannar has been acquired and is now mine-owned.</i></p>	Day/Evening/ Night L _{Aeq} (15 minute)	Property	43	94 - Curlewis	23C – Kannar	254A - Algie	40	All other residential or sensitive receptor, excluding the receptors listed in condition 1 above	Not triggered	No exceedances of the land acquisition noise criteria in this condition occurred during the audit period.
Day/Evening/ Night L _{Aeq} (15 minute)	Property											
43	94 - Curlewis											
	23C – Kannar											
	254A - Algie											
40	All other residential or sensitive receptor, excluding the receptors listed in condition 1 above											
		Operating Conditions										
4	8	<p>The Applicant must:</p> <ul style="list-style-type: none"> (a) implement best management practice to minimise the operational, low frequency and traffic noise of the Wambo Mining Complex; (b) operate a comprehensive noise management system for the Wambo Mining Complex that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide the day to day planning of mining operations and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this consent; (c) maintain the effectiveness of noise suppression equipment (if fitted) on plant at all times and ensure defective plant is not used operationally until fully repaired; (d) ensure that noise attenuated plant (if used) is deployed preferentially in locations relevant to sensitive receivers; (e) minimise the noise impacts of the Wambo Mining Complex during meteorological conditions when the noise limits in this consent do not apply; 	Not Compliant	<p>a) SP and HE described Wambo’s active noise monitoring and management measures, resulting in intermittent interruptions to mining activity, that have been in place during the audit period and have resulted in substantial compliance with noise criteria (except for two minor 1 dBA exceedances at one monitoring location in June and August 2017). There is no evidence for low frequency or traffic noise impacts at any receptor.</p> <p>b) Meteorological forecasts and real time noise monitoring system results were viewed. SP and HE described the proactive and reactive systems in place to manage noise to comply with relevant criteria.</p>								

Section	Sub-section	Requirement	Status	Comments
		<p>(f) co-ordinate the noise management for the Wambo Mining Complex with the noise management at nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative noise impacts of these mines and the Wambo Mining Complex, to the satisfaction of the Secretary.</p>		<p>c) No noise suppression systems are fitted so maintenance of such systems is not required.</p> <p>d) SP and HE presented examples of some mining equipment producing lower noise levels than others being preferentially used in more exposed areas of the mine.</p> <p>e) SP explained active noise monitoring and management occurs under all weather conditions, not just the conditions specified in the consent, requiring intermittent interruptions to production under such conditions.</p> <p>f) Active noise management responds to noise from other nearby mines as well as from Wambo, therefore active coordination with the operators of nearby mines is not required to ensure compliance. However, formal coordination with nearby mines as required by this condition does not occur and an agreed protocol does not exist.</p>
		<p>Noise Management Plan</p>		
<p>4</p>	<p>9</p>	<p>The Applicant must prepare and implement a Noise Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must:</p> <p>(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval by the end of June 2013;</p> <p>(b) describe the measures that would be implemented to ensure:</p> <ul style="list-style-type: none"> • best management practice is being employed; • the noise impacts of the Wambo Mining Complex are minimised during meteorological conditions when the noise limits in this consent do not apply; and • compliance with the relevant conditions of this consent; <p>(c) describe the proposed noise management system in detail;</p> <p>(d) include a monitoring program that:</p> <ul style="list-style-type: none"> • uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the Wambo Mining Complex; • adequately supports the proactive and reactive noise management system for the Wambo Mining Complex; • includes a protocol for determining exceedances of the relevant conditions in this consent; 	<p>Not Compliant</p>	<p>(a) – HB to address</p> <p>b) Mentioned in Sections 3.3 and 8 of the NMP. More detail is provided in the revised NMP prepared for the next audit period.</p> <p>c) Mentioned in Sections 3.3 and 8 of the NMP. More detail is provided in the revised NMP prepared for the next audit period.</p> <p>d) Requirements are covered by the NMP and the AEMRs and Annual Reviews during the audit period.</p> <p>e) Section 6 of the NMP states potential exceedances of cumulative noise criteria will be reported to operators of nearby mines, however a formal protocol required by this condition has not been prepared.</p>

Section	Sub-section	Requirement	Status	Comments						
		<ul style="list-style-type: none"> evaluates and reports on the effectiveness of the noise management system for the Wambo Mining Complex; provides for the annual validation of the noise model for the Wambo Mining Complex; and (e) include a protocol that has been prepared in consultation with the owners of nearby mines (including HVO South, HVO North and Mount Thorley Warkworth mines) to minimise the cumulative noise impacts of these mines and the Wambo Mining Complex. The Applicant must implement the approved management plan as approved from time to time by the Secretary.								
		³BLASTING & VIBRATION								
		Airblast Overpressure Limits								
4	11	The Applicant must ensure that the airblast overpressure level from blasting at the Wambo Mining Complex does not exceed the criteria in Table 12 at any residence on privately-owned land with the exception of property 13C (Skinner) (see condition 20 below). <table border="1"> <thead> <tr> <th>Airblast overpressure level (dB(Lin Peak))</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <tr> <td>115</td> <td>5% of the total number of blasts over a period of 12 months</td> </tr> <tr> <td>120</td> <td>0%</td> </tr> </tbody> </table> Table 12: Airblast overpressure impact assessment criteria	Airblast overpressure level (dB(Lin Peak))	Allowable exceedance	115	5% of the total number of blasts over a period of 12 months	120	0%	Compliant	A review of blast monitoring results has been carried out, with acceptable results subject to the following comments. Monitoring results for the period 23/2/2017 to 29/3/2017 were reported incorrectly (overpressure and vibration levels were swapped in the results table). Two overpressure levels over 115 dBA were noted in May 2017 at Muller, however both were within 120 dBA which complies with the criteria. Recommendation: Wambo staff investigate a likely calibration error for the overpressure microphone on the Thelander blast monitor, which developed in August 2017 after the last calibration check in July 2017.
Airblast overpressure level (dB(Lin Peak))	Allowable exceedance									
115	5% of the total number of blasts over a period of 12 months									
120	0%									
		Ground Vibration Impact Assessment Criteria								
4	12	The Applicant must ensure that the ground vibration level from blasting at the Wambo Mining Complex does not exceed the criteria in Table 13 at any residence on privately-owned land with the exception of property 13C (Skinner) (see condition 20 below). <table border="1"> <thead> <tr> <th>Peak particle velocity (mm/s)</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>5% of the total number of blasts over a period of 12 months</td> </tr> </tbody> </table>	Peak particle velocity (mm/s)	Allowable exceedance	5	5% of the total number of blasts over a period of 12 months	Compliant	A review of blast monitoring results has been carried out, with acceptable results subject to the following comments. Monitoring results for the period 23/2/2017 to 29/3/2017 were reported incorrectly (overpressure and vibration levels were swapped in the results table). Recommendation: Review all published monitoring data before data are published		
Peak particle velocity (mm/s)	Allowable exceedance									
5	5% of the total number of blasts over a period of 12 months									

Section	Sub-section	Requirement	Status	Comments
		10 0%		
		<i>Table 13: Ground vibration impact assessment criteria</i>		
		Blasting Hours		
4	13	The Applicant must only carry out blasting at the Wambo Mining Complex between 9 am and 5 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays or any other time without the written approval of EPA.	Compliant	Blast monitoring results in AEMR, Annual Review and other reports indicate compliance with this condition.
		Blasting Frequency		
	13A	The Applicant may carry out a maximum of: (a) 3 blasts a day, unless an additional blast is required following a blast misfire; and (b) 15 blasts a week, for all operations at the Wambo Mining Complex. This condition does not apply to blasts that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, or blasts required to ensure the safety of the mine or its workers. <i>Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.</i>	Compliant	Blast monitoring results in AEMR, Annual Review and other reports indicate compliance with this condition.
		Operating Conditions		
4	18	During mining operations at the Wambo Mining Complex, the Applicant must : (a) implement best management practice to: protect the safety of people and livestock in the surrounding area; protect public or private infrastructure/property in the surrounding area from any damage; and minimise the dust and fume emissions of any blasting; (b) minimise the frequency and duration of any road closures, and avoid road closures during peak traffic periods; (c) co-ordinate the timing of blasting at the Wambo Mining Complex with the timing of blasting at nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative blasting impacts of these mines and the Wambo Mining Complex; and (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule at the Wambo Mining Complex, to the satisfaction of the Secretary .	Compliant	a) Covered in BMP Sections 5.8 to 5.10. b) Covered in the road closure plan appended to the BMP. c) Viewed email communications with neighbouring mines listing proposed blasting times. d) Viewed the blast notification list covering email, phone and text message notifications to private receptors and staff at other mines.
4	19	The Applicant must not undertake blasting within 500 metres of: (a) any public road without the approval of the appropriate road authority; or (b) any land outside the site that is not owned by the Applicant, unless: the Applicant has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Applicant has advised the Department in	Not triggered	a) Covered in the road closure plan appended to the BMP which includes an RMS approval letter. No blasting within 500 m of the Golden Highway, and no road closures, have occurred during the audit period.

Section	Sub-section	Requirement	Status	Comments
		writing of the terms of this agreement, or the Applicant has: <ul style="list-style-type: none"> demonstrated to the satisfaction of the Secretary that the blasting can be carried out closer to the land without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land. 		b) Land north of the golden Highway is owned by HVO and the Crown, however no blasting has occurred within 500 m of this land during the audit period. Recommendation: Seek written approval for blasting within 500 m of Crown and HVO land before blasting within 500 m of this land in the next audit period.
		Blast Management Plan		
4	20	The Applicant must prepare and implement a Blast Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must: <ul style="list-style-type: none"> (a) be submitted to the Secretary for approval by the end of June 2013; (b) propose and justify any alternative ground vibration limits for any public infrastructure in the vicinity of the Wambo Mining Complex; (c) describe the measures that would be implemented to ensure: <ul style="list-style-type: none"> best management practice is being employed; compliance with the relevant conditions of this consent; (d) include a road closure management plan for blasting within 500 metres of a public road, that has been prepared in consultation with the RMS and Council; (e) include measures to minimise, mitigate, and if necessary remediate the blasting impacts on property 13C (Skinner); (f) address the requirements of conditions 63 – 68 of schedule 4; (g) include a monitoring program for evaluating the performance of the Wambo Mining Complex, including: <ul style="list-style-type: none"> compliance with the applicable criteria; and Minimising the fume emissions from the Wambo Mining Complex; and (h) include a protocol that has been prepared in consultation with the owners of nearby mines (including HVO South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative blasting impacts of these mines and the Wambo Mining Complex. <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p>	Compliant	a) – HB to address b) BMP Section 3 c) BMP Sections 5 and 6 d) BMP road closure plan e) This property is now owned by Wambo (ref previous audit report) f) Addressed as further described for the relevant conditions below g) BMP Section 6 h) BMP Section 5.1
	20A	The Applicant must not carry out more than 1 blast a day within 500 metres of Wallaby Scrub Road or the Golden Highway.	Not triggered	Sections 4.2 and 5.0 of the road closure plan attached to the BMP. No blasts within 500 m of roads during the audit period.
		Blasting		
4	63	Ground vibration and air blast levels are to be monitored and recorded at a blast monitoring station to be established within the Wambo Homestead Complex for each blast within 2 km of the Wambo Homestead Complex.	Compliant	All blast monitored including those over 2 km from this location. Monitoring data viewed, no exceedances of conservative

Section	Sub-section	Requirement	Status	Comments
				residential amenity criteria.
4	65	Ground vibration and air blast levels experienced at the Wambo Homestead Complex blast monitoring station are not to exceed the structural damage assessment criteria prescribed by <i>Australian Standard AS 2187.2-1993 (or its latest version) “Explosives – Storage Transport and Use” for Sensitive and Heritage Structures</i> to prevent damage to the heritage items.	Compliant	Conservative residential amenity criterion of 5 mm/s adopted as described in Section 3.3 of the BMP. Viewed monitoring data indicating no exceedances of criteria.
SCHEDULE 5 ADDITIONAL PROCEDURES FOR AIR QUALITY & NOISE MANAGEMENT				
		Independent Review		
5	4	<p>If a landowner considers the development to be exceeding the air quality and/or noise impact assessment criteria listed in schedule 4 at his/her dwelling, or at any proposed dwelling on his/her vacant land, then he/she may ask the Applicant for an independent review of the air pollution and/or noise impacts of the development on his/her dwelling, or proposed dwelling.</p> <p>If the Secretary is satisfied that an independent review is warranted, the Applicant must:</p> <ul style="list-style-type: none"> (a) consult with the landowner to determine his/her concerns; and (b) commission a suitably qualified person – whose appointment has been approved by the Secretary – to conduct air quality and/or noise monitoring at the relevant dwelling to determine whether the development is complying with the relevant impact assessment criteria, and identify the source(s) and scale of any air quality and/or noise impact at the dwelling, and the development’s contribution to this impact. <p>Within 14 days of receiving the results of this independent review, the Applicant must give a copy of these results to the Secretary and landowner.</p>	Not triggered	One review was requested in March 2017, however the Secretary has reviewed available data supplied by Wambo and determined a more detailed review and/or additional monitoring is not warranted in this case.

Table D2
DA 177-8-2004 Consolidated Conditions of Approval

Section	Sub-section	Condition	Audit Status	Audit Comments								
SCHEDULE 4 GENERAL ENVIRONMENTAL CONDITIONS												
¹ NOISE												
Noise Impact Assessment Criteria												
4	3	<p>The Applicant must ensure that noise generated by the development, combined with noise generated by any development in the Wambo Mining Complex, does not exceed the noise criteria provided in Table 2, unless higher noise criteria are specified in the consent for the Wambo Coal Mine (DA 305-7-2003).</p> <p>Table 2: Noise impact assessment criteria dB(A)</p> <table border="1"> <thead> <tr> <th>Day LAeq(15 minute)</th> <th>Evening/Night LAeq(15 minute)</th> <th>Night LA1(1 minute)</th> <th>Land Number</th> </tr> </thead> <tbody> <tr> <td>35</td> <td>35</td> <td>50</td> <td>All private residential or sensitive receptors, excluding the receptors listed in Table 1</td> </tr> </tbody> </table> <p>Notes:</p> <ul style="list-style-type: none"> Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. For this condition to apply, the exceedance of the criteria must be systemic. 	Day LAeq(15 minute)	Evening/Night LAeq(15 minute)	Night LA1(1 minute)	Land Number	35	35	50	All private residential or sensitive receptors, excluding the receptors listed in Table 1	Compliant	See Schedule 4 Condition 6 in DA 305-7-2003 which includes equal or higher noise criteria
Day LAeq(15 minute)	Evening/Night LAeq(15 minute)	Night LA1(1 minute)	Land Number									
35	35	50	All private residential or sensitive receptors, excluding the receptors listed in Table 1									
4	7	<p>Noise Monitoring</p> <p>The Applicant must monitor the noise generated by the development, and noise generated by the Wambo Mine, in general accordance with the Noise Management Plan for the Wambo Mining Complex and the NSW Industrial Noise Policy.</p>	Compliant	Covered by other Consent and NMP								
² BLASTING AND VIBRATION												
Airblast Overpressure Criteria												
4	8	<p>The Applicant must ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 3 at any residence on privately owned land.</p> <p>Table 3: Airblast overpressure impact assessment criteria</p> <table border="1"> <thead> <tr> <th>Airblast Overpressure Level (dB(Lin Peak))</th> <th>Allowable Exceedance</th> </tr> </thead> <tbody> <tr> <td>115</td> <td>5% of total number of blasts over 12 months</td> </tr> <tr> <td>120</td> <td>0%</td> </tr> </tbody> </table>	Airblast Overpressure Level (dB(Lin Peak))	Allowable Exceedance	115	5% of total number of blasts over 12 months	120	0%	Not triggered	No blasting has occurred within the rail loop during the audit period.		
Airblast Overpressure Level (dB(Lin Peak))	Allowable Exceedance											
115	5% of total number of blasts over 12 months											
120	0%											

Section	Sub-section	Condition	Audit Status	Audit Comments						
		Ground Vibration Impact Assessment Criteria								
4	9	<p>The Applicant must ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 4 at any residence on privately owned land.</p> <p><i>Table 4: Ground vibration impact assessment criteria</i></p> <table border="1"> <thead> <tr> <th>Peak Particle Velocity (mm/s)</th> <th>Allowable Exceedance</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>5% of total number of blasts over 12 months</td> </tr> <tr> <td>10</td> <td>0%</td> </tr> </tbody> </table> <p>For St Philip’s Church, the Applicant must ensure that ground vibration peak particle velocity generated by the development does not exceed 2.5 mm/s.</p>	Peak Particle Velocity (mm/s)	Allowable Exceedance	5	5% of total number of blasts over 12 months	10	0%	Not triggered	No blasting has occurred within the rail loop during the audit period.
Peak Particle Velocity (mm/s)	Allowable Exceedance									
5	5% of total number of blasts over 12 months									
10	0%									
		Vibration Monitoring								
4	12	The Applicant must monitor the vibration from the operation of the rail spur and the rail line at least 4 times a year, or as directed by the Director-General.	Not triggered	Vibration monitoring has been discontinued since December 2008 according to previous audit						
4	13	Within 3 months of this consent, the Applicant must prepare a Vibration Monitoring Program for the development to the satisfaction of the Director-General.	Not triggered	Vibration monitoring has been discontinued since December 2008 according to previous audit						



Australasian Groundwater and
Environmental Consultants Pty Ltd



Report on

Wambo Coal Mine Independent Environmental Audit 2017 - Groundwater

Prepared for
Hansen Bailey

Project No. G1889 November 2017
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Appendix A – Documents reviewed

Wambo Coal Mine

Independent Environmental Audit 2017 - Groundwater

1 Introduction

The Wambo open cut and Wambo underground mines (Wambo Coal Mine) are operated by Wambo Coal Pty Limited (WCPL). The Wambo Coal Mine is located approximately 15 km west of Singleton. The closest townships are Warkworth and Jerrys Plains, which are located 1 km south-east and 7 km north-west of the mine, respectively. The Wambo Coal Mine is within Exploration Lease (EL) 7211, Authorisation (A) 444, Mining Lease (ML) 1572, Coal Lease (CL) 374 (which is stratified and exists below Consolidated Coal Lease (CCL) 775) and CCL775. The Wambo Coal Mine is approved under Development Consent DA 305-7-2003 (as modified) for the Wambo Coal Mine and DA 177-8-2004 (as modified) for the Wambo Rail Loop.

An Independent Environmental Audit is being coordinated by Hansen Bailey for the Wambo Coal Mine, on behalf of WCPL. The period to which this Audit applies is from 1 November 2014 to 31 August 2017 (the audit period). Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) have been engaged by Hansen Bailey, to review the performance of the project for groundwater.

1.1 Project description

The Wambo Coal Mine includes a series of open cut and underground longwall mines. The current existing and approved Wambo open cut coal mine was planned to produce up to 8 Mtpa of run of mine (ROM) coal up to 2017. The combined Wambo underground and open cut operations, have approval to extract up to 14.7 Mtpa ROM coal, and to transport up to 15 Mtpa product coal via the approved train loading facility until 2025. Open cut mining at Wambo is conducted using a truck and excavator operation. ROM coal is crushed at on-site coal handling facilities. Product coal is transported by conveyor to the Train Load Out facility for train loading. Product coal is transported by rail to domestic customers and the Newcastle Port for export.

The Wambo Coal Mine operates under development consent (DA 305-7-2003), which is approved until 2032. The historical and existing open cut operations comprise 14 pits mining down to the Whybrow, Wambo or Whynot coal seams, as detailed in Table 1.1.

The mines target the Wittingham Coal Measures that comprise economic coal seams, along with overburden and interburden consisting of sandstone, siltstone, tuffaceous mudstone and conglomerate. The Permian sediments are unconformably overlain by thin Quaternary alluvial deposits. These deposits consist of silt, sand and gravel in the alluvial floodplain of the Wollombi Brook. To the east of the Wollombi Brook is a sequence of aeolian sands, known as the Warkworth Sands Formation, that form a thin capping on the underlying Permian bedrock.

The Permian coal measures are also unconformably overlain by the Triassic Narrabeen Group, which formed from uplift during the Triassic. The Narrabeen Group comprises fluvial deposits that form the ridges and a high plateau within the Wollemi National Park, west of the Wambo Coal Mine.

Surficial weathering occurs across the Project Area. The weathering profile is typically present as a thin heterogeneous layer of unconsolidated and highly weathered material (regolith) overlying fresh bedrock.

