WAMBO COAL
BLAST MANAGEMENT PLAN

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Revisions

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0	July 2005	Original Draft	Hansen Consulting	JT/TS	
1	Sept 2005	Revision	WCPL	JT	
2	Dec 2008	Revision	WCPL	RP	
3	May 2013	Revision	WCPL	TF	
4	Feb 2014	Revision	WCPL	TF	
5	Oct 2015	Revision	WCPL, Palaris	SP	
6	Nov 2015	Update to address DP&E comments on Rev 5	WCPL, Palaris	SP	
7	July 2017	Update to include the Road Closure Management Procedure	WCPL	SP	

CONTENTS

Tables

Figures

LIST OF APPENDICES

1.0 Introduction

1.1 Background

The Wambo Coal Mine (the Mine) is situated approximately 15 kilometres west of Singleton, near the village of Warkworth, New South Wales (**Figure 1**). Wambo is owned and operated by Wambo Coal Pty Limited (WCPL), a subsidiary of Peabody Energy Australia Pty Limited.

A range of open cut and underground mine operations have been conducted at WCPL since mining operations commenced in 1969. Mining under the current Development Consent (DA305-7-2003) commenced in 2004 and permits both open cut, underground operations and associated activities to be conducted.

The approved run-of-mine (ROM) coal production rate is 14.7 million tonnes per annum and all product coal is transported from WCPL by rail. A summary of the approved Wambo Coal Mine is provided in **Table 1**.

Table 1: Summary of the Approved Wambo Coal Mine

Component	Approved Wambo Coal Mine[1]
Life of Mine	21 years (from the date of the commencement of Development Consent [DA305-7-2003]). 1st March 2025
Open Cut Mining	Open cut mining at a rate of up to 8 Mtpa of ROM coal from the Whybrow, Redbank Creek, Wambo and Whynot Seams
	An estimated total open cut ROM coal reserve of 98 Mt
	Open cut mining operations under current approved MOP
Underground Mining	Underground mining of up to 7.5 Mtpa of ROM coal from the Whybrow, Wambo, Arrowfield and Bowfield Seams. Underground ROM coal reserves are estimated at 109.3 Mt.
Subsidence commitments and management.	The subsidence performance measures listed in Conditions 22 and 22A of the Development Consent (DA305-7-2003).
ROM Coal Production Rate	Up to 14.7 Mtpa of ROM coal
Total ROM Coal Mined	207.3 Mt
Waste Rock Management	Waste rock deposited in open cut voids and in waste rock emplacements adjacent open cut operations
Total Waste Rock	640 million bank cubic metres (Mbcm)
Coal Washing	Coal handling and preparation plant (CHPP) capable of processing approximately 1,800 tonnes per hour (tph)
Product Coal	Production of up to 11.3 Mtpa of thermal coal predominantly for export
CHPP Reject Management	Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids in accordance with existing Wambo management practices
Total CHPP Rejects	Approximately 28.2 Mt of coarse rejects and approximately 18.6 Mt of tailings
Water Supply	Make-up water demand to be met from runoff recovered from tailings storage areas, operational areas, dewatering, licensed extraction from Wollombi Brook and Hunter River
Mining Tenements	Coal Lease (CL) 365, CL374, CL397, Consolidated Coal Lease (CCL) 743, Mining Lease (ML) 1402, ML1572, ML1594, Authorisation (A) 444,

	Exploration Licence (EL) 7211.

Note: [1] Development Consent DA305-7-2003 (as modified April 2015)

In accordance with Schedule 4, Condition 20 of DA305-7-2003, WCPL are required to prepare a Blast Management Plan (BMP). In accordance with WCPL's continuous improvement and review processes and Conditions 4 & 6, Schedule 6 of DA305-7-2003, a review of the BMP has been undertaken to ensure that blasting activities at the Mine continue to be undertaken in a manner that ensures compliance and reduces impacts on the local community.