Table 1.1 Summary of historical mine workings and target seams

Reference name	Mine area	Seam	Start date	End date
Wambo Open cut	Hunter Pit	Whynot	1969	2011
	Wombat Pit	Whynot	1969	2009
	Homestead Pit	Whynot	1969	2016
	South Bates Pit	Whynot	1969	2016
	Eastern Pit	Whybrow	1974	1982
	Western Pit	Whybrow	1974	1983
	North Bates Pit	Whybrow	1980	1987
	Ridge Pit	Whybrow	1986	1988
	North East Pit	Wambo	1988	1998
	Whynot Pit	Whynot	1991	1998
	Wollemi Boxcut	Whybrow	2002	2005
	Wambo Pit	Whynot	2012	2017
	Montrose Pit	Whybrow	2013	2020
Wambo Underground	Wambo No.1 Underground	Wambo and Whybrow	1969	1977
	Ridge Underground	Whybrow	1976	1983
	Homestead and Wollemi Underground	Whybrow	1979	2002
	North Wambo Underground	Wambo	2007	2019
	South Bates Underground	Whybrow and Wambo	2014	2018
	Arrowfield Underground (South Wambo)*	Arrowfield	2017	2032
	Bowfield Underground (South Wambo)	Bowfield	2021	2028
Woodlands Hill Underground (South Wambo)*	Woodlands Hill	2019	2029	

2 Scope of audit

Under Schedule 6 (Environmental management, monitoring, auditing and reporting) of the project approval, WCPL are required to conduct an independent environmental review every three years thereafter. The audit must:

- (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
- (b) include consultation with the relevant agencies;
- (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these consents/approvals);
- (d) review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals;
- (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and
- (f) be conducted and reported to the satisfaction of the Secretary.

Project approval was granted for the Wambo Coal Mine by the Minister for Infrastructure and Planning on 4 February 2004. Review of the relevant groundwater conditions under the project approval (DA 305-7-2003 [as modified]) are summarised in Table 3.1 of Section 3.

A number of reports were reviewed as part of the groundwater audit, which include routine monitoring reports and revised groundwater assessments and plans. During the review period there were no revisions to mine plan approvals. The documents reviewed are listed in Appendix A.

3 Compliance to development approval conditions

Under Schedule 4 of the development consent conditions (DA 305-7-2003) are the conditions of approval required of WCPL. Table 3.1 details the individual conditions relating to groundwater, a summary of the audit details and the status of compliance.

Table 3.1 Compliance summary

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
22C	<p><i>The Applicant must prepare an Extraction Plan for the second workings within each seam to be mined to the satisfaction of the Secretary. Each Extraction Plan must:</i></p> <p><i>(h) include a:</i></p> <p><i>Water Management Plan, which has been prepared in consultation with EPA and DPI-Water, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on surface water resources, groundwater resources and flooding, and which includes: surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality; a program to monitor and report groundwater inflows to underground workings; and a program to manage and monitor impacts on groundwater bores on privately-owned land;</i></p>	<p>During the audit period, extraction plans were developed for North Wambo LW8-10A (2015), South Bates LW11-13 (2015) and South Bates LW11-16 (2017).</p> <p>Water management plans (WMP) were prepared for each of these extraction plans. The Groundwater Management Plans (GWMP) associated with each of these (WMP) were reviewed as part of the audit. The GWMPs to support each extraction plan are Version 8 (June 2015), Version 10 (October 2015) and Version 11 (December 2015) respectively.</p> <p>Evidence is provided within the GWMPs that they have been prepared in consultation with the relevant authorities and to the satisfaction of the secretary.</p>	<p>The GWMP components of the WMPs associated with the extraction plans developed during the audit period have been prepared in consultation with the state authorities. They provide all the requirements of the GWMP outlined in the consent conditions.</p> <p>It is important to note that the latest version of the stand-alone GWMP on the company website is Version 10 not the Version 11 used for the South Bates LW11-16 assessment. It is understood that a revised GWMP is currently in preparation.</p> <p>This latest version of the GWMP should be finalised as soon as is practical to include the recommended updates and changes outlined in this audit (see Section 4.3).</p>	Compliant
23	<p><i>The Applicant must ensure that it has sufficient water during each stage of the development, and if necessary, adjust the scale of mining operations to match its available water supply.</i></p> <p><i>Note: The Applicant is required to obtain necessary licences for the development under the Water Act 1912 and Water Management Act 2000.</i></p>	<p>The licences held by WCPL are listed in Table 3 of the 2016 AEMR. There is a total of 1,647 ML listed from the North Coast Fractured and Porous Rock Groundwater Sources, 420 ML listed from the Lower Wollombi Brook water source and 2,114 ML listed from the Hunter River water source.</p>	<p>Based on the MOD15 groundwater assessment by Hydrosimulations (2015), and the 2015/2016 AEMRs, the current licences held by WCPL are assessed as sufficient to cover the current take of water from the water sources. The MOD15 groundwater assessment predicts the future take of water. The current licences held by WCPL are assessed as sufficient to cover the future predicted take of water from the water sources.</p>	Compliant

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
24	<p><i>Each year, the Applicant must:</i></p> <p><i>(a) review the site water balance for the development against the predictions in the EIS;</i></p> <p><i>(b) re-calculate the site water balance for the development;</i></p> <p><i>(c) assess current and forecast compliance with the rules of the Hunter River Salinity Trading Scheme; and</i></p> <p><i>(d) report the results in the Annual Review.</i></p>	<p>d) The 2015 and 2016 AEMRs were reviewed to ensure the groundwater components of the site water balance were incorporated. The updates to the site water balance are detailed in Table 35 of the 2015 AEMR and Table 33 of the 2016 AEMR.</p>	<p>The AEMRs detail the annual updates to the site water balance.</p> <p>Currently open cut seepage is back calculated via the site water balance model.</p> <p>Improvements could be made in terms of the overall site water management if specific groundwater inflows to the open cut via alluvium and Permian could be pumped and metered separately.</p>	Compliant
29	<p><i>The Applicant must:</i></p> <p><i>(d) monitor the volume and quality of water inflows from each separate source to the underground and open cut workings; and</i></p> <p><i>(e) monitor regional ground water levels and quality in the alluvial and overburden aquifers during the development and at least 10 years after mining; and</i></p> <p><i>(f) periodically assess groundwater pressure response in the coal measures; to the satisfaction of EPA, DPI-Water and the Secretary.</i></p>	<p>The volume of inflows to the underground and open cut workings are reported within the 2015 and 2016 AEMRs.</p> <p>Regional groundwater levels and quality are reported and discussed in Section 6.2 and Appendix E of the 2015 AEMR and Section 6.2 and Appendix G of the 2016 AEMR.</p> <p>Groundwater depressurisation is reported and discussed in the Appendix E of the 2015 AEMR and Appendix G of the 2016 AEMR.</p>	<p>Currently open cut seepage is back calculated via the site water balance model. Similarly, groundwater seepage quality may potentially be back calculated using the site water balance /salt balance model.</p> <p>The groundwater quality of the various groundwater sources is monitored as per the GWMP and reported within the AEMRs.</p> <p>Consideration should be made to directly monitor the quality of groundwater seepage reporting to the underground and open-cut workings.</p> <p>It is understood that a salt balance model has been developed for the site for the United/Wambo project. It is suggested that this salt balance be updated annually to include the seepage quality monitoring data.</p> <p>There is no recommendation in terms of frequency of monitoring. WCPL should determine the frequency of monitoring to apply for the salt balance model.</p>	Compliant

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
30	<p><i>Before carrying out any development, the Applicant must prepare a Site Water Management Plan for the development in consultation with DRE and DPI-Water, and to the satisfaction of the Secretary. This plan must include:</i></p> <p><i>(a) the predicted site water balance;</i></p> <p><i>(b) the predicted salt balance for the site;</i></p> <p><i>(c) the North Wambo Creek Diversion Plan;</i></p> <p><i>(d) an Erosion and Sediment Control Plan;</i></p> <p><i>(e) a Surface Water Monitoring Program;</i></p> <p><i>(f) a Ground Water Monitoring Program;</i></p> <p><i>(g) a Surface and Ground Water Response Plan; and</i></p> <p><i>(h) a strategy for the decommissioning water management structures on the site.</i></p> <p><i>By the end of October 2009, the Applicant must revise the Site Water Management Plan in consultation with DRE, EPA and DPI-Water, and to the satisfaction of the Secretary.</i></p> <p><i>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</i></p>	<p>The GWMP (Version 10) has been reviewed as part of this audit. Evidence is provided within the GWMP (Version 10) that it has been prepared in consultation with the relevant authorities and has been approved to the satisfaction of Planning and Environment. The Version 10 of the GWMP is currently listed as the site GWMP on the website.</p>	<p>It is understood from reviewing the South Bates LW11-16 extraction plan (2017) and associated WMP that the latest version of the GWMP is Version 11 issued in December 2015.</p> <p>Furthermore it is understood that Version 11 of the groundwater monitoring program is currently under revision.</p> <p>The website is to be updated with the latest approved version (Version 11) of the GWMP.</p> <p>Improvements could be made in terms of the content of the groundwater water management program. These recommendations for improvement are provided in Section 4.3 of this report but include items such as:</p> <ul style="list-style-type: none"> • A more contemporary reference to groundwater sampling techniques; • Amendment of the text relating to purging of groundwater bores to be consistent with the latest guidelines; • Outline the methods of water quality data upload from the laboratory; • The bore labels in Figure 7 need to be clear for all bores; • General update of text relating to historical or proposed activities. 	Compliant

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
34	<p><i>The Ground Water Monitoring Program must include:</i></p> <p><i>(a) detailed baseline data on ground water levels and quality, based on statistical analysis, to benchmark the pre-mining natural variation in groundwater levels and quality;</i></p> <p><i>(b) ground water impact assessment criteria;</i></p> <p><i>(c) a comprehensive and detailed program to monitor the volume and quality of ground water seeping into the open cut and underground mining workings;</i></p> <p><i>(d) a detailed program to monitor regional ground water levels and quality in the alluvial and overburden aquifers; and</i></p> <p><i>(e) a program to investigate and monitor potential water loss from the Chitter Dump Dam and South Wambo Dam, and Montrose East Dam, including potential migration of stored water toward Wollombi Brook.</i></p>	<p>The GWMP has been prepared (Version 10) and includes the five requirements listed. These requirements are found in the following sections of the GWMP.</p> <p>a) Section 2</p> <p>b) Section 3</p> <p>c) Section 4.1.4. Ongoing groundwater monitoring is conducted as prescribed within the GWMP. Review of the water level and quality results has been conducted through the AEMRs by a qualified hydrogeologist for the audit period. The AEMRs and extraction plan assessments also include review of model predictions against current monitoring data.</p> <p>d) Section 4.1.1</p> <p>e) Section 4.1.6 However, the GWMP does not have reference to the Montrose East Dam which is understood to not have been constructed.</p>	<p>The on-going monitoring as prescribed in the GWMP is carried out as required and reviewed annually through the AEMR process. Development of the extraction plans are a further assessment process to consider the groundwater data captured as part of the GWMP.</p> <p>The groundwater quality of the various groundwater sources is monitored as per the GWMP and reported within the AEMRs.</p> <p>Consideration should be made to directly monitor the quality of groundwater seepage reporting to the underground and open-cut workings.</p> <p>Given that the Montrose East Dam is not yet constructed, the GWMP is assessed to be in compliance with the conditions.</p> <p>However, improvements to the GWMP could be made and several suggestions have been provided. These suggestions for improvement are provided in Section 4.3 of this report.</p>	Compliant
34a	<p><i>Prior to submitting the first Extraction Plan for the Longwall Domains, the Applicant must revise the Groundwater Monitoring Program to:</i></p> <p><i>(a) include the installation of paired monitoring bores for the South Wambo Underground Mine, in consultation with DPI-Water, to assess potential fracture interconnections between surface water resources, alluvial and hardrock aquifers; and</i></p> <p><i>(b) provide detailed information on the groundwater levels within the alluvial and hardrock aquifers within the Longwall Domains.</i></p>	<p>a) The GWMP includes the paired combination of GW20, N2, N3 and N5 (Section 4.1.1 of the GWMP [Version 10]).</p> <p>b) GW20 is completed within the alluvium whereas N2, N3 and N5 are VWP completions within the Permian coal seams and interburden/overburden (see Table 12 within Section 4.1.1 of the GWMP [Version 10]).</p>	<p>It is understood that the paired bores of GW20, N2, N3 and N5 fulfil this requirement. These bores/VWPs have been installed and are included within the GWMP. The results and responses of these bores/VWPs are currently reported in the 2015 and 2016 AEMRs.</p>	Compliant

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
35	<p><i>The Surface and Ground Water Response Plan must include:</i></p> <p><i>(a) measures to mitigate any adverse impacts on existing water supply bores or wells, including trigger levels for the provision of suitable compensatory water supplies;</i></p> <p><i>(b) measures to mitigate the loss of surface water flows in the surface water streams or channel on the site;</i></p> <p><i>(c) deleted;</i></p> <p><i>(d) measures to mitigate the long term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium if the potential for an downstream adverse impact is detected;</i></p> <p><i>(e) measures to address the decrease in throughflow rates caused by the development within the Wollombi Brook alluvium downstream of the open cut;</i></p> <p><i>(f) measures to address any reduction in the stability or ecological quality of the North Wambo Creek Diversion, Wambo Creek and Stony Creek below the established performance criteria;</i></p> <p><i>(g) measures to minimise and/or offset potential groundwater leakage from Wollombi Brook and associated alluvial aquifers; and</i></p> <p><i>(h) measures to mitigate adverse impacts on groundwater dependent ecosystems or riparian vegetation and offset any impacts above the predicted impacts;</i></p> <p><i>(i) trigger levels for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvials to open cut and underground mining workings;</i></p> <p><i>(j) the procedures that would be followed if any unforeseen impacts are detected during the development; and</i></p> <p><i>(k) response times for undertaking the above measures.</i></p>	<p>A Surface and Ground Water Response Plan has been prepared and includes the requirements specified in the conditions. These requirements are found in the following sections of the Surface and Ground Water Response Plan.</p> <p>a) Section 2.3 - A number of exceedances of groundwater triggers were reporting in the audit period. The 2015 and 2016 AEMRs consider these trigger exceedances and compare the observations against model predictions.</p> <p>It is understood that no complaints have been received in relation to groundwater.</p> <p>b) Section 2.4</p> <p>d) Section 2.5 - The trends in alluvial monitoring bores are assessed in the 2015 and 2016 AEMRs. The observed data is compared against model predictions. To date no adverse impacts have been detected.</p> <p>e) Section 2.4</p> <p>f) Section 2.7</p> <p>g) Section 2.8 - The TARP triggers outlined in Section 2.8 have not been triggered during the audit period.</p> <p>h) Section 2.9</p> <p>i) Sections 2.10 and 2.11. - Wambo currently holds sufficient licences to account for the take of water from water sources.</p> <p>j) Section 2.12 - No unforeseen impacts were documented during the audit period.</p> <p>k) These response times is addressed separately throughout the relevant sections.</p>	<p>From a groundwater perspective there are no recommendations or improvements to be made in this regard.</p>	Compliant

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
37	<p><i>Prior to seeking approval from the Department for an extraction plan in any coal seam not previously subject to second workings within the relevant longwall domain, unless the Secretary directs otherwise, the Applicant must commission a suitably qualified person, whose appointment has been approved by the Secretary, to conduct an independent audit of the subsidence, surface water, and ground water impacts of the development. This audit must:</i></p> <p><i>(a) review the monitoring data for the development;</i></p> <p><i>(b) identify any trends in the monitoring data;</i></p> <p><i>(c) examine the subsidence, surface water, and ground water impacts of the development;</i></p> <p><i>(d) compare these impacts against the relevant impact assessment criteria and predictions in the EIS; and, if necessary;</i></p> <p><i>(e) recommend measures to reduce, mitigate, or remediate these impacts.</i></p>	<p>This is not triggered as no extraction plan has been submitted for a coal seam not previously subject to second workings within the relevant longwall domain for the duration of the reporting period.</p>	None	Not Triggered
38	<p><i>If the independent audit determines that the subsidence, surface water, and/or ground water impacts resulting from the underground mining operations are greater than those predicted in the EIS, the Applicant must:</i></p> <p><i>(a) assess the significance of these impacts;</i></p> <p><i>(b) investigate measures to minimise these impacts, including modifying subsequent mine plans;</i></p> <p><i>(c) describe what measures would be implemented to reduce, minimise, mitigate or remediate these impacts in the future; and</i></p> <p><i>(d) implement the measures as described in (c); to the satisfaction of the Secretary.</i></p>	<p>Whilst not strictly defined, it is assumed that this condition is linked to condition 37 above. Therefore this is not applicable as no extraction plan has been submitted for a coal seam not previously subject to second workings within the relevant longwall domain.</p>	None	Not Triggered

Approval ID	Requirement	Evidence	Audit findings /recommendations	Compliance status
Department of Primary Industries – Water (DPI – Water)	<p><i>DPI water requests that the audit considers compliance with the relevant water licensing requirements for the mining operation, specifically:</i></p> <p><i>a) Assessment as to whether the project holds the required water entitlements and licences under the Water Management Act 200 or Water Act 1912 (as applicable);</i></p> <p><i>b) Compliance with the conditions of any water licences/approvals held;</i></p> <p><i>c) Summary Table of all water licences and copies of original licence;</i></p> <p><i>d) Identification of all water storages for the mine and identification of their licensing status being either exempt, subject to harvestable rights or regulated via water access licence; and</i></p> <p><i>e) Quantification of both active and passive take by the Project from each relevant water source and a comparison against previously modelled predictions.</i></p> <p><i>The following questions may aid in assessing the water licensing requirements of the mine operation:</i></p> <p><i>f) Does the proponent have enough licenced water entitlement to cater for active and passive take of water?</i></p> <p><i>g) Are adequate records kept to enable determination of the volume and source of surface and groundwater taken?</i></p> <p><i>h) Do any exemptions under the Water Management (General) Regulation 2011 or Harvestable Rights Order (Gazetted 31 march 2006) apply to the capture of water?</i></p>	<p>a) As per Condition 23 above, the licences held by WCPL are listed in Table 3 of the 2016 AEMR. There is a total of 1,647 ML listed from the North Coast Fractured and Porous Rock Groundwater Sources, 420 ML listed from the Lower Wollombi Brook water source and 2,114 ML listed from the Hunter River water source.</p> <p>b) The copies of the licences and relevant conditions were not specifically requested or made available during the audit and therefore compliance with any conditions has not been assessed.</p> <p>c) The licences held by WCPL are listed in Table 3 of the 2016 AEMR. Copies of the licences and relevant conditions were not specifically requested or made available during the audit and therefore have not been sited.</p> <p>d) Not applicable to groundwater.</p> <p>e/f) Passive take of groundwater cannot be measured however there is sufficient evidence to confirm that active take of groundwater is able to be quantified on an annual basis. The AEMRs include technical assessment against observed versus predicted take of water. The current licences held by WCPL are assessed as sufficient to cover the current take of water from the water sources. The current licences held by WCPL are assessed as sufficient to cover the future predicted take of water from the water sources.</p> <p>g) As above, passive take of groundwater cannot be measured however there is sufficient evidence to confirm that active take of groundwater is able to be quantified on an annual basis.</p> <p>h) Not applicable to groundwater.</p>	<p>a) Based on the MOD15 groundwater assessment by Hydrosimulations (2015), and the 2015/2016 AEMRs, the current licences held by WCPL are assessed as sufficient to cover the current take of water from the water sources. The MOD15 groundwater assessment predicts the future take of water. The current licences held by WCPL are assessed as sufficient to cover the future predicted take of water from the water sources.</p> <p>Copies of the licences and relevant conditions should be made available and correlated against Table 3 of the 2016 AEMR.</p>	<p>Not Triggered</p>

4 Summary and recommendations

4.1 Management and monitoring compliance

The audit process involved a systematic review of the development conditions, the associated documentation provided and discussions with site personnel. It was concluded that the project is compliant with all conditions relating to groundwater. Ongoing groundwater monitoring is conducted as prescribed within the GWMP. Review of the water level and quality results has been conducted on an annual basis by a qualified hydrogeologist (HydroSimulations) for the reporting period. In addition, development of the groundwater model, and review of model predictions against current monitoring data was conducted by a qualified hydrogeologist (HydroSimulations) on an annual basis and for the three most recent extraction plan assessments.

4.2 Recommendations for improvement

A number of recommendations for improvement were recognised through the audit. Whilst these areas are compliant, improvements could be made in the following areas:

- Condition 29 relates to monitoring the volume and quality of water inflows from each separate source to the underground and open cut workings. As per Condition 29, Condition 34 also involves the monitoring of quality of groundwater that reports to the open-cut and underground.

The GWMP allows for the monitoring and reporting of groundwater quality from the various groundwater sources that report to the underground and open-cut workings. A suggested improvement to the GWMP would be the inclusion of direct monitoring of the quality of groundwater seepage reporting to the underground and open-cut workings.

- The current GWMP listed on the website is Version 10 released in October 2015. It is understood that a revised GWMP (Version 11, December 2015) was prepared and released by WCPL for the South Bates LW11-16 extraction plan. This latest GWMP (Version 11) should be updated on the company website for consistency.
- The GWMP refers to a reference from Jiwan, J. & Gates, G. (1992) A Practical Guide to Groundwater Sampling, 1st Edition, NSW Department of Water Resources Technical Services Division TS92 080. This reference cannot be found publicly and it is suggested that a more current sampling reference(s) is used within the GWMP. Examples are provided below and it is considered best practice to sample in accordance with:
 - Geoscience Australia (2009) "Groundwater Sampling and Analysis – A Field Guide" (record 2009/27);
 - The Australian/New Zealand Standard Water quality – "Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples" (AS/NZS 5667.1:1998); and
 - The Australian/New Zealand Standard Water quality – "Sampling, Part 11: Guidance on sampling of groundwaters" (AS/NZS 5667.11:1998).
- The website hyperlinks within the GWMP and other documents are outdated and no longer work. These hyperlinks should be updated.
- Section 4.2 of the GWMP states that measurement of groundwater field parameters (pH, EC) are carried out using a calibrated water quality meter and a flow cell during purging. pH and EC readings should be recorded in the field once they have stabilised. We would recommend recording all parameter during purging and stabilisation so as to demonstrate compliance with the necessary guidelines.

- The site field forms should be updated to reflect the additional data monitored during sampling.
- It is also understood from discussion with site personnel that water quality data is uploaded to a database directly from the laboratory. This process should be discussed in Section 4.3 of the GWMP.
- The labels for all monitoring bores shown in Figure 7 are not visible. The figure should be amended to better illustrate the location of the monitoring bores.
- Section 2.4.2 of the site water balance states that “*the proposed SBU (Wambo Seam)1 is subject to modifying DA305-7-2003 (MOD15). MOD15 was submitted in July 2015 and is currently under determination by the DP&E*”. This project has been approved and this statement should be updated in the site water balance.
- During the site visit, groundwater inflow was observed in the western highwall of the Montrose open pit. This groundwater inflow is originating from the alluvial sediments and was predicted as part of the EIS, subsequent modifications and extraction plans. WCPL has sufficient licences to account for this take of water currently and into the future.

Whilst it may be impractical to do so, AGE suggest that there would be benefit to manage this water separately to the entire open pit. In particular, metering of the alluvial inflow would provide a more accurate input into the site water balance model (rather than back calculations) and would provide verification to the groundwater flow model predictions.

Appendix A **Documents reviewed**

The documents reviewed include (but were not limited to):

- Wambo Coal Groundwater Monitoring Program – Addresses project approval Schedule 4 Condition 30, Schedule 6 Conditions 4 & 6, and Schedule 4 Condition 34;
- Wambo Coal Site Water Balance (WA-ENV-MNP-509.5) – Addresses project approval Schedule 4, Condition 30(a) Condition 39;
- Wambo Coal Surface and Ground Water Response Plan (Document WA-ENV-MNP-509.4) – Addresses project approval Schedule 4, Condition 30;
- annual groundwater reviews:
 - 2015 groundwater annual review: Hydrosimulations (2016)¹; and
 - 2016 groundwater annual review: Hydrosimulations (2017)².
- extraction plans groundwater impact assessments all prepared by Hydrosimulations:
 - North Wambo_LW8-10A_2015;
 - South Bates LW11013_2015; and
 - South Bates LW11-16_2017.
- groundwater sampling field sheets (2017); and
- community complaints register for 2014, 2015, 2016 and 2017.

¹ HydroSimulations 2015a. Wambo Annual Review Groundwater Analysis. Report No. HC2016/07.

² HydroSimulations, 2017a. Wambo Annual Review Groundwater Analysis. Report No. HS2017/07. March 2017.



Memorandum

Project number G1889A.Wambo Mine Independent Environmental Audit – Follow-up v01.07

To Dianne Munro

CC Taylor Jackson

Company Hansen Bailey - Singleton

From Costante Conte

Date 14 August 2018

RE **Wambo Coal Mine – 2017 Independent Environmental Audit**
Groundwater – Follow up

1 Introduction and scope

In 2017, Hansen Bailey commissioned Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) to undertake a review of the groundwater aspects of the independent environmental audit (IEA) for Hansen Bailey on behalf of Wambo Coal Mine Pty Ltd (the proponent).

On 03 July 2018, the NSW Department of Planning and Environment (DPE) issued a letter requesting additional information related to the IEA, namely:

- *“Item 3 of the Department’s letter requested a hydrogeologist to assess the potential for hydrological connectivity between the open cuts and the underground mining operations. This was not addressed in the IEA report.”*

In response, AGE undertook the following tasks:

- Task 1 – Review available information related to groundwater modelling for the Wambo mine complex;
- Task 2 – Engaged with Noel Merrick of HydroSimulations to discuss the groundwater modelling; and
- Task 3 – Prepared a short letter report summarising the findings.

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2 Documents reviewed

The following documents were reviewed as part of this project:

- AGE (2003). *“Wambo Development Project – Groundwater Impact Assessment report”*. Australasian Groundwater and Environmental Consultants report G1159, dated April 2003.
- AGE (2016). *“Wambo/United Joint Venture, Groundwater Impact Assessment report”*. Australasian Groundwater and Environmental Consultants report G1733A, dated 25 July 2016.
- Heritage Computing (2012). *“North Wambo Underground Mine Modification Groundwater Assessment: Appendix B Groundwater Assessment”*. Heritage Computing Report no. HC2012/13, dated November 2012.
- HydroSimulations (2014). *“North Wambo Underground Longwall 10A Modification Groundwater Assessment (MOD14)”*. Report prepared for Wambo Coal Pty Limited, Report No. HC2014/20, date 5 September 2014.
- HydroSimulations (2015A). *“North Wambo Extraction Plan Longwalls 8 to 10A – Groundwater Impact Assessment Review”*. HydroSimulations Report No. HC2015/17, dated 9 April 2015.
- HydroSimulations (2015B). *“Assessment of groundwater trends in GW08 and GW09”*. Report prepared for Wambo Coal Pty Ltd. Report No. HC2015/39, dated 29 September 2015.
- HydroSimulations (2015C). *“Addition of South Bates (Wambo Seam) Underground Mine Longwalls 14 to 16 – Groundwater Assessment Review”*. HydroSimulations July 2015 Report no. 2015/026.
- HydroSimulations (2015D). *“South Bates (Whybrow Seam) Underground Mine Extraction Plan – Groundwater”*. Report for Wambo Coal Pty Ltd. Report No. HC2016/36, dated 2 October 2015.
- HydroSimulations (2016A). *“South Wambo Underground Mine Modification Groundwater Assessment (MOD 15)”*. Report for Wambo Coal Pty Ltd. Report No. HC2016/01, dated March 2016.
- HydroSimulations (2016B). *“Wambo Annual Review Groundwater Analysis”*. Report for Wambo Coal Pty Ltd. Report No. HC2016/07, dated March 2016.
- HydroSimulations (2017). *“South Bates Underground Mine Longwalls 11 to 16 Extraction Plan – Groundwater Assessment Review”*. Report for Wambo Coal Pty Ltd. Report No. HC2016/64, dated 3 January 2017.
- HydroSimulations (2018). *“2017 Wambo Annual Environmental Management Report (AEMR) for groundwater”*. HydroSimulations HS2018/09, dated 28 March 2018.

3 Review

The review process has relied on the available reporting only, and has not relied on analysis of model files nor generated specific model outputs. The following sections summarise the various reporting references relating to assessment methodology of interaction/connectivity of the opencut and underground areas. The majority of the dot points in the following sections are text quoted directly from the relevant reports and quoted text is in inverted commas and italicised.

3.1 AGE (2003)

This report focuses on groundwater impact assessment (GIA) for the Wambo continued development project that included the expansion of its opencut and underground workings.

- The GIA included two numerical groundwater models simulating the shallow and deeper groundwater systems. Analytical methods were also used to assess the impacts of underground mining.
- The GIA acknowledges the changes to permeability over underground mining areas due to subsidence and uses the Kendorski subsidence fracture model in the GIA's conceptualisation.
- It is not clear whether the interaction/connectivity between the opencut and underground areas was assessed. The simulation using two separate groundwater models may not have allowed the assessment of the connectivity between the opencut and underground areas.
- The GIA modelling was undertaken to industry standards at the time.

Although the groundwater modelling may not have assessed the interaction/connectivity of the opencut and underground areas, the modelling was undertaken to industry standards in place in 2003. The assessment of the interaction/connectivity of the opencut and underground areas was assessed in subsequent groundwater modelling exercises, with each model developing its simulation with each update.

3.2 AGE (2016)

This report focuses on groundwater impact assessment for the United/Wambo Joint Venture open-cut complex. All of the open cut and underground mining (historic, present and proposed) was modelled as part of this exercise. Cumulative impacts were also assessed.

- *“Goafing and fracturing was simulated by changing the parameters within the coal seam and overlying strata as the longwall panel was developed. This was achieved by applying a ramp function to vertical hydraulic conductivity (K_v), gradually decaying to the estimated maximum height of connective cracking. The maximum height of connective cracking was calculated from the average width of the longwall panels (275 m) multiplied by 0.4.”*
- *“The vertical fracture changes were applied immediately above the active longwall drain cells using a logarithmic increase during the first stress period. Once the drain cells were removed, changes to horizontal hydraulic conductivity, specific yield and specific storage parameters in the goaf zone were applied to the coal seam layer only at 0.01m/day, 20% and $1 \times 10^{-4} \text{ m}^{-1}$, respectively.”*
- *“Parameters for the overlying fracture zone layers maintain the perturbed K_z values assigned during active mining. If the fracture zone extends into previously fractured strata, the overlying layers remain fractured with perturbed K_z values.”*
- *“Hydraulic fracturing above the longwall panel was applied to the overlying cells immediately above the longwall drain cells.”*

Underground mining was represented in a manner so as to assess the impacts where the fracture heights exceeded cover thickness and exposed fractures at the surface. It is implicit that this includes underground mines that underlie open cut areas as all mining on site was included in the mine progression.

3.3 Heritage Computing (2012)

This report focuses on a groundwater impact assessment for the North Wambo Underground Mine Modification. The assessment was in support of the addition of two longwall panels in the Wambo seam.

- The model was run in MODFLOW-SURFACT.
- *“The impact of mining on the permeability of caved overburden has been based on experience of monitoring and groundwater modelling gained to date, combined with the most recent research available for subsidence impacts on aquifer materials.”*
- *“The rocks in the connective-cracking part of the fractured zone will have a substantially higher vertical permeability than the undisturbed host rocks. This will encourage groundwater to move out of rock storage downwards towards the goaf.”*
- *“The fractured zone was simulated with horizontal hydraulic conductivity enhanced by a factor of two, and with vertical hydraulic conductivity enhanced according to a log-linear monotonic (ramp) function. The function varied the vertical hydraulic conductivity field within the deformation zone overlying coal extraction areas and weighted the permeability changes on layer thickness. Limits for the variability were governed by predicted fracture height and assigned upper and lower bounds on hydraulic conductivity.”*
- *“Separate ramp functions were found necessary in areas of variable cover depth and this was a key variable in the calibration process. Because cover depth varies over the various underground mining areas, differing fracture elevations were applied.... Storage properties (Sy) were also increased in the coal seam layer to 15% for the longwalls and 25% for Bord and Pillar.”*

Whilst not stated explicitly, the groundwater model stimulated the interaction/connectivity between the underground mine areas and the subsidence fracture zone. Where the subsidence fracture zone came into contact with the open cut areas, it is implicit that the interaction would have been assessed.

3.4 HydroSimulations (2014)

This report is a groundwater impacts assessment of the modification that comprises the addition of Longwall 10A in the North Wambo underground mine.

- *“The underground mining and dewatering activity is simulated in the model using MODFLOW Drain (DRN) cells... These DRN cells were applied wherever workings occur, and were progressed through time increments coincident with the stress period durations.”*
- *“After an area has been fully mined (i.e. extraction down to the Whynot Seam), in the next stress period the DRN cells were deactivated. The exception to that is in the areas that are to remain as the final void. In those areas the DRN cells are deactivated at the end of mining, and the layers are assigned high permeability and high storage properties to represent the final void.”*

These points imply that the exposed mine faces (predominantly in the open cut areas) were considered recharge/discharge points and that there is interaction/connectivity between the opencut and underground areas. Recharge is likely to occur during periods when the water level would be against the mine face (void filling/post mining), and discharge points as locations of seepage and evaporation.

3.5 HydroSimulations (2015A)

This report is a groundwater impacts assessment to support the Extraction Plan for Wambo North underground – Longwall panels 8 to 10A. LW 10A was shortened by 245m. This impact assessment was to review the potential changes to impacts as approved based on the shorter LW panel.

- *“Reassessment of likely fracture zone heights confirms that connective fracturing is likely to reach land surface or the surficial zone of tensile cracking where the Wambo seam is mined beneath a 400m long section of Homestead Longwall 9.”*
- *“Elsewhere, the reassessment of likely fractured zone heights confirms that adopted connective fracturing heights in the groundwater model are conservative.”*

The report states that the fracture zone heights/subsidence profile application is conservative; therefore, the groundwater modelling is likely to represent a worst case scenario. It includes prediction of groundwater impacts at the surface and hydraulic connectivity/interaction between the opencut and underground areas.

3.6 HydroSimulations (2015B)

This report is an assessment of observed drawdown in two alluvium monitoring bores – GW08 and GW09 – through a modelling exercise using the existing approved groundwater model. GW08 and GW09 are shallow monitoring bores installed and screened within the alluvium of North Wambo Creek. They enable monitoring of groundwater levels within the North Wambo Creek alluvium, and form part of an extensive groundwater monitoring network for the Wambo Mine operations. The trend is anomalous compared with observations prior to 2012, and inconsistent with model predictions of groundwater drawdown related to known mining activities.

- *The assessment concluded “...that the drawdown at GW08 and GW09 is due to pumping of water from (dewatering of) the old mine workings. The numerical model which was updated by Hydrosimulations in 2015 to assess the South Bates underground operations was not optimised at the location of GW08 and GW09, despite being well-calibrated elsewhere. The existing model is nevertheless expected to provide reasonable predictions for assessment purposes for the South Bates Underground Mine.”*
- *“The 2015 numerical model, although well-calibrated with respect to other bore hydrographs on site, under-predicts the drawdown at GW08 and GW09. This is most likely because the extent of fracturing and enhanced permeability related to the old Wambo mine workings is more extensive (both laterally and vertically) than is represented in the model.”*
- *“It is recommended that the numerical model be updated and calibrated to better replicate shallow groundwater effects in the area around GW08 and GW09, as part of the next groundwater assessment at Wambo Coal Mine.”*

No description of the opencut and underground interaction was provided as part of this report.

3.7 HydroSimulations (2015C)

This report focuses on a groundwater impact assessment for the addition of South Bates (Wambo Seam) Underground Mine Longwalls 14 to 16. A complex groundwater modelling exercise was undertaken to assess the impacts of changes to LW14-LW16 including a cumulative impacts assessment.

- *“A review of the modelled recharge zones showed that Zone 3 represented “exposed mining and backfilled areas”.* This implies that the exposed mine faces (predominantly in the open cut areas were considered recharge/discharge points. Recharge is likely to occur during periods when the water level would be against the mine face (void filling/post mining), and discharge points as locations of seepage and evaporation.
- *“The underground subsidence related fractured zone was simulated with horizontal hydraulic conductivity enhanced by a factor of two (2), and with vertical hydraulic conductivity enhanced according to a log-linear monotonic (ramp) function. The function varied the vertical hydraulic conductivity field within the deformation zone overlying coal extraction areas and weighted the permeability changes on layer thickness. Limits for the variability were governed by predicted fracture height and assigned upper and lower bounds on hydraulic conductivity. Storage properties (specific yield S_y) were also increased in the mined coal seam layer to 15% for the longwalls and 25% for bord and pillar areas.”*

The groundwater regime and mining was modelled and calibration to observed groundwater levels provided a high level of confidence in the predicted groundwater impacts. The interaction of subsidence with overlying strata (including open cut mining areas) is clear.

3.8 HydroSimulations (2015D)

This is a report to support the Extraction Plan for South Bates (Whybrow seam) Underground Mine Longwall Panels 11 to 13. The report focusses on predict responses to South Bates Underground Mine extraction of coal from the Whybrow Seam for Longwalls 11 to 13 for a three-year period (notionally January 2015 to December 2017).

- *“The groundwater assessment by HydroSimulations (2015) included numerical modelling using MODFLOW-SURFACT software”*
- *“The model uses a conservative estimate of about 170 m for the fractured zone height (0.67 times the panel width of 250 m). As the depth of cover for the Whybrow Seam across the entire South Bates Underground Mine varies from 54 m to 470 m, fracturing was modelled to reach ground surface over the north-eastern portion of the mine footprint.”*
- *“The groundwater model developed using MODFLOW-SURFACT software (HydroSimulations 2015)... Of most relevance to this groundwater assessment are the predicted drawdowns in model layer 1 for the alluvium and the regolith at the end of Longwall 13. The predicted drawdowns are cumulative as they **include the effects of concurrent open cut mining and the final stages of the United Underground Mine in a deeper coal seam.**”*
- *“Due to the cumulative impacts of approved mining, shallow drawdowns in alluvium and regolith ... is **partially due to fracturing to land surface but primarily due to adjacent open cut mining.**”*
- *“The depth of cover above the Whybrow Seam at the North Wambo Creek diversion is approximately 64 m to 80 m and there would be an enhanced hydraulic connection between the seam and the surface in this location.”*

- *“A guide to the potential enhanced vertical hydraulic conductivity (K) has been estimated based on reported inflows by Australian Mining Engineering Consultants (2000) and Coffey (2000). The highest inflow reported by Klenowski was approximately 16 ML/day (190 L/s), and the reported inflow to the Homestead Mine was approximately 17 ML/day (200 L/s).”*

This report explicitly states that the interaction/connectivity of the open cuts and underground areas has been assessed.

3.9 HydroSimulations (2016A)

This report forms a groundwater impact assessment for MOD12 - South Wambo underground mine modification. All of the open cut and underground mining (historic, present and proposed) was modelled as part of this exercise. Cumulative impacts were also assessed. This was the first assessment where MODFLOW-USG Beta was used exclusively to assess mining impacts.

- *The underground “longwall extraction and open cut mining, and bore dewatering, are simulated in the model as MODFLOW-USG Beta ‘Drain’ (DRN) cells. The set-up involved changing the parameters with time in the goaf and the overlying fractured zone directly after mining of each longwall panel. The development headings were activated 12 months in advance of the active longwall mining and subsequent subsidence. Although the coal seam void should be dominated by the drain mechanism, the horizontal and vertical hydraulic conductivities were raised to 10 m/day to simulate the highly disturbed nature of materials within the caved zone.”*
- *“The open cut mining areas throughout the model domain form groundwater sinks to levels dictated by excavation depths and by seams which are intersected. These were also represented as DRN cells and effectively form specified head boundaries.”*
- *“It is generally accepted that under most underground mining conditions there will be a sequence of zones of strata deformation consisting of the caved zone, the fractured zone (a lower zone of connective-cracking and an upper zone of disconnected-cracking), the constrained zone and the surface zone.”*
- *The subsidence-related fractured zone was “simulated with horizontal hydraulic conductivity enhanced by a factor of two (2), and with vertical hydraulic conductivity enhanced according to a log-linear monotonic (ramp) function. The function varied the vertical hydraulic conductivity field within the deformation zone overlying coal extraction areas and weighted the hydraulic conductivity changes on layer thickness. Limits for the variability were governed by predicted fracture height and assigned upper and lower bounds on hydraulic conductivity.*

This version of the model implements the then-recently released Ditton and Merrick (2014) subsurface fracture height prediction model. The Ditton and Merrick (2014) model includes the key fracture height driving parameters of panel width (W), cover depth (H), mining height (T) and local geology factors to estimate the A and B zone horizons above a given longwall panel. The A zone corresponds with the connective-cracking part of the fractured zone, while the B Zone corresponds with the disconnected-cracking part of the fractured zone which is equivalent to the lower dilated part of the constrained zone.”