1.2 Purpose

The purpose of this BMP is to ensure that WCPL blast related impacts, including ground vibration, overpressure, fume and dust are minimised on the local community, infrastructure and heritage sites to the extent required by DA305-7-2003, DA177-8-2004 and Environmental Protection Licence (EPL 529). This BMP has been developed to:

- Describe the measures to be implemented to comply with the relevant blast conditions;
- Describe the blast management strategies used to manage impacts from blasting;
- Provide a blast monitoring protocol for evaluating compliance with the blast criteria;
- Describe WCPL's Blast Fume Management Strategy (**Appendix A**);
- Provide a protocol for managing and reporting any blast related incidents, exceedances or non-compliances;
- Communicate with the local community and regulators regarding WCPL's blasting activities;
- Describe and assign responsibilities relating to blast management at WCPL;
- Describe the road closure management procedure for blasting within 500 metres of the Golden Highway(**Appendix E**); and
- Describe how this BMP will be reviewed and updated

1.3 Scope

This BMP applies to all blasting activities undertaken within WCPL's mining authorisations and approved mining areas (**Figure 2**). This BMP has been prepared to manage blast related impacts including overpressure, ground vibration, dust, and blast fume in accordance with the Blast Fume Management Strategy. This BMP forms part of WCPL's Environmental Management System (EMS) and provides a consistent process for notification and reporting in accordance with the Pollution Incident Response Management Plan (PIRMP).