- *“The lower figure shows fractured zones that grow dynamically as the simulation of mining progresses in the model. These figures show that the extent of adopted fracturing in the groundwater model is conservative, as **fracturing is often to land surface, and where multi-seam mining is simulated the interburden between coal seams is fully fractured.**”*
- *“Active mining and the consequent subsidence were simulated by activating Drains throughout the relevant longwall panels whilst simultaneously changing the parameters with time in the goaf and overlying fractured zones (and the underlying deformed ‘floor strata’).”*

- *“Due to the high hydraulic conductivity of the old Whybrow Seam goaves, the Whybrow Seam DRN cells result in the desaturation of the Whybrow Seam (layer 3) **where it overlies the North Wambo longwall panels.**”*
- *“For the Wambo open cut pits (e.g. Bates/South Bates, Homestead and Montrose Pits), DRN elevations are set to 0.1 m above the Whynot Seam. DRN cells are kept active for differing periods, representing the historical and proposed pit progression. After an area had been fully mined (i.e. extraction down to the Whynot Seam), the DRN cells are deactivated in the following stress period and the TVM utility was used to assign new properties to the emplaced spoil. The exception is in the areas that are to remain as the final void, with the intent of replicating the recharge to the hydrogeological unit outcrop in the mine highwalls/filled mine voids. In the void areas, the DRN cells were deactivated at the end of mining, and the layers then are assigned high hydraulic conductivity and high storage properties to represent the final void.”* The work is intended to replicate the modelling of the interaction of the open cut areas with the unmined areas and underground mine areas that underlie the opencut areas.
- Sensitivity analysis was undertaken on the fracture zone using a fracture zone/no fracture zone scenarios, *“...in addition to the calibrated models simulating fracture heights calculated using the Ditton and Merrick (2014) method. The sensitivity analysis show that peak inflows to the Arrowfield Seam decrease by 50% to 0.7 ML/day (0.7 ML/day reduction) without the inclusion of fracturing above longwalls.”* Therefore, the fractured model scenarios are those most representative of mining.

Assessment of the interaction/connectivity of the open cut areas and subsided underground areas was undertaken. The fracture heights of the longwall mining where the fracture height reached the surface, including in open cut areas, was included in the groundwater modelling.

3.10 HydroSimulations (2016B)

This report is an annual review of groundwater monitoring data for the calendar year 2015. Available EC and groundwater level monitoring data were assessed at key locations as part of this review.

- There is no comment directly related to the interaction of opencut and underground areas.
- Water levels in monitoring bores in the Montrose opencut area and adjacent alluvium do not show definitive mining related impacts, although the modelling *“conservatively predicts impacts”* in part of the Montrose area.
- Water levels in key monitoring bores in the North Wambo Underground (NWU) area show mining related impacts due to underground mining and subsidence fracturing impacts; however, *“the modelled heads have performed very well”*.
- Modelled versus predicted water levels were reviewed and show relatively good matches.

The monitoring data water levels remain faithful to the model calibration and as such the model remains a good representation of the groundwater regime and mining related groundwater impacts.

3.11 HydroSimulations (2017)

This is a report to support the Extraction Plan for North Wambo Underground Mine Longwall Panels 11 to 16. The modification comprised the inversion of mining progression and the shortening of LW11-14 and LW16.

- An estimate of inflow to the underground from the *“North Wambo Creek diversion above the South Bates Underground Mine, using a reach of 250 m (above one longwall), a channel width of 5 m, and a conservative K of 10 m/day, the estimated inflow would be approximately 12.5 ML/day.”*

- The assessment utilises the 2015 HydroSimulations groundwater model. *“The model used a conservative estimate of about 170 m for the fractured zone height (0.67 times the panel width of 250 m). As the depth of cover for the Whybrow Seam across the entire South Bates Underground Mine varies from 54 m to 470 m, **fracturing was modelled to reach ground surface over the north-eastern portion of the mine footprint**. The HydroSimulations (2016) model applied the Ditton and Merrick (2014) Geology Model algorithm to obtain a more rigorous estimation of the height of connective fracturing above the mine void. This algorithm includes a procedure for quantifying the effects of multi-seam mining. The reappraisal showed that the extent of previously adopted fracturing in the HydroSimulations (2015) groundwater model was conservative. Fracturing still is expected to be often to land surface, at the northern ends of longwall panels for 25-40% of panel length. For multi-seam mining the interburden between coal seams is expected to be fully fractured, and is simulated accordingly.”*

The report also states that *“It is not realistic to assess the drawdown caused by the South Bates Underground Mine acting alone, as the groundwater responses are affected significantly by adjacent open cut and longwall mining.”* This implies that the interaction of the opencut and underground areas was modelled and that the cumulative impacts were assessed.

3.12 HydroSimulations (2018)

This report is an annual review of groundwater monitoring data for the calendar year 2017. Available EC and groundwater level monitoring data were assessed at key locations as part of this review.

- There is no comment directly related to the interaction of opencut and underground areas.
- Water levels in key monitoring bores in the North Wambo Underground (NWU) area show mining related impacts due to underground mining and subsidence fracturing impacts.
- The North Wambo Underground or Dewatering Impact at GW08 and GW09 was reviewed using 2017 monitoring data. The updates to the groundwater model’s conceptualisation made following the 2015 investigation (HydroSimulations 2015B) still hold true; although, the water level decline is also likely to be a result of long-term decrease in rainfall.
- Water levels in monitoring bores in the Montrose opencut area and adjacent alluvium show mining related impacts predominantly due to opencut mining, but *“some of the drawdown may also be attributed to the extraction of South Bates Underground LW11 and LW12.....2km away.”*
- Water levels in key monitoring bores in the South Bates Underground (SBU) area show mining related impacts due to underground mining and subsidence fracturing impacts.
- Modelled versus predicted water levels were reviewed and show relatively good matches.
- Commentary on observed and modelled groundwater levels suggest that although the comparison of observed versus modelled heads is reasonably good, there are some areas of potential improvement for the groundwater model, including:
 - Lower hydraulic permeabilities in the area of N5 in the Montrose opencut area
 - Include a component of enhanced recharge from intermittent streamflow along Wambo Creek (in the vicinity of P109)
 - Review the conceptualisation and model representation for the potential fault between SBU and NWU, and its impact on the model results
- *“Overall, the groundwater model performs well and remains fit for purpose to predict the timing and magnitude of impacts to groundwater caused by Wambo Coal Mine.”*

The monitoring data water levels remain faithful to the model calibration and as such the model remains a good representation of the groundwater regime and mining related groundwater impacts.

4 Conclusion

Groundwater modelling of the opencut and underground areas has been undertaken for the Wambo mine site since at least 2002, when the EIA for the mine was undertaken. The 2003 GIA for the Wambo consent acknowledged the potential impact to the groundwater regime by subsidence; however, the interaction/connectivity of the opencut and underground areas was primarily assessed through the main groundwater models used for the modification approval phases of the mine site in 2012 and 2015 (and subsequently used for other assessments). These main models have a good conceptualisation and simulate interaction/connectivity of the opencut and underground areas. The models are well calibrated to observation data and were rigorously peer reviewed by a third party and government regulators, and are considered fit for purpose. The HydroSimulations models have been updated numerous times and the 2015 iteration includes an update based on anomalous groundwater trends in monitoring bores.

The fracturing associated with the goaf/goaves and subsidence profile of the underground areas is central to the modelling of impacts in the underground areas. In a number of cases, the subsidence and subsidence-related fracturing reached the surface, including in areas within an outside of the opencut areas. The groundwater modelling also included modelling of exposed opencut surfaces (highwall and floors) as evaporation/discharge points and later, during void recovery, as recharge points.

The interaction/connectivity of the opencut and underground areas, and of coal seams and interburden/overburden, is a fundamental process of the groundwater modelling to date. The fact that the models are calibrated to observation data, and updated based on adjustments made to conceptualisation using observation data, demonstrate that the model conceptualisation of interaction/connectivity of the opencut and underground areas is representative of the actual groundwater regime and that there is interaction/connectivity of the opencut and underground areas.

Whilst the majority of the report texts imply this interaction/connectivity, only the HydroSimulations (2015D) report explicitly states that there is an interaction/connectivity between the opencut and underground areas. That said, the model conceptualisation and the modelling approach is based on an existing interaction/connectivity of the opencut and underground areas. The degree of this connectivity is dependent on the overlap of the opencut and underground areas and the future exposure of mine surfaces.

5 Recommendations

We recommend the following tasks for future modelling and groundwater impact assessments:

- Future groundwater modelling updates/reports need a clear description of the interaction/connectivity of the opencut and underground areas and how this is represented in the modelling;
- Future groundwater modelling updates/reports should comment on the interaction/connectivity of the opencut and underground areas and whether it is visible in the observation data;
- Future annual groundwater monitoring reviews should comment on the interaction/connectivity of the opencut and underground areas and on the degree of match of the predicted versus observed water levels match.

WAMBO COAL MINE

INDEPENDENT ENVIRONMENTAL AUDIT OF NORTH WAMBO CREEK DIVERSION AND MINE SITE EROSION AND SEDIMENT CONTROL

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November 2017

For:

WAMBO COAL PTY LTD
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WAMBO COAL MINE INDEPENDENT ENVIRONMENTAL AUDIT OF NORTH WAMBO CREEK DIVERSOIN AND MINE SITE EROSION AND SEDIMENT CONTROL

for
Wambo Coal Pty Ltd

1 INTRODUCTION

1.1 BACKGROUND

Hansen Bailey was engaged by Wambo Coal Pty Ltd (WPCL) to undertake an audit of erosion and sediment control practices and the performance of the North Wambo Creek diversion (the diversion) at Wambo Coal Mine (the mine). This audit was undertaken as part of the 2017 Independent Environmental Audit for the mine.

1.2 SCOPE

The scope of work included a compliance audit of environmental aspects of the mining assets focussing on potential compliance issues associated with erosion and sediment control practices and the performance of the diversion. The scope of work involved collation and review of documents provided by WPCL and publicly available documents, a site inspection and face-to-face interviews with WPCL environmental personnel. The site inspection and interviews were held on 20 and 21 September 2017, and included the following environmental personnel from WPCL:

- Steve Peart, Environment and Community Manager; and
- Peter Jaeger, Environmental Advisor.

A complete list of documents reviewed during this audit is provided in Appendix A.

The following key environmental areas were considered, to the extent possible, based on the information provided:

- Development Consents and Environmental Protection Licences (EPLs) issued under the New South Wales *Environmental Planning and Assessment Act 1979* and *Protection of the Environment Operations Act 1997*, respectively to identify any potential compliance issues;
- Infringement notices, the previous IEA reports and annual environmental monitoring reports (AEMRs) to identify any current environmental compliance issues;

- Mining Operations Plan and other statutory plans (including Extraction Plans and water management plans) to identify any current compliance issues and potential compliance risks associated with rehabilitation and mine closure.

This report discusses the potential compliance issues and key risks identified during the audit. A register of the relevant approval conditions and audit findings are presented in Appendix B.

This audit was undertaken in accordance with the *'Independent Audit Guideline'* (Department of Planning and Environment, 2015).

1.3 REPORT STRUCTURE

This report is structured as follows:

- Section 1: Introduction – this section provides the background to the audit, the scope of the audit and the personnel involved in the audit;
- Section 2: North Wambo Creek Diversion – this section provides the findings of the audit and recommendations in relation to the diversion; and
- Section 3: Erosion and Sediment Control – this section provides the findings of the audit and recommendations in relation to erosion and sediment control.

2 NORTH WAMBO CREEK DIVERSION

These approvals are described in the following sections. The following sections also explain the current compliance status.

2.1 DEVELOPMENT CONSENTS

Mining under the current Development Consent (DA 305-7-2003) commenced in 2004 and permits both open cut, underground operations and associated activities. A separate Development Consent (DA 177-8-2004) permits the operation of the train load out facility and rail spur.

The original DA 305-7-2003 provided approval for a 'water control structure' on North Wambo Creek to divert the creek around the open cut mining area. A modification (Modification 5) was granted on 20 October 2006 to specifically allow the two-stage construction of the North Wambo Creek diversion. A subsequent modification to the development consent (Modification 6) was determined on 25 January 2007 under Section 96(1A) by a SEE and enabled the construction and operation of a temporary creek diversion on a 2 km section of North Wambo Creek for 2 years. A further modification relating to the South Wambo Underground Mine (Modification 12) allowed additional subsidence of the diversion.

The necessary development consents are in place for the diversion and relevant mining activities.

2.2 ENVIRONMENTAL PROTECTION LICENCE

The EPL 529 requires that mitigation works are completed to ensure that the diversion operates in an environmentally satisfactory manner. The EPL records that these works were completed on 10 December 2015.

2.3 MINING OPERATIONS PLAN

A Mining Operations Plan addressing activities from 31 March 2015 to 30 March 2020 is in place. Proposed activities during this term include the maintenance of the diversion. This will include:

- General maintenance and rehabilitation to address erosion (as required);
- Specific maintenance works are scheduled to occur within the Stage 3 reach of the diversion during 2015 and 2016. These works include planting trees and shrubs over a 2 ha area of the diversion, weed (*Galenia pueescens*) management, repairing erosion, re-seeding creek banks and floodplain, and undertaking revegetation trials with native grass species.

- Remediation of subsidence effects associated with South Bates underground mining area.

WPCL confirmed that these works have been undertaken or are ongoing. This was confirmed during the site inspection (as discussed in Section 2.7).

2.4 STATUTORY MANAGEMENT PLANS

The development consents require the preparation of a suite of management plans addressing a range of issues, including construction, subsidence, monitoring and rehabilitation of the diversion. This audit has included a detailed review of the following plans relevant to the diversion:

- Site Water Management Plan comprising:
 - Surface Water Monitoring Program;
 - Surface and Groundwater Response Plan;
 - Erosion and Sediment Control Plan;
 - Site Water Balance.
- South Bates Underground Extraction Plan (LW11 to 13);
- South Bates Underground Extraction Plan (LW11 to 16); and
- North Wambo Creek Underground Extraction Plan (LW8-10A).

A review of these documents has been undertaken and the content of the plans is typical of management plans prepared for other coal mines in the Hunter Valley. The Site Water Management Plan and the Extraction Plans specifically address all of the current content requirements required under the development consent.

The development consent requires that the diversion be constructed in accordance with a North Wambo Creek Diversion Plan. The approved Site Water Management Plan and Extraction Plans indicate that the North Wambo Creek Diversion Plan was approved in 2008, subject to additional monitoring and reporting requirements. The additional requirements have been incorporated into the Surface Water Monitoring Program and AEMRs.

The MOP indicates that the North Wambo Creek Diversion Plan was updated in 2013 to reflect the construction of Stage 3 of the diversion. This document was not reviewed as part of this audit.

The 2015-2020 MOP also indicates that the North Wambo Creek Diversion Plan is a component of the Site Water Management Plan. However, this is inconsistent with the approved Site Water Management Plan which does not list the North Wambo Creek Diversion

Plan as one of its components. These plans should be amended to address this minor inconsistency.

2.5 COMPLIANCE WITH ENVIRONMENTAL APPROVALS

All necessary New South Wales environmental approvals for the diversion are in place.

WPCL undertakes regular independent environmental compliance audits (IEAs) to determine whether operations are being conducted in accordance with approval conditions and management plans.

The previous compliance audit (Hansen Bailey, 2015) indicated that an erosion incident occurred in Stage 3 of the diversion in 2013. The 2015 audit concluded that the affected reach of the diversion had been repaired and stabilised following the incident. A site inspection undertaken as part of the current audit confirmed that these works had effectively repaired and stabilised the affected reach. The general erosion and stability issues affecting the diversion are detailed in Section 2.7.

The 2015 audit also found that ground cover was variable and that ongoing inspections and maintenance would be required over approximately 10 years to ensure the long-term success of the diversion.

WPCL, in the interviews undertaken as part of this audit, indicated that there are no instances of non-compliance with the environmental approval requirements for the diversion over the current audit period.

2.6 COMPLIANCE WITH ENVIRONMENTAL ASSESSMENT DOCUMENTATION

The Wambo Development Project EIS showed that the water control structure would traverse Whybrow Seam longwall panels LW1 to LW3, Wambo Seam longwall panels LW1 and LW2 and several Arrowfield and Bowman Seam longwall panels. The surface water assessment undertaken as part of the EIS concluded that:

- The water control structure would be constructed following extraction of the subsidence of the landform due to extraction of Whybrow Seam longwall panels and therefore the effects of subsidence would be accommodated in the diversion design.
- The Arrowfield and Bowman Seam longwall panels would occur at significant depth and would not affect the geomorphology of the water control structure.
- The Wambo Seam longwall panels would potentially result in ponding of water in the water control structure channel and on the constructed floodplain.

- The construction and operation of the water control structure would potentially increase the levels of suspended sediment in downstream surface waters until such time as the structure is stabilised.
- The surface water monitoring program would be expanded to include the water control structure and its surrounds, specifically two monitoring sites within the diversion extents, one monitoring site upstream on North Wambo Creek and one monitoring site downstream on Wollombi Creek.

The detailed design of the water control structure was deferred to the Mining Operations Plan and the Site Water Management Plan.

The SEE that supported Modification 5 concluded that the two stage development would allow the diversion to be constructed on the subsided landform. The subsequent Modification 12 included a surface water assessment of subsidence effects on a 600 m reach of the diversion.

The findings of the document review and site inspection are generally consistent with the commitments presented in the environmental assessment documentation.

2.7 KEY ENVIRONMENTAL MANAGEMENT ISSUES

The key environmental management issues relating to the diversion relate to erosion and mine subsidence. Monitoring of these issues is also a relevant issue. These issues are discussed in the following sections.

2.7.1 Erosion Issues

Drone footage and a site inspection confirmed that the reach of North Wambo Creek upstream of the diversion is generally stable with a relatively consistent level of grass cover in the channel and on overbank area (Plate 1). This is consistent with previous inspections undertaken as part of the 2015 and 2016 AEMRs and the supporting documentation for the South Bates Underground Mine Extraction Plan.

The upper stage (Stage 2 as shown on Figure 4-1 of Technical Report 3 of the 2017 South Bates Underground Extraction Plan Longwall Panels 11 to 16) of the diversion alignment is located towards the margins of the original North Wambo Creek floodplain. The diversion comprises a low flow channel set within a constructed floodplain. The low flow channel is initially between 1 m and 3 m deep and increases to more than 6 m deep in the lower reach of this stage. The floodplain is defined by levees and its width becomes increasingly constricted as the diversion moves downstream.

In these areas, the flow velocities and stream power are increased and undercutting and channel migration is actively occurring. Rainfall runoff draining to the diversion channel as

overland flow has resulted in areas of rilling and localised gully erosion (as shown in Plate 2 and Plate 3).

Extensive revegetation and repair work was observed, including established shrubs and replacement of large woody debris (Plate 4 and 5). However, due to a lack of rainfall, even establishment of ground cover has yet to occur, and areas of bare soil remain. Ongoing management will be required in order to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established (Plate 4).

The lower stage (Stage 3 as shown on Figure 4-1 of Technical Report 3 of the 2017 South Bates Underground Extraction Plan Longwall Panels 11 to 16) of the diversion is generally constructed in competent to highly weathered bedrock (as shown in Plate 4 and Plate 5).

WCPL has undertaken necessary rehabilitation work on the diversion on a number of occasions both in response to erosion and mine subsidence (Plate 6). WCPL has indicated that regulators are satisfied with this work.

However, a number of issues were observed in this area including:

- The limited depth of root penetration of shrubs and trees resulting in treefall;
- The limited deposition of sediments in the creek bed;
- The efficacy of rock-lined infiltration channels in overbank areas;
- The presence of exposed soils with visibly dispersive characteristics; and
- The presence of subsidence cracks in the bed and banks.

The areas of bare earthworks in and adjacent the diversion without any significant revegetation are likely to contribute to elevated levels of suspended sediment in North Wambo Creek immediately downstream of the lower stage of the diversion. It is understood that these areas remain without revegetation as a result of poor soil quality across the site and extended dry period in the months prior to the site inspection. Whilst deep ripping, reseeding and erosion controls have been installed in a number of key areas, including the overbank areas of the lower stage, these areas remain at risk of erosion and may contribute to suspended sediment in the downstream creek. Consistent with the commitments in the MOP and Extraction Plans, further monitoring and remedial works will be required during the short to medium term.

As a result, the diversion is not yet compliant with the completion criteria for geomorphic function and stability.

The integrated diversion monitoring proposed in Section 2.7.3, is designed to enable identification of any problem areas requiring further erosion control measures and provide further confirmation of the suspended sediment levels in runoff across the site. This monitoring and management measures reflect current best practice and, when fully

implemented, are expected to achieve a level of geomorphic function and stability that is consistent with the diversion completion criteria.

2.7.2 Mine Subsidence

The rehabilitation of mine subsidence effects, including the repair of surface tension cracks, is a key ongoing rehabilitation task and mine subsidence is the key potential future impact on the diversion.

Rehabilitation of subsided areas of the diversion are required to be conducted in accordance with an Extraction Plan (or Subsidence Management Plan), prepared in accordance with development consent conditions. Consistent with the Surface and Groundwater Response Plan and the approved MOP, WPCL has indicated that subsidence management includes repairing surface subsidence cracks and undertaking subsidence remediation where necessary in areas where the diversion has been subsided. This includes repair of any cracks in the channel bed and banks and installation of timber debris in the banks of the channel at the sides of subsidence troughs to prevent undermining and scouring of the banks.