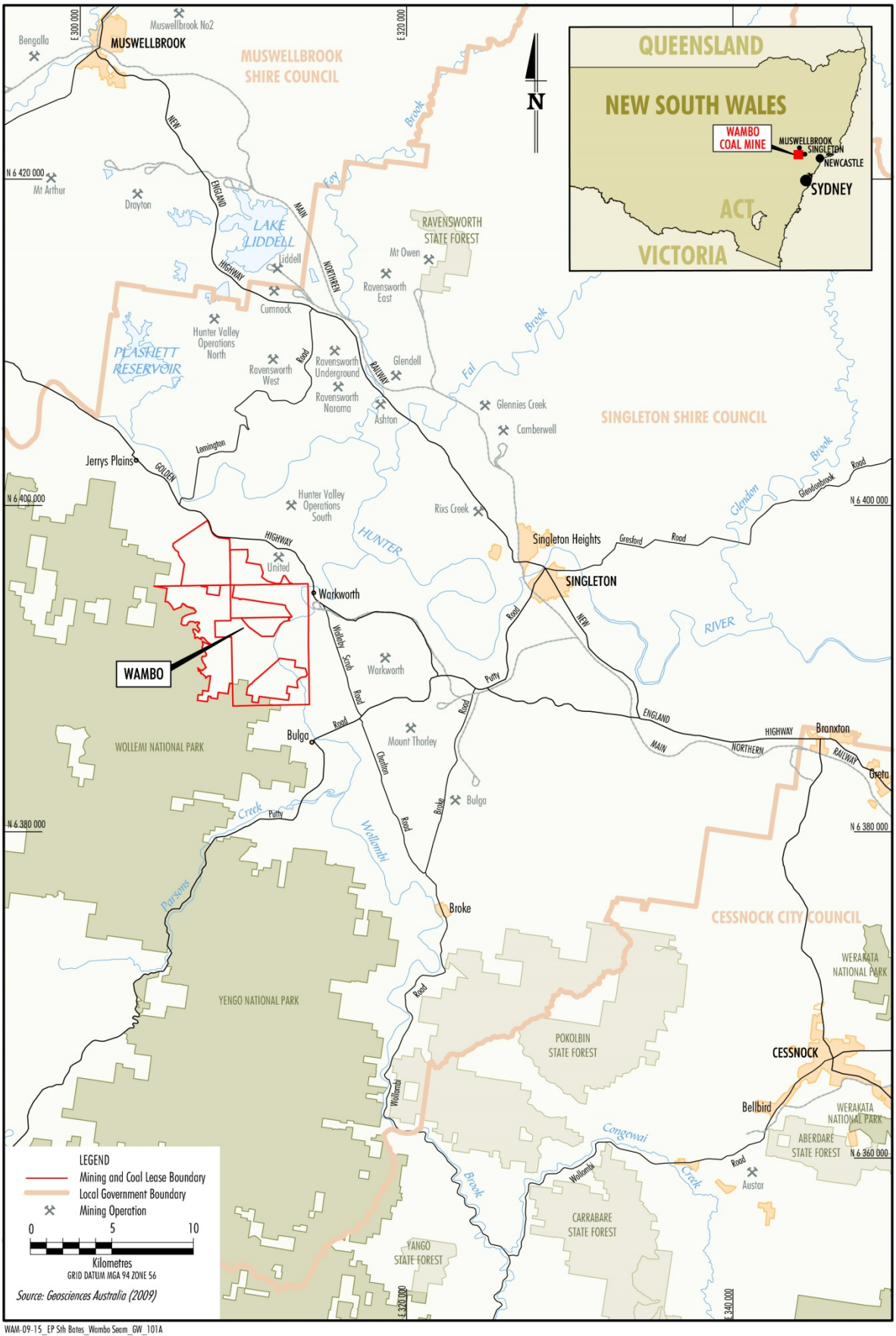

Figure 1: Wambo Coal Regional Location

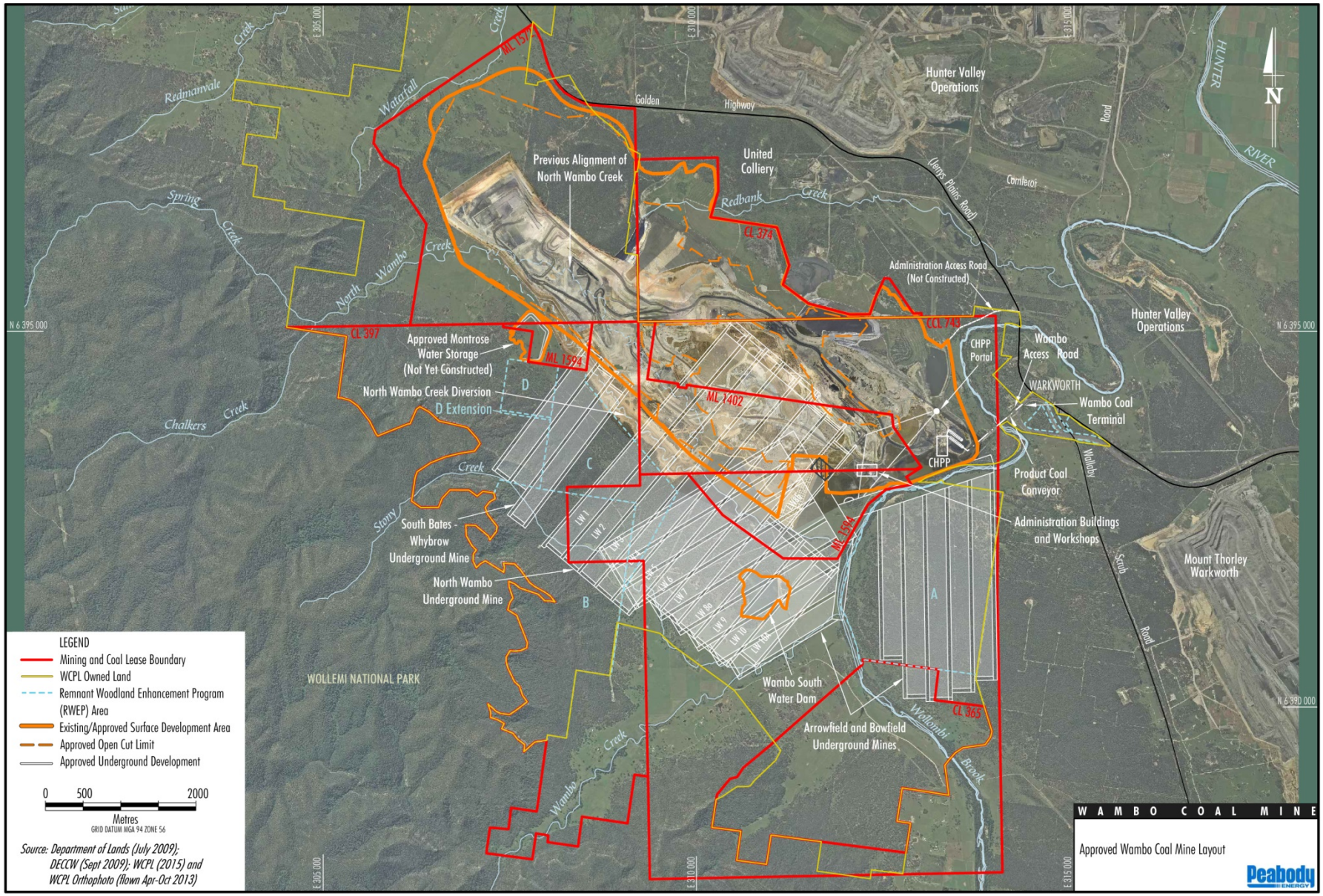

Figure 2: Approved Wambo Coal Mine Layout

1.4 Statutory Requirements

This BMP has been prepared to fulfil the requirements of DA305-7-2003, DA177-8-2004 and EPL529 (**Table 2, Table 3 and Table 4**).

1.4.1 Environmental Planning & Assessment Act 1979

WCPL received Development Consent (DA305-7-2003) in accordance with the *Environmental Planning & Assessment Act 1979* (EP&A Act) from the NSW Department of Planning and Environment (DP&E), formerly NSW Department of Planning and Infrastructure (DP&I), on 4 February 2004. Conditions within DA305-7-2003 regulate blasting activities undertaken at the Mine (**Table 2**).

DA177-8-2004 was granted in 2004 for the Wambo Rail Development (WRD). Blasting activities required for the construction of the WRD ceased in 2005. Rail loading activities utilising the WRD by WCPL commenced in April 2006. With respect to Condition 10, Schedule 4 of DA177-8-2004, WCPL completed the structural assessment of the St Phillips Church in 2007. The assessment of the church was completed by GHD in September 2007 and noted:

> *.....The assessment concluded that the building had no additional damage since the previous inspection in 2006. All existing cracking was in the same or better condition as previously inspected and it was concluded that no further structural damage would result from the operation of the rail line, with any additional cracking likely to be caused by seasonal soil movement.*

1.4.2 Protection of the Environment Operations Act 1997

WCPL operates under Environmental Protection Licence 529 (EPL 529), issued by the NSW Office of Environment & Heritage (OEH) under the authority of the *Protection of the Environment Operations Act 1997*. Conditions within EPL529 regulate blasting activities undertaken at the Mine (**Table 4**) EPL 529 is administered by the NSW Environmental Protection Authority (EPA).