WPCL has indicated that surface ponding due to subsidence is not a significant environmental management issue and that there is minimal ponding of water in the depressions caused by subsidence. This is consistent with the environmental assessment documentation for the diversion. WPCL has indicated that regulators have not raised any concerns in relation to the residual ponding areas due to subsidence.

2.7.3 Diversion and Subsidence Monitoring

An integrated monitoring and review program for the diversion and mine subsidence has been proposed as part of the Extraction Plans. It is understood that the intention is to adopt a consistent methodology for collecting and analysing monitoring data from the diversion (and other subsided areas). It is understood from the site interviews that WCPL is in the process of updating its systems to reflect this approach.

This approach, when fully implemented, is likely to improve the management and rehabilitation of the diversion by allowing WPCL to make better informed decisions based on a consistent measure of diversion performance and compliance risk, and the need for any management measures to improve the performance of the diversion.

3 EROSION AND SEDIMENT CONTROL

3.1 DEVELOPMENT CONSENT

The current Development Consent (DA 305-7-2003) requires the preparation of an Erosion and Sediment Control Plan (ESCP). Section 4-32 of the Development Consent requires the ESCP to be consistent with the Department of Housing's Managing Urban Stormwater: Soils and Construction manual, identify activities that could cause erosion and generate sediment, describe erosion and sediment control structures and describe management measures to minimise erosion and offsite sediment transport.

The necessary plan is in place for the current mining activities.

3.2 ENVIRONMENTAL PROTECTION LICENCE

Clause O1.1 of EPL 529 requires that mining activities, including the erosion and sediment control measures must be carried out in a competent manner.

3.3 MINING OPERATIONS PLAN

The MOP states that operations in Montrose East open cut mining area commenced in October 2016, and included the construction of erosion and sediment controls.

The site inspection undertaken as part of this audit confirmed that the Montrose East 1 and Montrose East 2 sediment basins and associated contour drains have been constructed to control all sediment laden runoff from Montrose East and out of pit dump areas. It is understood that collected runoff is pumped to the mine water management system for reuse.

WPCL personnel confirmed that these works were undertaken to an engineered standard in accordance with the Blue Book requirements. Visual inspection of supports this view. However, it was noted that ground cover has not yet been established due to an extended dry period. WPCL has offset the short term erosion risks to the stability of these drains associated with the lack of ground cover by the extensive use of geotextile fabric.

As part of the Rug Dump Rehab final landform design WPCL has constructed approximately 2.7 km of contour drains, a 250 m long rock lined channel and two sediment basins during 2016. These works are scheduled for completion in 2017 and were well advanced at the time of this audit. These works were observed to have been undertaken in accordance with all good design and construction practices.

3.4 STATUTORY MANAGEMENT PLANS

The development consents require the preparation of an ESCP addressing the design, construction, operation and maintenance of erosion and sediment control measures. The current approved ESCP was approved by the Department of Planning and Environment (DPE) in November 2015.

A detailed review of the ESCP has been undertaken and the content of the plans is typical of such plans prepared for other coal mines in the Hunter Valley. The ESCP specifically addresses all of the current content requirements required under the development consent.

3.5 COMPLIANCE WITH ENVIRONMENTAL APPROVAL DOCUMENTATION

The previous compliance audit (Hansen Bailey, 2015) concluded that as of 2014 the recommendations of the earlier 2011 compliance audit had not been completed. Specifically, it was recommended that the ESCP be updated to align with the objectives, requirements and design standards described in Soils and Construction, Volume 2E – Mines and Quarries (also known as the Blue Book). A review of the ESCP as part of the current audit confirmed that the ESCP has since been updated to meet the content requirements.

A review of the 2016 AEMR indicates that a sediment dam failure occurred in January 2016, following a period of significant rainfall. It is understood from interviews with WPCL that the sediment dam was located in the Waterfall Creek catchment, adjacent the Montrose open cut mining area. Runoff from an overburden emplacement area in the northern part of the Montrose open cut mining area was captured in collection drains and directed to the sediment dam. The sediment dam was a temporary structure and was not designed or constructed to an engineering standard. Following significant rainfall, a dam break occurred, resulting in the release of sediment affected water and embankment materials to the downstream drainage features. It is understood that WPCL reported the incident to the EPA and undertook an investigation of the incident which concluded that the incident did not result in any significant environmental harm or impacts on the aquatic ecology of Waterfall Creek. It is also understood the ESCP was amended in order to address learnings from this incident. A review of topographic mapping data provided by WPCL indicates that runoff from the former sediment dam catchment now reports to the mine water management system via Montrose East open cut pit. Discussions with WPCL indicate that the matter is subject to ongoing legal proceedings.

WPCL, in the interviews undertaken as part of this audit, indicated that there are no other instances of non-compliance with the environmental approval requirements for erosion and sediment control over the current audit period.

3.6 KEY ENVIRONMENTAL MANAGEMENT ISSUES

The erosion and sediment control practices at the existing mine were generally found to be of a high standard. However, the following key environmental management issues were identified with respect to erosion and sediment control:

- Water management strategy for sediment affected waters;
- Sediment and erosion control within and adjacent the rail loop, specifically Hales Crossing; and
- Sediment and erosion control within and adjacent the Coal Handling and Preparation Plant and product coal stockpile.

3.6.1 Sediment Affected Water Management Strategy

The management strategy for sediment affected runoff involves its containment and reuse in the mine water management system. WPCL understands that this is consistent with regulatory requirements which are understood to prohibit the uncontrolled or passive release of runoff from mining areas. This is also consistent with the approach at other Hunter Valley coal mines.

However, the design and construction requirements for sediment control structures are based upon the Blue Book requirements. These requirements are based upon the treatment of sediment up to a design rainfall event and are not intended for full containment (i.e. nil discharge).

As a result, the key sediment control structures are likely to passively overflow during rainfall that exceeds the dam design events.

It is recommended that WPCL collect water quality data from these dams in order to characterise the quality of runoff from non-coal affected catchments. This data would be useful to support an investigation in the event of any uncontrolled discharge from these dams. This data would also be necessary to support any future passive drainage strategy for the management of runoff from rehabilitated areas to natural drainage features.

3.6.2 Rail Loop and Hales Crossing

The 2016 AEMR indicates that an incident in April 2014 resulted in runoff from the rail loading facility entering Wollombi Brook, via the Hales Crossing sump. The 2016 AEMR and interviews with WPCL indicated that the stormwater management arrangements have been upgraded to prevent recurrence of such an incident. WPCL confirmed that this upgrade included:

- Reducing the coal sediment affected catchment draining to the sump through the installation of a cut off drain.
- Installation of a mobile, high-volume automated pumping system to dewater the sump to the mine water management system during a storm event.

Hansen Bailey inspected the sump at the time of audit and it was desilted with maximum capacity available. A draft WPCL memorandum of design was also sighted which indicated that the pump rate was sufficient to manage input to the sump during typical annual storm conditions.

This arrangement is generally satisfactory to manage the risks in the short term, during normal flow conditions in Wollombi Brook and rainfall up to the design storm event.

However, it is understood from WPCL that the sump is located within the flood extents of Wollombi Brook and has previously been inundated. In addition, during flood events in the creek it may be necessary to remove the pumping apparatus and the ability to dewater the sump.

The arrangement could therefore be improved by removing these risks. Options include relocating the sump and pump apparatus to a location outside the flood extents of Wollombi Brook.

3.6.3 CHPP and Product Coal Stockpile

The CHPP was generally well maintained, with sumps and drains observed to be de-silted and clear of obstructions. Spill kits and segregated waste bins were observed in workshop areas.

The network of perimeter collection drains and bunds at the coal stockpile area were generally found to be clear of obstructions and adequate for containing runoff from this area. A small amount of coal sediment was observed in a road drain at one location outside the coal stockpile perimeter collection drainage network (Plate 7). An accumulation of coal sediment in the drain and 90 degree change in flow direction were observed at this location. The affected road drain was inspected and observed to return to the perimeter collection drainage network a short distance (approximately 50 m) downstream. No release of coal sediment from the site was observed to have occurred. The observed coal sediment is likely to be the result of spillage from the drain. It is recommended that the drain be de-silted at this location and monitored to confirm whether the flow direction of the drain is adequate.

The product coal reclaim tunnel area is located in a contained catchment that receives runoff from the southern part of the coal stockpile area, via surface drains and culverts. Coal

sediment was observed to be contained within this area with no evidence of any spillage of coal sediment from this area to the Hales Crossing sumps.

Water storage dams and ponds at the CHPP were generally well maintained, although coal sediment was found to have accumulated in some cells of the Gordon Below Franklin water storage (Plate 8). It is recommended that accumulated sediment is removed from the Gordon Below Franklin water storage where necessary in order to reinstate the design/operating storage capacity.

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for
HANSEN BAILEY



Ross Edwards
Senior Environmental Scientist

PLATES



Plate 1
Example of Stage 1 of the North Wambo Creek Diversion



Plate 2
Example of Erosion on Stage 2 of the North Wambo Creek Diversion



Plate 3
Example of Erosion on Stage 2 of the North Wambo Creek Diversion



Plate 4
Bedrock Exposure on Stage 3 of the North Wambo Creek Diversion



Plate 5
Bedrock Exposure on Stage 3 of the North Wambo Creek Diversion



Plate 6
Example of Rehabilitation of the North Wambo Creek Diversion



Plate 7
Coal Sediment in Road Drain at Coal Stockpile



Plate 8
Coal Sediment Accumulation at the Gordon Below Franklin Storage

APPENDIX A

Document Review Register

Appendix A Document Review Register

Approvals
Approval Decision – Wambo Coal Mine Expansion (EPBC 2003/1138)
Mining - DA 305-7-2003
Rail and Coal Loading - DA 177-8-2004
Environment Protection Licence 529
Statutory Plans
2015 – 2020 Mining Operations Plan
North Wambo Underground Mine Longwall 8 – 10a Extraction Plan – Appendix A Water Management Plan
South Bates Underground Mine Longwall 11 – 13 Extraction Plan – Appendix A Water Management Plan
South Bates Underground Mine Longwall 11 – 16 Extraction Plan – Appendix A Water Management Plan
Surface Water Monitoring Program
Surface and Groundwater Response Plan
Site Water Balance
Erosion and Sediment Control Plan
Environmental Assessment Documentation
Environmental Impact Statement (2003) Volume 1 and Volume 4
South Wambo Underground Mine Modification – Environmental Assessment
South Wambo Underground Mine Modification – Appendix C Surface Water Assessment
SEE-01-F Wambo Coal Mine Modification Statement of Environmental Effects (September 2006)
South Bates Underground Mine Longwall 11 – 16 Extraction Plan – Report 1 Subsidence Predictions and Impact Assessments
South Bates Underground Mine Longwall 11 – 16 Extraction Plan – Report 3 Surface Water Assessment Review
North Wambo Underground Mine Longwall 8 – 10A Extraction Plan – Report 3 Surface Water Assessment Review
WPCL Internal Memo – Hales Crossing Sump Design
Environmental Reporting Documentation
WPCL Environmental Reports – January 2015 to August 2017
Annual Environmental Review 2016
Annual Environmental Review 2015
Independent Environmental Audit 2015

APPENDIX B

Audit of Relevant Approval Conditions

Appendix B
Audit of Relevant Approval Conditions

**DA 305-7-2003 Conditions of Approval
For Audit Period 1 November 2014 to 31 August 2017**

Key

Blue type represents 2004 modification

Red type represents May 2005 modification

Green represents January 2006 modification

Pink represents April 2006 Modification

Orange represents October 2006 Modification

Violet represents January 2007 Modification

Brown represents June 2009 Modification

Lime represents August 2009 Modification

Blue with yellow background represents February 2011 Modification

Taupe represents January 2013 Modification

Light Blue represents July 2013 Modification

Blue with grey background represents April 2015 Modification

Purple represents October 2015 Modification

Maroon represents October 2016 Modification

Section	Sub-section	Requirement	Status	Comments
		Performance Measures – Built Features		
		<p>(h) include a:</p> <ul style="list-style-type: none"> • Water Management Plan, which has been prepared in consultation with EPA and DPI - Water, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on surface water resources, groundwater resources and flooding, and which includes: <ul style="list-style-type: none"> - surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality; - a program to monitor and report groundwater inflows to underground workings; and - a program to manage and monitor impacts on groundwater bores on privately-owned land; 	Compliant	Water Management Plans are included as Appendix A of the approved Extraction Plans (LW8-10A & LW11-13). The Water Management Plans have been reviewed and are broadly consistent with the content requirements.

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> Biodiversity Management Plan, which has been prepared in consultation with DECCW and DRE, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on flora and fauna; Land Management Plan, which has been prepared in consultation with any affected public authorities, to manage the potential impacts and/or environmental consequences of the proposed second workings on land in general; Heritage Management Plan, which has been prepared in consultation with DECCW, the Department's Heritage Branch and relevant stakeholders for Aboriginal and non-Aboriginal heritage, to manage the potential environmental consequences of the proposed second workings on heritage sites or values; and 		
		Pollution of Waters		
4	23	<p>Water Supply The Applicant must ensure that it has sufficient water during each stage of the development, and if necessary, adjust the scale of mining operations to match its available water supply. <i>Note: The Applicant is required to obtain necessary licences for the development under the Water Act 1912 and Water Management Act 2000.</i></p>	Compliant	The approved Site Water Management Plan includes a Site Water Balance which confirms appropriate measures and strategies to address water supply requirements.
4	23A	Except as may be expressly provided by an EPA licence, the Applicant shall comply with section 120 of the <i>Protection of the Environment Operations Act 1997</i> during the carrying out of the development.	Not compliant	<p>A non-compliant unlicensed release of runoff occurred on 21 April 2015 from a sump located adjacent to Wollombi Creek at Hales Crossing. This release is not permitted under an EPA licence. It is recommended that the current Hales Crossing sump and pump arrangement is improved to remove the risk of sump inundation. Options include relocating the sump and pump apparatus to a location outside the flood extents of Wollombi Brook.</p> <p>Failure of temporary sediment dam on resulting in the non-compliant unlicensed release of sediment</p>

Section	Sub-section	Requirement	Status	Comments
				<p>and water to the Waterfall Creek catchment. This release is not permitted under an EPA licence. The sediment dam was a temporary structure and was not designed or constructed to an engineering standard. Following significant rainfall, a dam break occurred, resulting in the release of sediment affected water and embankment materials to the downstream drainage features. It is understood that WPCL reported the incident to the EPA and undertook an investigation of the incident which concluded that the incident did not result in any significant environmental harm or impacts on the aquatic ecology of Waterfall Creek. It is also understood the ESCP was amended in order to address learnings from this incident. A review of topographic mapping data provided by WPCL indicates that runoff from the former sediment dam catchment now reports to the mine water management system via Montrose East open cut pit and therefore no additional mitigation measures are required.</p> <p>The network of perimeter collection drains and bunds at the coal stockpile area were generally found to be clear of obstructions and adequate for containing runoff from this area. A small amount of coal sediment was observed in a road drain at one location outside the coal stockpile perimeter collection drainage network. An accumulation of coal sediment in the drain and 90 degree change in flow direction were observed at this location. The affected road</p>

Section	Sub-section	Requirement	Status	Comments									
				<p>drain was inspected and observed to return to the perimeter collection drainage network a short distance (approximately 50 m) downstream. No release of coal sediment from the site was observed to have occurred. The observed coal sediment is likely to be the result of spillage from the drain. It is recommended that the drain be de-silted at this location and monitored to confirm whether the flow direction of the drain is adequate.</p> <p>Water storage dams and ponds at the CHPP were generally well maintained, although coal sediment was found to have accumulated in some cells of the Gordon Below Franklin water storage. It is recommended that accumulated sediment is removed from the Gordon Below Franklin water storage where necessary in order to reinstate the design/operating storage capacity.</p>									
		Discharge Limits											
	24	<p>Except as may be expressly provided by a EPA licence or the <i>Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002</i>, the Applicant shall:</p> <ul style="list-style-type: none"> not discharge more than 250 ML/day from the licenced discharge point/s at the development; ensure that the discharges from any licenced discharge point comply with the limits in Table 15: <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Units of measure</th> <th>100 percentile concentration limit</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>pH</td> <td>6.5 to 9.5</td> </tr> <tr> <td>Total suspended solids</td> <td>mg/litre</td> <td>120</td> </tr> </tbody> </table>	Pollutant	Units of measure	100 percentile concentration limit	pH	pH	6.5 to 9.5	Total suspended solids	mg/litre	120	Compliant	<p>Reviewed annual surface water discharge records and EPL annual returns for the audit period.</p> <p>The 2015 EPL annual return shows that a maximum of 38.5 ML/d was released from the licenced discharge point over the period. The discharged water was in the range 8.9 to 9.3 and a maximum total suspended solids concentration of 105 mg/L, and therefore complied with the limits in Table 15.</p>
Pollutant	Units of measure	100 percentile concentration limit											
pH	pH	6.5 to 9.5											
Total suspended solids	mg/litre	120											

Section	Sub-section	Requirement	Status	Comments
		<p><i>Table 15: Discharge Limits</i> <i>Note: This condition does not authorise the pollution of waters by any other pollutants.</i></p>		The 2016 AEMR showed the volume and quality of all discharges in 2016 complied with the limits in Table 15. In addition, the monthly environmental monitoring reports between January 2016 and August 2017 do not indicate any exceedances of the limits presented in Table 15 within Eagles Nest Dam (the licenced discharge point).
		Site Water Balance		
4	25	<p>Each year, the Applicant must:</p> <p>(a) review the site water balance for the development against the predictions in the EIS;</p> <p>(b) re-calculate the site water balance for the development;</p> <p>(c) assess current and forecast compliance with the rules of the Hunter River Salinity Trading Scheme; and</p> <p>(d) report the results in the Annual Reviews</p>	Not compliant	<p>(a) Section 6.7 of the 2016 and 2015 AEMRs provide a comparison of the water supply components of the site water balance with corresponding EIS predictions. Specifically the 2016 AEMR provides a comparison of the measured and predicted water supplies as a proportion of the total water supply.</p> <p>The AEMR does not provide:</p> <ul style="list-style-type: none"> - a comparison between the measured water balance (i.e. a 900 ML deficit) and the EIS water balance predictions; - a comparison between the measured 416 ML discharge requirement with the EIS water balance predictions; or - a comparison of the measured and predicted water demands, losses or water supplies from runoff (either as a proportion or volume). <p>It is recommended that the comparison presented in future AEMRs is expanded to address these points in order to provide a full comparison of the</p>

Section	Sub-section	Requirement	Status	Comments
				<p>overall site water balance with the EIS predictions.</p> <p>If the differences between the EIS water management system and operations are such that a meaningful comparison of the predictions is not possible, or the EIS does not provide sufficient detail on the water balance predictions to allow a comparison of the water balance (which looks likely based upon Appendix E of the EIS), this should be acknowledged.</p> <p>(b) Section 6.7 of the 2016 and 2015 AEMRs provide a re-calculation of the site water balance. Interview with WPCL (Peter Jaeger pers.comm.) confirmed that the site water balance is reviewed monthly and annually.</p> <p>(c) Section 6.7 of the 2016 and 2015 AEMRs provide an assessment of compliance with the HRSTS over the reporting period.</p> <p>Section 6.4.3 of the 2016 and 2015 AEMRs forecast that the mine will utilise all available HRSTS credits during the next reporting period. The AEMRs do not explicitly forecast compliance with the HRSTS rules. It is recommended that the forecast presented in future AEMRs is expanded to explicitly address forecast compliance. Interviews with WPCL (Peter Jaeger pers. comm.)</p>

Section	Sub-section	Requirement	Status	Comments
				<p>confirmed that current and future compliance the HRSTS rules is reviewed monthly and annually.</p> <p>(d) Section 6.4.3 of the 2016 and 2015 AEMRs forecast that the mine will utilise all available HRSTS credits during the next reporting period. The AEMRs do not explicitly forecast compliance with the HRSTS rules. It is recommended that the forecast presented in future AEMRs is expanded to explicitly address forecast compliance.</p>
		North Wambo Creek Diversion		
4	26	<p>The Applicant shall design, construct, maintain, and rehabilitate the temporary North Wambo Creek Bypass, the temporary North Wambo Creek Pipeline, and the North Wambo Creek Diversion in consultation with DRE, DPI-Water and to the satisfaction of the Secretary.</p> <p><i>Note: The Department accepts that the Applicant is not required to “rehabilitate” the temporary North Wambo Creek Bypass.</i></p>	Compliant	<p>Previous audit confirmed that the North Wambo Creek Bypass and temporary pipeline were approved in 2008 and are not assessed as part of this audit.</p> <p>North Wambo Creek Diversion was completed late 2012 and was included as part of this audit. Previous audit confirmed that DP&E provided approval of the NWCD and mining of the original creek line on 01/07/13.</p> <p>The 2015 – 2020 MOP describes repair and stabilisation works that have recently been undertaken to address an erosion incident and maintain the diversion. These works were inspected during this audit and while these works effectively repaired the affected eroded area, several additional areas of erosion and instability have been observed. The Extraction Plans also present hydraulic modelling which confirms that the hydraulic conditions within the</p>

Section	Sub-section	Requirement	Status	Comments
				<p>diversion are likely to result in erosion and instability in the long-term. Ongoing maintenance in the form of monitoring and stabilisation measures are therefore recommended to maintain the diversion and meet rehabilitation objectives.</p> <p>WPCL undertakes regular drone surveys and inspections of the diversion as part of the current monitoring and maintenance program. These were viewed during the audit.</p> <p>A comprehensive update to the monitoring and maintenance program has been described in the approved Extraction Plans and approved Site Water Management Plan. It is understood from site interviews (Peter Jaeger pers comm) that WPCL plans to fully implement this program during 2017.</p> <p>The diversion is not yet compliant with the completion criteria for geomorphic function and stability. The updated diversion monitoring and maintenance program, when fully implemented, is expected to achieve a level of geomorphic function and stability that is consistent with the diversion completion criteria.</p>
4	27	<p>Within one month of completing the construction of the temporary North Wambo Creek Bypass, the temporary North Wambo Creek Pipeline, and the North Wambo Creek Diversion, the Applicant shall submit an as-executed report, certified by a practising registered engineer, to the Secretary.</p>	Compliant	Stage 1 and 2 confirmed compliant in previous audit.

Section	Sub-section	Requirement	Status	Comments
4	28	Prior to destroying the original creek line by open cut mining, the Applicant shall demonstrate that the relevant stage of the North Wambo Creek Diversion is operating successfully from a hydrological and biological point of view to the satisfaction of DRE and the Secretary . <i>Note: This condition does not apply to the temporary North Wambo Creek Bypass.</i>	Compliant	Letter of conditional approval from DP&E to Peter Baker (General Manager, WCPL) dated 28/06/13 was viewed during previous audit.
		South Wambo Dam		
	28B	The Applicant must design construct and operate the South Wambo Dam to the satisfaction of the DSC and DRE. The design of the dam must be accompanied by a detailed assessment of the potential operational and environmental risks associated with the dam, particularly in relation to potential subsidence-related impacts.	Compliant	Letter from DSC dated 05/11/09 in response to submission of documentation of South Wambo Dam viewed during previous audit. Letter from DRE dated 13/11/13 viewed as part of the current audit and confirms DRE approval of the South Wambo Dam. A site inspection undertaken as part of the current audit confirmed that the dam has been drained and is now disused.
	28C	The South Wambo Dam must be fully, or substantially, drained prior to the commencement of mining in the underlying longwalls to the satisfaction of DSC to minimise the risk of operational or environmental impacts from subsidence.	Compliant	The South Wambo Dam was inspected during this audit and found to be substantially drained and effectively decommissioned (Peter Jaeger pers. comm.). Peter Jaeger confirmed that these works were undertaken prior to undermining of the dam and have been undertaken in accordance with the strategy developed in consultation with DSC.
		Monitoring		
4	29	The Applicant must : (a) measure: <ul style="list-style-type: none"> the volume of water discharged from the site; water use on the site; dam and water structure storage levels, 	Not compliant	(a) Reviewed surface water volume and quality data reported in 2015 and 2016 AEMRs during the audit period. Viewed current status of site water management system in Citec system. Equipment and procedures in place to collect the required

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> • water transfers across the site; and • water transfers between the site and surrounding mines; <p>(b) monitor the quality of the surface water:</p> <ul style="list-style-type: none"> • discharged from the licenced discharge point/s at the development; and • upstream and downstream of the development; <p>(c) monitor flows in the Wollombi Brook; and North Wambo, South Wambo, and Stony Creeks;</p> <p>(d) monitor the volume and quality of water inflows from each separate source to the underground and open cut workings; and</p> <p>(e) monitor regional ground water levels and quality in the alluvial and overburden aquifers during the development and at least 10 years after mining, and</p> <p>(f) periodically assess groundwater pressure response in the coal measures; to the satisfaction of EPA, DPI - Water and the Secretary.</p> <p>⁵ These calculations must exclude the clean water system, including any sediment control structures, and any dams in the mine lease area which fall under the Maximum Harvestable Right Dam Capacity; include any dams that are licensable under Section 205 of the <i>Water Act 1912</i>, and water harvested from any non-harvestable rights dam on the mine lease area; address balances of inflows, licenced water extractions, and transfers of water from the site to other sites; include an accounting system for water budgets; and include a salt budget.</p>		<p>measurements. However, a non-compliance with the requirements for discharge measurement occurred during the reporting period due to equipment failure. Measures observed during the site inspection have been implemented to prevent recurrence.</p> <p>(b) Reviewed EPL annual returns, monitoring data from discharge locations and receiving waters. It is recommended that WPCL also collect water quality data from sediment dams in order to characterise the quality of runoff from non-coal affected catchments. This data would be useful to support an investigation in the event of any uncontrolled discharge from these dams. This data would also be necessary to support any future passive drainage strategy for the management of runoff from rehabilitated areas to natural drainage features.</p> <p>(c) Reviewed Surface Water Monitoring Program and monitoring data for flow monitoring sites.</p> <p>(d) The volume of inflows to the underground and open cut workings is reported within the AEMR. The quality of inflows to a representative selection of open cut pits and underground mining areas is monitored in accordance with the SWMP.</p>

Section	Sub-section	Requirement	Status	Comments
				<p>Inflows to the open cut pits and underground workings may include groundwater seepage to pits and underground workings, runoff from open cut pit catchments (including undisturbed areas and active/rehabilitated overburden emplacement areas), and water supplies. The quality of each of these sources of inflow is adequately monitored at representative locations in accordance with the SWMP and GWMP.</p> <p>(e) Section 6 of approved Groundwater Monitoring Program</p> <p>(f) Evidence not available at the time of audit to confirm that EPA are satisfied with the groundwater pressure monitoring program.</p>
		Site Water Management Plan		
4	30	<p>Before carrying out any development, the Applicant shall prepare a Site Water Management Plan for the development in consultation with EPA and DPI-Water, and to the satisfaction of the Secretary.</p> <p>This plan must include:</p> <p>(a) the predicted site water balance;</p> <p>(b) the predicted salt balance for the site;</p> <p>(c) the North Wambo Creek Diversion Plan;</p> <p>(d) an Erosion and Sediment Control Plan;</p> <p>(e) a Surface Water Monitoring Program;</p> <p>(f) a Ground Water Monitoring Program;</p> <p>(g) a Surface and Ground Water Response Plan; and</p> <p>(h) a strategy for the decommissioning water management structures on the site.</p>	Not compliant	<p>Reviewed the WCPL site water management documents, including:</p> <ul style="list-style-type: none"> - Surface Water Monitoring Program (SWMP), October 2015. Approved 27/11/15 by DP&E. - Groundwater Monitoring Program (GWMP), October 2015. Approved 27/11/15 by DP&E. - Surface and Groundwater Response Plan (SGRP), October 2015. Approved 27/11/15 by DP&E. <p>Audit confirmed:</p> <p>(a) The site water balance is included in the Site Water Balance and annual updates are provided in the AEMRs.</p>

Section	Sub-section	Requirement	Status	Comments
		<p>By the end of October 2009, the Applicant shall revise the Site Water Management Plan in consultation with DRE, EPA and DPI-Water, and to the satisfaction of the Secretary.</p> <p>The Applicant must implement the approved management plan as approved from time to time by the Secretary.</p> <p><i>Note: The North Wambo Creek Diversion Plan must also be prepared in consultation with NSW Fisheries.</i></p>		<p>(b) A predicted salt balance is not provided in the Site Water Management Plan. The Site Water Balance notes that WPCL has undertaken a salt balance as part of the surface water assessment for the United and Wambo Open Cut Coal Mine Project. It is recommended that the Site Water Management Plan is updated to include the predicted salt balance.</p> <p>(c) The North Wambo Creek Diversion Plan is not a component of the Site Water Management Plan.</p> <p>(d), (e) and (g) The Site Water Management Plan includes an Erosion and Sediment Control Plan, a Surface Water Monitoring Program and a Surface and Groundwater Response Plan.</p> <p>(h) Section 2.2.16 of the Site Water Management Plan outlines rehabilitation objectives for decommissioning water management structures on site. It is recommended that this section is improved by providing a high level strategy for the decommissioning of water management structures (including the management of water during the decommissioning process) as part of any future update of the Site Water Management Plan.</p>
4	30A	<p>The predicted salt balance for the site must:</p> <p>(a) include details of:</p> <ul style="list-style-type: none"> • the sources of saline material on the site; • saline material and saline water management on site; • reporting procedures, including the preparation of an annual salt balance; and <p>(b) describe the measures that would be implemented to minimise short term and long term discharge of saline water from the site.</p>	Not compliant	<p>A predicted salt balance is not provided in the Site Water Management Plan. However, the Site Water Balance notes that WPCL has undertaken a salt balance as part of the surface water assessment for the United and Wambo Open Cut Coal Mine Project. This assessment was reviewed and meets the content requirements of clause (a). It is recommended that</p>

Section	Sub-section	Requirement	Status	Comments
				<p>the Site Water Management Plan is updated to include the predicted salt balance.</p> <p>Measures to address saline discharge from the site are addressed in the approved Site Water Management Plan.</p>
4	31	<p>The North Wambo Creek Diversion Plan must include:</p> <ul style="list-style-type: none"> (a) the detailed design and specifications of the creek diversion, including the flow control bund, cut off wall, and channel; (b) a revegetation program for the channel using a range of suitable native riparian and floodplain species; (c) the detailed design of the system that would return intercepted ground water to the alluvial aquifer downstream of the open cut; (d) a construction program for the creek diversion, describing how the work would be staged, and progressively integrated with the mining operations and the mine waste emplacement drainage system; (e) water quality, ecological and geomorphic performance criteria for the creek diversion; (f) a program to monitor water quality, ecological, and geomorphic integrity of the creek diversion; and (g) a program to inspect and maintain the creek diversion and revegetation works during the development <p><i>Note: The Applicant may prepare and submit the North Wambo Diversion Plan on a progressive basis to reflect the relevant stages of the proposed diversion.</i></p>	Compliant	Table 4 of 2015 IEA noted that the North Wambo Creek Diversion Plan was revised to address these content requirements following the previous IEA.
4	32	<p>Erosion and Sediment Control Plan must:</p> <ul style="list-style-type: none"> (a) be consistent with the requirements of the Department of Housing's Managing Urban Stormwater: Soils and Construction manual; (b) identify activities that could cause soil erosion and generate sediment; (c) describe the location, function, and capacity of erosion and sediment control structures; and 	Compliant	<ul style="list-style-type: none"> (a) Section 4.1 of the approved Erosion and Sediment Control Plan (ESCP) acknowledges these requirements. The ESCP is generally consistent with these requirements. (b) Section 2 of the approved ESCP. (c) and (d) Sections 5, 6 and Appendix D of the approved ESCP.

Section	Sub-section	Requirement	Status	Comments
		(d) describe measures to minimise soil erosion and the potential for the migration of sediments to downstream waters.		
4	33	<p>The Surface Water Monitoring Program must include:</p> <ul style="list-style-type: none"> (a) detailed baseline data on surface water flows and quality in the Wollombi Brook, and North Wambo, South Wambo, and Stony Creeks; (b) surface water impact assessment criteria; (c) a detailed program to monitor surface water flows and quality in the Wollombi Brook; and North Wambo, South Wambo, and Stony Creeks; (d) a detailed program to monitor bank and bed stability in North Wambo, South Wambo, and Stony Creeks; (e) a detailed program to monitor the quantity and quality of the vegetation in the riparian zones adjacent to North Wambo, South Wambo, and Stony Creeks; and (f) a program to monitor the effectiveness of the Erosion and Sediment Control Plan 	Compliant	<ul style="list-style-type: none"> (a) Section 2 of the approved Surface and Groundwater Response Plan provides a detailed summary of the required data (b) Section 3 of the approved Surface and Groundwater Response Plan (c) Section 4 of the approved Surface and Groundwater Response Plan (d) and (e) Section 4 of the approved Surface and Groundwater Response Plan. Additional detail is provided in Section 4.3 of the Surface Water Technical Report for South Bates Underground Mine (Alluvium, 2016). These details should be incorporated into the Surface and Groundwater Response Plan. (e) Section 4 of the of the approved Surface and Groundwater Response Plan.
4	35	<p>The Surface and Ground Water Response Plan shall include:</p> <ul style="list-style-type: none"> (a) measures to mitigate any adverse impacts on existing water supply bores or wells, including trigger levels for the provision of suitable compensatory water supplies; (b) measures to mitigate the loss of surface water flows in the surface water streams or channel on the site; (c) deleted; (d) measures to mitigate the long term direct hydraulic connection between the backfilled open cut and the North Wambo Creek alluvium if the potential for an downstream adverse impact is detected; (e) measures to address the decrease in through flow rates caused by the development within the Wollombi Brook alluvium downstream of the open cut; 	Compliant	<ul style="list-style-type: none"> (a)) Section 2.3 of the approved Surface and Groundwater Response Plan (b) Section 2.4 of the approved Surface and Groundwater Response Plan (c) Not applicable (d) Section 2.6 of the approved Surface and Groundwater Response Plan (e) Section 2.8 of the approved Surface and Groundwater Response Plan (f) Section 2.7 of the approved Surface and Groundwater Response Plan

Section	Sub-section	Requirement	Status	Comments								
		<p>(f) measures to address any reduction in the stability or ecological quality of the North Wambo Creek Diversion below the established performance criteria;</p> <p>(g) measures to minimise and/or offset potential groundwater leakage from Wollombi Brook and associated alluvial aquifers; and</p> <p>(h) measures to mitigate adverse impacts on groundwater dependent ecosystems or riparian vegetation and offset any impacts above the predicted impacts;</p> <p>(i) trigger levels for the relinquishment of water extraction rights to compensate for surface and groundwater losses from streams, channels or alluvials to open cut and underground mining workings;</p> <p>(j) the procedures that would be followed if any unforeseen impacts are detected during the development; and</p> <p>(k) response times for undertaking the above measures.</p>		<p>(g) Section 2.8 of the approved Surface and Groundwater Response Plan</p> <p>(h) Section 2.9 of the approved Surface and Groundwater Response Plan</p> <p>(i) Section 2.11 of the approved Surface and Groundwater Response Plan</p> <p>(j) Section 2.12 of the approved Surface and Groundwater Response Plan</p> <p>(k) Section 2.12 of the approved Surface and Groundwater Response Plan</p>								
		REHABILITATION										
		Rehabilitation Objectives										
4	94	<p>The Applicant must rehabilitate the Wambo Mining Complex to the satisfaction of DRE. The rehabilitation must be generally in accordance with the proposed rehabilitation strategy described by the documents listed in Condition 2 of Schedule 3 and the objectives in Table 18.</p> <p>Table 18: Rehabilitation Objectives</p> <table border="1"> <thead> <tr> <th>Area/Domain</th> <th>Rehabilitation Objectives</th> </tr> </thead> <tbody> <tr> <td>Mine site (as a whole), including the final void</td> <td>Safe, stable & non-polluting</td> </tr> <tr> <td>Surface infrastructure</td> <td>To be decommissioned and removed, unless the Executive DRE agrees otherwise</td> </tr> <tr> <td>Community</td> <td>Ensure public safety Minimise the adverse socio-economic effects associated with mine closure</td> </tr> </tbody> </table>	Area/Domain	Rehabilitation Objectives	Mine site (as a whole), including the final void	Safe, stable & non-polluting	Surface infrastructure	To be decommissioned and removed, unless the Executive DRE agrees otherwise	Community	Ensure public safety Minimise the adverse socio-economic effects associated with mine closure	Not Triggered	<p>The current rehabilitation status of the North Wambo Creek diversion was established through a review of the Surface Water Technical Report for South Bates Underground Mine (Alluvium, 2016) and drone footage collected on 3 August 2017, and a site inspection undertaken on 20 August 2017. These findings were compared to the rehabilitation strategy outlined in Section 5.4 of Appendix B of the SEE (Sept 2006), Table ES-3 of the South Bates (Wambo Seam) Underground Mine Modification – Environmental Assessment, Section 2.9 of the North Wambo Underground Mine Modification 13 (Dec 2012) and Sections 6 and 7 of the 2015 and 2016 AEMRs.</p>
Area/Domain	Rehabilitation Objectives											
Mine site (as a whole), including the final void	Safe, stable & non-polluting											
Surface infrastructure	To be decommissioned and removed, unless the Executive DRE agrees otherwise											
Community	Ensure public safety Minimise the adverse socio-economic effects associated with mine closure											

Section	Sub-section	Requirement	Status	Comments
		<p>Landforms Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape</p>		<p>These investigations confirmed that the North Wambo Creek diversion and adjacent reaches of the watercourse do not yet meet the final rehabilitation objectives for hydraulic and geomorphic stability.</p>
		<p>All watercourses subject to subsidence impacts Hydraulically and geomorphologically stable, with riparian vegetation established that is the same or better than prior to commencement of mining</p>		<p>The recently updated diversion monitoring and maintenance program, when fully implemented, is expected to achieve a level of geomorphic function and stability that is consistent with the rehabilitation objectives. Prior to completion of the next audit period, WPCL must undertake all monitoring and maintenance measures arising from the approved program and ensure that the North Wambo Creek diversion and adjacent reaches of the watercourse are hydraulically and geomorphically stable and a suitable level of riparian vegetation is established.</p>

Table D2
DA 177-8-2004 Consolidated Conditions of Approval

Blue type represents Notice of Modification 15 December 2006 (126-10-2006)

Pink type represents 2012 modification

Section	Sub-section	Requirement	2014 Audit Status	2014 Audit Comments
MCoA		Development Application: DA 177-8-2004		
		SCHEDULE 4 GENERAL ENVIRONMENTAL CONDITIONS		
		³ Soil and Water Management Plan		
4	17	<p>Prior to carrying out any development associated with the proposed refuelling facility, the Applicant must review and update the Soil and Water Management Plan for the development, to the satisfaction of the Director-General. This plan must include:</p> <p>(a) an Erosion and Sediment Control Plan that:</p> <ul style="list-style-type: none"> • is consistent with the requirements of <i>Managing Urban Stormwater: Soils and Construction manual</i>; • identifies activities that could cause soil erosion and generate sediment; • describes the location, function and capacity of erosion and sediment control structures; and • describes measures to minimise soil erosion and the potential for the migration of sediments to downstream waters; <p>(b) details of the dirty water management system to be implemented for the development including measures to prevent contamination from diesel and oil spills;</p> <p>(c) a Surface Water Monitoring Program; and</p> <p>(d) a strategy for decommissioning the water management structures on the site.</p>	Compliant	<p>(a) The Erosion and Sediment Control Plan meets the content requirements.</p> <p>(b) The Site Water Balance provides details of the dirty water management system. Section 2.2.5 of the Surface Water Monitoring Program describes measures to prevent contamination.</p> <p>(c) Section 2.2.6 of the Surface Water Monitoring Program meets the content requirements.</p> <p>(d) Section 2.2.16 of the Site Water Management Plan outlines rehabilitation objectives for decommissioning water management structures on site. It is recommended that this section is improved by providing a high level strategy</p>

Section	Sub-section	Requirement	2014 Audit Status	2014 Audit Comments
				for the decommissioning of water management structures (including the management of water during the decommissioning process) as part of any future update of the Site Water Management Plan.

**Wambo Coal Mine
Independent Environmental Audit Additional Information**

1 INTRODUCTION

In late 2017, Wambo Coal Pty Ltd (Wambo) submitted an Independent Environmental Audit (IEA) to the NSW Department of Planning and Environment (DPE). The IEA relates to the operation of the Wambo open cut and underground coal mine (the mine).

The IEA was supported by an audit of the performance of the North Wambo Creek diversion (the diversion). This audit included a description of the diversion condition based on a desktop review of previous diversion assessment reports and monitoring data, an assessment of compliance with the management targets for the diversion function, and recommendations for diversion management.

The DPE subsequently provided Wambo with an *IEA Additional Information and Amendment Request* on 3 July 2018. The DPE has specifically noted that:

- Item 2 of the DPE's endorsement letter, dated 27 July 2017, requested a fluvial geomorphologist to be included on the audit team to assess geomorphological function of the North Wambo Creek Diversion compared to an appropriate undisturbed reference reach section of North Wambo Creek. A fluvial geomorphologist was included in the audit team however the assessment of geomorphological function was not addressed in the IEA report; and
- Given the ongoing stability and rehabilitation issues with the North Wambo Creek diversion the Department will require the audit action plan to include a detailed program to complete stabilisation and rehabilitation works.

The DPE requires additional information to address these issues. Section 2 of this report provides additional information on the reach comparison. Section 3 of this report provides additional information on diversion management including the known diversion stability and rehabilitation issues and details of the diversion management program proposed by Wambo to address these issues. Section 4 provides the key conclusions and recommendations.

This report has been prepared by Hansen Bailey, using additional information provided by Wambo. The additional information provided by Wambo comprises:

- A detailed geomorphic description of the diversion and adjacent reaches of North Wambo Creek (and its tributaries) using the River Styles Framework and modelled flow conditions;
- An assessment of the predicted future geomorphic condition of the diversion and adjacent reaches of North Wambo Creek based upon the modelled flow conditions;
- A general description of diversion design, construction, monitoring and relinquishment practices;
- Diversion rehabilitation measures for subsided sections of the diversion (i.e. downstream of longwall panel LW16); and
- A plan for rehabilitation of areas that will be subject to future subsidence (i.e. upstream of longwall panel LW16).

2 REACH COMPARISON

The additional information provided by Wambo shows that North Wambo Creek currently comprises:

- Three upstream reaches;
- The diversion (Stage 2A, Stage 2B and Stage 3); and
- A downstream reach to the confluence with Wollimbi Brook.

The downstream reach has been described as disturbed by mining. The three upstream reaches are described as disturbed and substantially modified by non-mining activities. On this basis, there are no undisturbed reaches of North Wambo Creek.

In order to address the DPE request, a comparative assessment has been undertaken between the diversion reaches and the upstream reaches of North Wambo Creek that have not yet been disturbed by mining activities. The North Wambo Creek tributaries Chalker Creek and Spring Creek, and the downstream reach of North Wambo Creek, have also been assessed.

The following table provides a summary of the reach comparison.

Diversion Reach	North Wambo Creek Comparison Reach
Stage 2A	Reach 3
Stage 2B	Reach 2
Stage 3	Reach 1 (Downstream Reach – disturbed by mining)

The flow conditions (i.e. velocity, shear stress and stream power) in the diversion and North Wambo Creek have been assessed against the comparison reach.

The assessment shows that flow conditions in the diversion and North Wambo Creek frequently exceed of the referenced diversion stability criteria.

On average:

- The Stage 2A diversion reach is within the referenced criteria for diversion stability. The predicted flow conditions in the Stage 2A diversion reach are lower than the corresponding values in the comparison reach of North Wambo Creek.
- The Stage 2B diversion reach exceeds the referenced diversion stability criteria for stream power and velocity (without vegetation) during low flow conditions. The predicted shear stress, stream power and velocity during low flow conditions in the Stage 2B diversion reach are also higher than the corresponding values in the comparison reach of North Wambo Creek.
- The Stage 3 diversion reach exceeds the referenced diversion stability criteria for velocity, shear stress and stream power. The assessment concludes that the predicted flow conditions in this reach are lower than the corresponding values in the comparison reaches.
- The downstream reach of North Wambo Creek exceeds the referenced diversion stability criteria for stream power during high and low flow conditions and velocity (without vegetation) during low flow conditions. The predicted shear stress during low flow conditions and stream power during high and low flow conditions in the downstream reach are also higher than the corresponding values in the comparison reach of North Wambo Creek. The greatest changes in velocity, stream power and shear stress occur where the downstream reach traverses subsided longwall panels.

3 DIVERSION MANAGEMENT

3.1.1 Diversion Stability and Rehabilitation Issues

The IEA report concluded that the diversion is not yet compliant with the completion criteria for geomorphic function and stability, and that additional management will be required to address these issues. The additional information provided confirms that *'the diversion is not on a trajectory for relinquishment'*.

The following table lists the specific diversion condition issues raised in the IEA report and the corresponding conclusions from the additional information provided by Wambo. This table shows that the additional information provided by Wambo is consistent with the condition of the diversion and known issues described in the IEA report.

IEA Report	Additional Information
Stage 2 Diversion Reach Issues	
<p>The Stage 2 diversion reach experiences elevated flow velocities and stream power are increased and undercutting and channel migration is actively occurring.</p>	<p>Additional information confirms that the Stage 2B diversion reach exceeds the referenced diversion stability criteria for stream power and velocity (without vegetation) during low flow conditions. The predicted shear stress, stream power and velocity during low flow conditions in the Stage 2B diversion reach are also higher than the corresponding values in the comparison reach of North Wambo Creek.</p>
<p>Rainfall runoff draining to the diversion channel as overland flow has resulted in areas of rilling and localised gully erosion.</p>	<p>Additional information confirms erosion of the diversion banks in the Stage 2 diversion reach, including:</p> <ul style="list-style-type: none"> • Pipe and tunnel erosion where runoff has ponded in overbank areas; and • Rill and gully erosion where tunnels have collapsed, allowing concentrated runoff to drain over the diversion banks.
<p>Extensive revegetation and repair work was observed, including established shrubs and replacement of large woody debris. However, due to a lack of rainfall, even establishment of ground cover has yet to occur, and areas of bare soil remain. Ongoing management will be required in order to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established.</p>	<p>Additional information confirms the lack of successful revegetation and other remedial measures in the Stage 2 diversion reach will affect the long-term performance of the diversion.</p> <p>Additional cross sectional information confirms that there is limited potential for establishment of riparian species on constructed benches and upper bank slopes of the diversion (due to lack of inundation).</p>

IEA Report	Additional Information
Stage 3 Diversion Reach Issues	
<p>The Stage 3 diversion reach has undergone rehabilitation work on a number of occasions in response to erosion, mine subsidence and flood damage. However, a number of issues were observed in this area including:</p> <ul style="list-style-type: none"> • The limited depth of root penetration of shrubs and trees resulting in treefall; • The limited deposition of sediments in the creek bed; • The efficacy of rock-lined infiltration channels in overbank areas; • The presence of exposed soils with visibly dispersive characteristics; and • The presence of subsidence cracks in the bed and banks. 	<p>Additional information confirms the revegetation constraints associated with the low flow diversion channel in Stage 3 diversion reach (e.g. root barrier presented by rock, soil loss).</p> <p>Additional information confirms that elevated energy conditions in Stage 3 combined with the limited finer sediment supplied to the reach under current sediment supply conditions means there is little prospect of deposition and that any fine sediment topsoil in the channel is likely to be stripped in larger flow events.</p> <p>Additional information confirms issues with the efficacy and integrity of runoff management measures in the Stage 3 diversion reach.</p> <p>Additional information confirms the presence of highly dispersive soils in the Stage 3 diversion reach and associated erosion issues.</p> <p>Additional information confirms that surface subsidence cracks have occurred in the diversion and suggests that these cracks may increase the potential for infiltration of surface water flows to underlying strata.</p>
<p>The areas of bare earthworks in and adjacent the diversion without any significant revegetation are likely to contribute to elevated levels of suspended sediment in North Wambo Creek immediately downstream of the lower stage of the diversion.</p> <p>It is understood that these areas remain without revegetation as a result of poor soil quality across the site and extended dry period in the months prior to the site inspection.</p> <p>Whilst deep ripping, reseeding and erosion controls have been installed in a number of key areas, including the overbank areas of the lower stage, these areas remain at risk of erosion and may contribute to suspended sediment in the downstream creek.</p>	<p>Additional information confirms that fine sediment topsoil in the channel is likely to be stripped in larger flow events and there is evidence of sediment deposition in the downstream reach of North Wambo Creek.</p> <p>Additional information confirms the revegetation issues due to erosion of dispersive soils, the lack of widespread ripping on suitable diversion surfaces, and the placement of topsoil on hard rock surfaces that experience potentially erosive flows and soil loss.</p>

IEA Report	Additional Information
<i>Diversion-Wide Issues</i>	
The rehabilitation of mine subsidence effects, including the repair of surface tension cracks, is a key ongoing rehabilitation task and mine subsidence is the key potential future impact on the diversion.	Additional information confirms that surface subsidence cracks have occurred in the diversion and suggests that these cracks may increase the potential for infiltration of surface water flows to underlying strata.

The following additional issues were raised within the additional information:

- The adequacy of flood protection measures for the adjacent open cut pit due to the height and construction of the rock spillway and embankment;
- The long-term maintenance requirements associated with the rock chute at the diversion outlet to North Wambo Creek.

Section 3.1.2 describes the proposed diversion management measures to address the issues identified above and ensure the effective long-term operation of the diversion.

3.1.2 Diversion Management Requirements

The IEA report highlighted the following diversion management requirements to address the diversion stability and rehabilitation issues:

- Ongoing management are required in order to ensure that soil erosion is minimised and ground cover is given adequate opportunity to become established.
- Consistent with the commitments in the Mining Operation Plan (MOP) and Extraction Plans, further monitoring and remedial works are required during the short to medium term to address the erosion and revegetation issues.
- An integrated diversion monitoring program should be implemented to enable identification of any problem areas requiring further erosion control measures and provide further confirmation of the suspended sediment levels in runoff across the site.
- Rehabilitation of subsided areas of the diversion is required in accordance with an Extraction Plan (or Subsidence Management Plan), including repairing surface subsidence cracks and undertaking subsidence remediation where necessary in areas where the diversion has been subsided. This includes repair of any cracks in the low flow channel and installation of timber debris in the banks of the channel at the sides of subsidence troughs to prevent undermining and scouring of the banks.

Consistent with the IEA findings and the request from DPE for an action plan, Wambo has suggested a timetable for implementing the following existing approved diversion management commitments:

1. In 2018, undertaking diversion inspections and implementing rehabilitation maintenance works described in the MOP, including:
 - Weed management with particular focus on *G. purescens* spp;
 - Erosion repair works;
 - Reseeding with native pasture and trees;
 - Revegetation trials using native grasses as a weed control measure; and
 - Collection of native grass seeds.

Wambo has proposed that a technical review of the completed diversion rehabilitation and maintenance actions and the diversion monitoring results should be undertaken in 2020.
2. In 2018 and 2019, implementing subsidence remediation measures (if required) as described in the approved Extraction Plan – South Bates Underground Mine Longwalls 11 to 16.
3. From 2018 onwards, undertaking annual diversion and subsidence monitoring.

Wambo has also provided additional details of the planned erosion repair works, as follows:

- Downstream of longwall panel LW16 (i.e. currently subsided areas):
 - The reconstruction of all batter chutes in order to manage runoff draining over the diversion banks address rill and gully erosion issues;
 - Reconfiguration of the overbank bunding and drainage arrangement in order to prevent ponding at the top of the diversion banks and associated tunnel erosion;
 - The application of on-contour ripping (per 2015 diversion review recommendations) to all appropriate locations in Stage 3 diversion reach; and
 - Regrading of the existing drain to repair incision in the mid Stage 3 diversion reach.
- Upstream of longwall panel LW16 (i.e. including planned subsidence areas):
 - Actions to address existing erosion of diversion banks above and upstream of longwall panel LW 16 pillar, and any potential increase in erosion due to subsidence in these areas. Actions may include stabilisation above longwall panels LW 11 and LW12 and the area upstream of longwall panel LW 11.
 - Actions to address alluvial baseflow to the open cut mining area.
 - Subsidence crack management and monitoring in the diversion.
 - New batter chutes to be designed and installed above longwall panels LW11 to LW16 including both banks of the diversion above longwall panel LW13;

-
- Regrading of the existing drain to repair incision in the upper Stage 3 diversion reach; and
 - A review of stream flow estimates and monitoring data for North Wambo Creek to refine the modelling predictions. These modelling predictions are used to as a diversion management tool.

Wambo has also proposed that a North Wambo Creek Diversion Rehabilitation and Maintenance Plan be developed in 2018 in consultation with key stakeholders. The proposed scope of the plan includes consideration of the current diversion performance indicators and completion criteria, development of alternative performance indicators and completion criteria if necessary and detailed scheduling of diversion stabilisation and rehabilitation works over a five year horizon. The proposed scope of the North Wambo Creek Diversion Rehabilitation and Maintenance Plan is currently limited to the reaches of the diversion and North Wambo Creek located downstream of longwall panel LW16. The proposed plan is to be implemented from 2018 onwards and reviewed in 2020.

4 KEY CONCLUSIONS

Hansen Bailey has considered the additional information in order to update the IEA action plan for the diversion. The key conclusions are as follows:

- The current status and geomorphological function of the diversion has been comprehensively assessed by a qualified and suitably experienced fluvial geomorphologist. This assessment concludes that all reaches of North Wambo Creek have been historically modified and disturbed prior to commencement of mining, and therefore North Wambo Creek does not include any undisturbed reaches. In order to address the DPE's request, Wambo has provided a comparison of the diversion and upstream reaches of North Wambo Creek that have not yet been disturbed by mining activities. The information provided indicates that this is an appropriate comparison that is consistent with the intent of the DPE request for a reach comparison. The findings of this comparative assessment do not change the findings of the IEA.
- The diversion and comparison reaches of North Wambo Creek experience high energy flow conditions that are likely to result in erosion and diversion stability issues.
- The additional information confirms the diversion management issues identified in the IEA. The additional information also highlighted potential flood protection issues associated with the adjacent open cut pit and maintenance issues associated with the rock chute located at the diversion outlet that require management.
- Wambo has committed to a timetabled diversion management program that addresses the key requirements described in the IEA. The diversion management program

comprises existing approved monitoring commitments with additional details on the timing and scope of the erosion control measures to be implemented in the short to medium-term. As discussed in the IEA, if implemented this program is expected to significantly improve the operation of the diversion.

- Wambo has also committed to the preparation and implementation of a new Diversion Maintenance and Rehabilitation Plan. However, the current diversion management and monitoring objectives, strategies and commitments are contained in several documents including the MOP, the North Wambo Creek Management Plan, the Site Water Management Plan, the South Bates Underground Extraction Plan (LW11 to 13), the South Bates Underground Extraction Plan (LW11 to 16), the North Wambo Creek Underground Extraction Plan (LW8-10A). In order to assist site personnel in effectively managing the diversion, it is recommended that these requirements are rationalised and consolidated in a single concise plan that can be used to provide operational guidance specifically on the diversion management. The North Wambo Creek Management Plan is an existing requirement of the development consent and would therefore be logical and straightforward to update the existing North Wambo Creek Management Plan in line with this recommendation.

The following table outlines the recommended action plan that is consistent with these recommendations.

Action	Timing
<p>Liaise with technical specialists and stakeholders to establish the scope specific erosion repair works to be undertaken in early 2019 as an interim management measure until the Diversion and Rehabilitation Plan is finalised. The following specific erosion repair works will be considered:</p> <ul style="list-style-type: none"> • The reconstruction of all batter chutes in order to manage runoff draining over the diversion banks address rill and gully erosion issues; • Reconfiguration of the overbank bunding and drainage arrangement in order to prevent ponding at the top of the diversion banks and associated tunnel erosion; • The application of on-contour ripping (per 2015 diversion review recommendations) to all appropriate locations in Stage 3 diversion reach; and • Regrading of the existing drain to repair incision in the mid Stage 3 diversion reach. <p>These measures should be included in the updated North Wambo Creek Management Plan.</p>	End 2018

Action	Timing
<p>Undertake diversion inspections and implement rehabilitation maintenance works described in the MOP, including:</p> <ul style="list-style-type: none"> • Weed management with particular focus on <i>G. pulescens</i> spp; • Erosion repair works; • Reseeding with native pasture and trees; • Revegetation trials using native grasses as a weed control measure; and • Collection of native grass seeds. 	End 2018
<p><u>Update the North Wambo Creek Management Plan.</u></p> <p>The existing North Wambo Creek Management Plan should be a concise stand-alone internal environmental management document designed to provide clear, practical guidance for mine operations on the management of the entire diversion. The scope of the North Wambo Creek Management Plan (as described in the development consent) should be expanded to include:</p> <ul style="list-style-type: none"> • A clear description of the current regulatory requirements and approved environmental management commitments; • A clear description of the diversion management objectives and the diversion management strategies for achieving these objectives. It may be necessary to include short-term or interim strategies to manage parts of the diversion that are likely to be affected by future approved subsidence, or additional management and consultation strategies to support any planned changes to the approved performance or closure criteria. • A concise description of the current status of the diversion and all known issues. This will include all known issues; • A brief discussion of the performance of the diversion against the diversion management objectives and criteria based on the available monitoring data; • An itemised action plan and a prioritised timetable (consistent with the Diversion and Rehabilitation Plan) to address the known issues and diversion performance issues. It may be necessary to include interim actions to address known issues for parts of the diversion that are likely to be affected by future approved subsidence; and • A holistic diversion monitoring plan. This monitoring program should capture all of the approved diversion monitoring commitments. This should include a clear description of the scope and timing of the diversion monitoring program implemented in 2017, all ongoing diversion inspections, the annual diversion monitoring, subsidence remediation monitoring as it specifically relates to the diversion, and rehabilitation monitoring as it specifically relates to the diversion and vegetation monitoring as it specifically relates to the diversion. It should 	Submit for consultation by 26 April 2019

Action	Timing
<p>also include any additional monitoring required as part of the action plan (e.g. monitoring required to support any strategy to change the approved performance or closure criteria). Where there is overlap between these monitoring commitments, the monitoring program should be rationalised for ease of use by Wambo personnel.</p> <p>The updated Diversion Management Plan should be reviewed on an annual basis until such time as all significant known issues are addressed, and diversion performance is in line with the diversion management objectives.</p>	
<p>Implement the updated North Wambo Creek Management Plan including the following:</p> <ul style="list-style-type: none"> • Actions to address existing erosion of diversion banks above and upstream of longwall panel LW 16 pillar, and any potential increase in erosion due to subsidence in these areas. Actions may include stabilisation above longwall panels LW 11 and LW12 and the area upstream of longwall panel LW 11. • Actions to address alluvial baseflow to the open cut mining area. • Subsidence crack management and monitoring in the diversion. • New batter chutes to be designed and installed above longwall panels LW11 to LW16 including both banks of the diversion above longwall panel LW13; • Regrading of the existing drain to repair incision in the upper Stage 3 diversion reach; and • A review of stream flow estimates and monitoring data for North Wambo Creek to refine the modelling predictions. These modelling predictions are used to as a diversion management tool. 	<p>In accordance with the updated North Wambo Creek Management Plan (indicatively prior to the 2019-20 wet season)</p>

Should you have any queries in relation to this report, please contact Hansen Bailey on (02) 6575 2000.

Yours faithfully
HANSEN BAILEY



Ross Edwards
Senior Environmental Scientist

APPENDIX G
Water Licence Certificates

BOX 47V
(AM131556)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL1369	
EDITION	DATE OF ISSUE
5	27/2/2017
CERTIFICATE AUTHENTICATION CODE	
75NY-DD-RLRD	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LTD

UNITED COLLIERIES PTY LTD

AS TENANTS IN COMMON IN EQUAL SHARES

(T AM131556)

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: SUPPLEMENTARY WATER

SHARE COMPONENT:

SHARE - 15 UNITS

WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE

WATER SHARING PLAN - HUNTER REGULATED RIVER WATER SOURCE 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - AT THOSE TIMES WHEN THE MINISTER
ANNOUNCES THAT SUPPLEMENTARY WATER IS AVAILABLE, AT SUCH RATE AS
THE MINISTER ANNOUNCES

EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF

EXTRACTION ZONE - ZONE 1B (HUNTER RIVER FROM GOULBURN RIVER JUNCTION
TO GLENNIES CREEK JUNCTION)

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20CA201654

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM
THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.

NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU

NOW REFERENCE NUMBER: 20AL203071

PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL060416.

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 47V
(AM131556)

PAGE 2



NEW SOUTH WALES
CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000

WAL TITLE REFERENCE	
WAL1369	
EDITION	DATE OF ISSUE
5	27/2/2017
CERTIFICATE AUTHENTICATION CODE	
75NY-DD-RLRD	

This certificate is issued under s87B of the Water Management Act, 2000.



**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 47V
(AM131556)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL15459	
EDITION	DATE OF ISSUE
4	27/2/2017
CERTIFICATE AUTHENTICATION CODE	
ZV26-5F-7L2F	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LTD
UNITED COLLIERIES PTY LTD
AS TENANTS IN COMMON IN EQUAL SHARES

(T AM131556)

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: REGULATED RIVER (GENERAL SECURITY)

SHARE COMPONENT:

SHARE - 21 UNITS
WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE
WATER SHARING PLAN - HUNTER REGULATED RIVER WATER SOURCE 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE
EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF
EXTRACTION ZONE - ZONE 1B (HUNTER RIVER FROM GOULBURN RIVER JUNCTION
TO GLENNIES CREEK JUNCTION)

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20CA201654
INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM
THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.
NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU
NOW REFERENCE NUMBER: 20AL204246

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1W
(A1574772)



NEW SOUTH WALES
CERTIFICATE OF TITLE
WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL18437	
EDITION	DATE OF ISSUE
1	16/5/2014
CERTIFICATE AUTHENTICATION CODE	
PJZ2-9T-L2JT	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO MINING CORPORATION PTY LIMITED

(DW AE914469)

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: UNREGULATED RIVER

SHARE COMPONENT:

SHARE - 350 UNITS

WATER SOURCE - LOWER WOLLOMBI BROOK WATER SOURCE

WATER SHARING PLAN - HUNTER UNREGULATED AND ALLUVIAL WATER SOURCES
2009

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE

EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20WA208642

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM
THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.
NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU
NOW REFERENCE NUMBER: 20AL208641
PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL033872.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1W
(AH146235)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE WAL23897	
EDITION 1	DATE OF ISSUE 1/8/2012
CERTIFICATE AUTHENTICATION CODE DJCG-XD-HDLH	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LIMITED

(WB AG348859)

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 70 UNITS

WATER SOURCE - LOWER WOLLOMBI BROOK WATER SOURCE

WATER SHARING PLAN - HUNTER UNREGULATED AND ALLUVIAL WATER SOURCES
2009

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - ANY TIME OR RATE

EXTRACTION FROM - AQUIFER

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20WA211372

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND
EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM NOW.

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.

NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU

NOW REFERENCE NUMBER: 20AL211371

PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT910815, 20BL167737.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AK869845)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL39735	
EDITION	DATE OF ISSUE
1	3/11/2016
CERTIFICATE AUTHENTICATION CODE	
7PJ3-7W-XSS6	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LIMITED

(DW AK614264)

ENCUMBRANCES

1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
2. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 40 UNITS

WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE

WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK
GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE

EXTRACTION FROM - AQUIFER

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20MW065010

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AK869845)

PAGE 2



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL39735	
EDITION	DATE OF ISSUE
1	3/11/2016
CERTIFICATE AUTHENTICATION CODE	
7PJ3-7W-XSS6	

This certificate is issued under s87B of the Water Management Act, 2000.



NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL217073

PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT911895, 20BL168643.

**** END OF CERTIFICATE ****

Water Access Licence Certificate

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.111 (1) (a) WATER PROPERTY ACT)

BOX 1026Y
(AK869845)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL39738	
EDITION	DATE OF ISSUE
1	3/11/2016
CERTIFICATE AUTHENTICATION CODE	
WYW2-ZK-2NXY	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LIMITED

(DW AK614264)

ENCUMBRANCES

- SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
- TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 243 UNITS
 WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE
 WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK
 GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
 ACCESS LICENCE
 EXTRACTION FROM - AQUIFER
 EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20MW065010
 INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AK869845)

PAGE 2



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL39738	
EDITION	DATE OF ISSUE
1	3/11/2016
CERTIFICATE AUTHENTICATION CODE	
WYW2-ZK-2NXY	

This certificate is issued under s87B of the Water Management Act, 2000.



NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL216848

PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT910040, 20BL132753.

**** END OF CERTIFICATE ****

Water Access Licence Certificate

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT UNDER THE REAL PROPERTY ACT 1900

BOX 1026Y
(AN135017)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL39803	
EDITION	DATE OF ISSUE
1	21/2/2018
CERTIFICATE AUTHENTICATION CODE	
SC2Z-GK-HYKC	



This certificate is issued under s87B of the Water Management Act, 2000.

WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LIMITED

(WB AN135017)

ENCUMBRANCES

-
1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
 2. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 450 UNITS

WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE
WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK
GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE
EXTRACTION FROM - AQUIFER
EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20MW065010
INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM
THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.
NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AN135017)



NEW SOUTH WALES
CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000

WAL TITLE REFERENCE WAL39803	
EDITION 1	DATE OF ISSUE 21/2/2018
CERTIFICATE AUTHENTICATION CODE SC2Z-GK-HYKC	



This certificate is issued under s87B of the Water Management Act, 2000.

NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL216872

PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT910607, 20BL166910.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AN135017)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE WAL41494	
EDITION 1	DATE OF ISSUE 21/2/2018
CERTIFICATE AUTHENTICATION CODE 4MLN-YG-P2RS	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER(S)

WAMBO COAL PTY LIMITED

(WB AN135017)

ENCUMBRANCES

1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
2. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 750 UNITS

WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE

WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK

GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER

ACCESS LICENCE

EXTRACTION FROM - AQUIFER

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - NIL

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

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BOX 1026Y
(AN135017)

PAGE 2



NEW SOUTH WALES
CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000

WAL TITLE REFERENCE WAL41494	
EDITION 1	DATE OF ISSUE 21/2/2018
CERTIFICATE AUTHENTICATION CODE 4MLN-YG-P2RS	



This certificate is issued under s87B of the Water Management Act, 2000.

NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL216903

PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT910929.

**** END OF CERTIFICATE ****

Water Access Licence Certificate
ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AM966211)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL41520	
EDITION	DATE OF ISSUE
1	14/12/2017
CERTIFICATE AUTHENTICATION CODE	
VJ4M-63-PSML	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LIMITED

(WB AM966211)

ENCUMBRANCES

1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
2. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 9 UNITS

WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE

WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK
GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE

EXTRACTION FROM - AQUIFER

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - NIL

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

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ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.14) REAL PROPERTY ACT.

Water Access Licence Certificate

BOX 1026Y
(AM966211)

PAGE 2



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL41520	
EDITION	DATE OF ISSUE
1	14/12/2017
CERTIFICATE AUTHENTICATION CODE	
VJ4M-63-PSML	



This certificate is issued under s87B of the Water Management Act, 2000.

NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL217089
PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT911973.

**** END OF CERTIFICATE ****

Water Access Licence Certificate

26Y
(AN135017)



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL41528	
EDITION	DATE OF ISSUE
1	21/2/2018
CERTIFICATE AUTHENTICATION CODE	
3D4L-PJ-RM5G	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LIMITED

(WB AN135017)

ENCUMBRANCES

1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
2. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 57 UNITS

WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE

WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER ACCESS LICENCE

EXTRACTION FROM - AQUIFER

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - NIL

INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

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ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AN135017)



NEW SOUTH WALES
CERTIFICATE OF TITLE
WATER MANAGEMENT ACT, 2000

WAL TITLE REFERENCE WAL41528	
EDITION 1	DATE OF ISSUE 21/2/2018
CERTIFICATE AUTHENTICATION CODE 3D4L-PJ-RM5G	

This certificate is issued under s87B of the Water Management Act, 2000.



NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL218990
PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT910782.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AN153936)



NEW SOUTH WALES
CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL41532	
EDITION	DATE OF ISSUE
1	6/3/2018
CERTIFICATE AUTHENTICATION CODE	
WHTP-XV-57M6	



This certificate is issued under s87B of the Water Management Act, 2000.

WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LTD

(WB AN153936)

ENCUMBRANCES

-
- SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2016 MAY BE RECORDED ON THIS LICENCE WITHIN THREE YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
 - TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: AQUIFER

SHARE COMPONENT:

SHARE - 98 UNITS
 WATER SOURCE - SYDNEY BASIN-NORTH COAST GROUNDWATER SOURCE
 WATER SHARING PLAN - NORTH COAST FRACTURED AND POROUS ROCK
 GROUNDWATER SOURCES 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
 ACCESS LICENCE
 EXTRACTION FROM - AQUIFER
 EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - NIL
 INTERSTATE TAGGING ZONE - NIL

CONDITIONS

 LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM THE NSW OFFICE OF WATER (NOW).

NOTES

 A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE. NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL INFORMATION@WATER.NSW.GOV.AU

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ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 1026Y
(AN153936)

PAGE 2



NEW SOUTH WALES
CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000

WAL TITLE REFERENCE	
WAL41532	
EDITION	DATE OF ISSUE
1	6/3/2018
CERTIFICATE AUTHENTICATION CODE	
WHTP-XV-57M6	



This certificate is issued under s87B of the Water Management Act, 2000.

NOTES (CONTINUED)

NOW REFERENCE NUMBER: 20AL218994
PREVIOUS WATER ACT LICENCE NUMBER(S): 20PT911706.

**** END OF CERTIFICATE ****

Water Access Licence Certificate

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT)



WAL number 718

Reference number 20AL200631

Contact for service of documents

Name WAMBO COAL PTY LIMITED

Address Steven Peart
Environment & Community Manager
PMB 1
SINGLETON NSW 2330

All holders

Name(s) WAMBO COAL PTY LIMITED

Licence details

Water source HUNTER REGULATED RIVER WATER SOURCE

Water sharing plan HUNTER REGULATED RIVER WATER SOURCE 2016

Management zone ZONE 2A (HUNTER RIVER FROM GLENNIES CREEK JUNCTION TO WOLLOMBI BROOK JUNCTION)

Category REGULATED RIVER (HIGH SECURITY)

Share component 1000 units

Nominated work(s) 20WA200632

Tenure type Continuing

Conditions

The water access licence with Reference No 20AL200631 is subject to the following conditions:

Plan conditions

Water sharing plan

Hunter Regulated River Water Source

Take of water

MW3574-00001

Before water is taken under this access licence a water order must be placed and confirmed by WaterNSW.

MW4270-00001

When the Minister announces that uncontrolled flows are available, water from those uncontrolled flows may be taken in accordance with the announcement.

Monitoring and recording

MW2338-00001

The completed logbook must be retained for five (5) years from the last date recorded in the logbook.

MW2337-00001

The following information must be recorded in the logbook for each period of time that water is taken:

- A. date, volume of water, start and end time when water was taken as well as the pump capacity per unit of time, and
- B. the access licence number under which the water is taken, and
- C. the approval number under which the water is taken, and
- D. the volume of water taken for domestic consumption and/or stock watering.

MW2339-00001

A logbook must be kept, unless the work is metered and fitted with a data logger. The logbook must be produced for inspection when requested by the relevant licensor.

Reporting

MW0051-00003

Once the water access licence holder becomes aware of a breach of any condition on this water access licence, the water access licence holder must notify the Minister as soon as practicable. The Minister must be notified by:

- A. email: water.enquiries@dpi.nsw.gov.au,
or
- B. telephone: 1800 353 104. Any notification by telephone must also be confirmed in writing within seven (7) business days of the telephone call.

Other conditions

No other conditions applicable

Glossary

domestic consumption - Domestic consumption is the use of water for normal household purposes in domestic premises situated on the land.

licensor - WaterNSW or DPI Water, depending on which organisation administers your licences and/or approvals

logbook - A logbook is a document, electronic or hard copy, that records specific required information.

metered water supply work - A metered water supply work is a water supply work fitted with a data logger and a water meter that complies with Australian Standard AS 4747: Meters for non-urban water supply.

stock watering - Stock watering is the use of water for stock animals being raised on the land. It does not include the use of water for the raising of stock animals on an intensive commercial basis (kept in feedlots or buildings for all, or a substantial part, of the period during which the stock animals are being raised).

uncontrolled flow - Uncontrolled flows are flows in excess of those needed to meet:

- the environmental provisions of the water sharing plan, and
- basic landholder rights, and
- water orders placed by regulated river (general security) access licences and higher priority access licences in a water source.

General Notes

All conditions on a water access licence require compliance. An appeal to the Land and Environment Court against a decision to impose certain conditions on an approval can be made within 28 days after the date the decision is made. Conditions identified with the first letter "D" are those that can be appealed during the appeal period.

Certain dealings and other matters relating to this water access licence or a holding in this water access licence must be registered in the Access Register in accordance with section 71A of the *Water Management Act 2000*. For information about the Access Register, contact Land and Property Information (<http://www.lpi.nsw.gov.au>).

BOX 42G
(AB405032)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE

REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER	WAL8599
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
N39S-WU-B8MH	

This certificate is issued under s87B of the Water Management Act, 2000.

WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LIMITED

(T AB544745)

ENCUMBRANCES

1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2004 MAY BE RECORDED ON THIS LICENCE WITHIN TWO YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
2. AB405032 TERM TRANSFER TO C M FISHER PTY LIMITED EXPIRES 12/9/2006

ACCESS LICENCE DETAILS

CATEGORY: REGULATED RIVER (HIGH SECURITY)

SHARE COMPONENT:

SHARE - 6 UNITS

WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE

WATER SHARING PLAN - HUNTER REGULATED WATER SHARING PLAN

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - ANY TIME OR RATE

EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20CA201459

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM DIPNR.

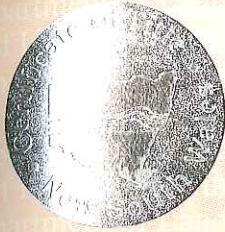
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WARNING: BEFORE DEALING WITH THIS LICENCE SEARCH THE CURRENT FOLIO OF THE REGISTER

0020243

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).

CERTIFICATE OF TITLE
WATER MANAGEMENT ACT, 2000



WAL TITLE	
REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER	WAL8599
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
N39S-WU-B8MH	

This certificate is issued under s87B of the Water Management Act, 2000.

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE DEPARTMENT OF INFRASTRUCTURE, PLANNING AND NATURAL RESOURCES (DIPNR) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.

DIPNR WEBSITE WWW.DIPNR.NSW.GOV.AU, PHONE 1800 353 104, EMAIL WMA.INFO@DIPNR.NSW.GOV.AU

DIPNR REFERENCE NUMBER: 20AL201457

PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL061206.

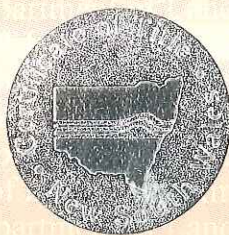
**** END OF CERTIFICATE ****

Water Access Licence Certificate

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).

BOX 42G
(AB405036)

NEW SOUTH WALES



CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE

REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER WAL8600	
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
VVAE-EA-TT4P	

This certificate is issued under s87B of the Water Management Act, 2000.

WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: CONTINUING

HOLDER (S)

WAMBO COAL PTY LIMITED

(T AB544747)

ENCUMBRANCES

-
1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2004 MAY BE RECORDED ON THIS LICENCE WITHIN TWO YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
 2. AB405036 TERM TRANSFER TO C M FISHER PTY LIMITED EXPIRES 12/9/2006

ACCESS LICENCE DETAILS

CATEGORY: REGULATED RIVER (GENERAL SECURITY)

SHARE COMPONENT:

SHARE - 868 UNITS

WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE

WATER SHARING PLAN - HUNTER REGULATED WATER SHARING PLAN

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - ANY TIME OR RATE

EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF

EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20CA201459

CONDITIONS

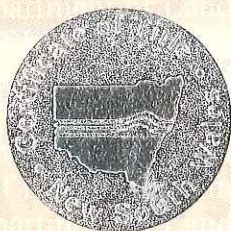
LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM DIPNR.

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).

END OF PAGE 1 CONTINUED OVER

WARNING: BEFORE DEALING WITH THIS LICENCE SEARCH THE CURRENT FOLIO OF THE REGISTER

0020245



CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE

REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER WAL8600	
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
VVAE-EA-TT4P	

This certificate is issued under s87B of the Water Management Act, 2000.

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE DEPARTMENT OF INFRASTRUCTURE, PLANNING AND NATURAL RESOURCES (DIPNR) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.

DIPNR WEBSITE WWW.DIPNR.NSW.GOV.AU, PHONE 1800 353 104, EMAIL WMA.INFO@DIPNR.NSW.GOV.AU

DIPNR REFERENCE NUMBER: 20AL201458

PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL061206.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).

BOX 42G
(AB405045)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE

REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER WAL8604	
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
DBLF-EC-MT11	

This certificate is issued under s87B of the Water Management Act, 2000.

WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: SUPPLEMENTARY

HOLDER(S)

WAMBO COAL PTY LIMITED

(T AB544746)

ENCUMBRANCES

-
1. SECURITY INTERESTS IN THE WATER ENTITLEMENT REPLACED BY THIS ACCESS LICENCE THAT WERE REGISTERED OR CAPABLE OF BEING REGISTERED WITH LPI OR ASIC BEFORE THE COMMENCEMENT DATE OF THIS LICENCE 1/7/2004 MAY BE RECORDED ON THIS LICENCE WITHIN TWO YEARS FROM THE COMMENCEMENT DATE. SEE NOTES.
 2. AB405045 TERM TRANSFER TO C M FISHER PTY LIMITED EXPIRES 12/9/2006

ACCESS LICENCE DETAILS

CATEGORY: SUPPLEMENTARY WATER

SHARE COMPONENT:

- SHARE - 240 UNITS
- WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE
- WATER SHARING PLAN - HUNTER REGULATED WATER SHARING PLAN

EXTRACTION COMPONENT:

- TIMES/RATES/CIRCUMSTANCES - AT THOSE TIMES WHEN THE MINISTER ANNOUNCES THAT SUPPLEMENTARY WATER IS AVAILABLE, AT SUCH RATE AS THE MINISTER ANNOUNCES
- EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF
- EXTRACTION ZONE - WHOLE WATER SOURCE

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20CA201459

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM DIPNR.

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).
WARNING: BEFORE DEALING WITH THIS LICENCE SEARCH THE CURRENT FOLIO OF THE REGISTER

0020247



CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE

REFERENCE TO FOLIO OF THE REGISTER	
IDENTIFIER WAL8604	
EDITION	DATE OF ISSUE
2	12/7/2005
CERTIFICATE AUTHENTICATION CODE	
DBLF-EC-MT11	

This certificate is issued under s87B of the Water Management Act, 2000.

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE DEPARTMENT OF INFRASTRUCTURE, PLANNING AND NATURAL RESOURCES (DIPNR) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.

DIPNR WEBSITE WWW.DIPNR.NSW.GOV.AU, PHONE 1800 353 104, EMAIL WMA.INFO@DIPNR.NSW.GOV.AU

DIPNR REFERENCE NUMBER: 20AL203044

PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL061206.

**** END OF CERTIFICATE ****

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S347A WATER MANAGEMENT ACT).

BOX 47V
(AM533865)

NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL929	
EDITION	DATE OF ISSUE
2	4/7/2017
CERTIFICATE AUTHENTICATION CODE	
LJZW-KT-HZFD	

This certificate is issued under s87B of the Water Management Act, 2000.



WARNING NOTE: INFORMATION ON THIS REGISTER IS NOT GUARANTEED

TENURE TYPE: SPECIFIC PURPOSE

HOLDER(S)

WAMBO COAL PTY LTD
UNITED COLLIERIES PTY LTD
AS TENANTS IN COMMON IN EQUAL SHARES (T AM533865)

ENCUMBRANCES

1. TERM TRANSFER: NIL

ACCESS LICENCE DETAILS

CATEGORY: DOMESTIC AND STOCK (DOMESTIC)

SHARE COMPONENT:

SHARE - 3 MEGALITRES PER YEAR
WATER SOURCE - HUNTER REGULATED RIVER WATER SOURCE
WATER SHARING PLAN - HUNTER REGULATED RIVER WATER SOURCE 2016

EXTRACTION COMPONENT:

TIMES/RATES/CIRCUMSTANCES - SUBJECT TO THE CONDITIONS OF THE WATER
ACCESS LICENCE
EXTRACTION FROM - RIVER, LAKE OR SURFACE WATER RUNOFF
EXTRACTION ZONE - ZONE 1B (HUNTER RIVER FROM GOULBURN RIVER JUNCTION
TO GLENNIES CREEK JUNCTION)

NOMINATED WORKS:

WORK APPROVAL NUMBER(S) - 20WA201148
INTERSTATE TAGGING ZONE - NIL

CONDITIONS

LICENCE CONDITIONS FORM A PART OF THIS LICENCE AND AFFECT THE SHARE
AND EXTRACTION COMPONENTS. CONDITION STATEMENTS ARE AVAILABLE FROM
THE NSW OFFICE OF WATER (NOW).

NOTES

A WATER LICENCE INFORMATION SHEET IS AVAILABLE FROM THE NSW OFFICE OF
WATER (NOW) AND SHOULD BE REFERRED TO IN INTERPRETING THIS LICENCE.
NOW WEBSITE WWW.WATER.NSW.GOV.AU, PHONE 1800 353 104, EMAIL
INFORMATION@WATER.NSW.GOV.AU
NOW REFERENCE NUMBER: 20AL201147
PREVIOUS WATER ACT LICENCE NUMBER(S): 20SL050661.

END OF PAGE 1 CONTINUED OVER

ANY ATTEMPT TO ALTER THIS CERTIFICATE COULD RESULT IN HEAVY FINES OR IMPRISONMENT (S.141 REAL PROPERTY ACT).

BOX 47V
(AM533865)

PAGE 2



NEW SOUTH WALES

CERTIFICATE OF TITLE

WATER MANAGEMENT ACT, 2000



WAL TITLE REFERENCE	
WAL929	
EDITION	DATE OF ISSUE
2	4/7/2017
CERTIFICATE AUTHENTICATION CODE	
LJZW-KT-HZFD	

This certificate is issued under s87B of the Water Management Act, 2000.



**** END OF CERTIFICATE ****