A Pollution Incident Response Management Plan (PIRMP) has been prepared by WCPL, as holder of EPL 529 in accordance with Part 5.7A of the *Protection of the Environment Operations Act 1997* (POEO Act) and Part 3A of the *Protection of the Environment Operations (General) Regulation 2009* (Regulation). For more information regarding WCPL's protocol for reporting environmental incidents please refer to **Section 9.5**.

Table 2: DA305-7-2003 Requirements for the BMP

<table>
<tr><th>Schedule</th><th>Condition</th><th>DA305-7-2003</th><th>BMP Section</th></tr>
<tr><td>4</td><td>11</td><td>Airblast Overpressure Limits
The Applicant shall 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 12: Airblast overpressure impact assessment criteria<table><tr><th>Airblast overpressure level (dB(Lin Peak))</th><th>Allowable exceedance</th></tr><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></table></td><td>Section 3.1</td></tr>
<tr><td>4</td><td>12</td><td>Ground Vibration Impact Assessment Criteria
The Applicant shall 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><tr><th>Table 13: Ground Vibration Impact assessment criteriaPeak particle velocity (mm/s)</th><th>Allowable exceedance</th></tr><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></table></td><td>Section 3.2</td></tr>
<tr><td>4</td><td>13</td><td>Blasting Hours
The Applicant shall 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.</td><td>Section 4.1</td></tr>
</table>

Schedule	Condition	DA305-7-2003	BMP Section
4	13A.	**Blasting Frequency** 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. *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.*	**Section 4.2**
4	14	**Public Notice** During the life of the Wambo Mining Complex, the Applicant shall: (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 (a) notify the occupants of any land within 2 km of the site about this hotline or system on an annual basis.	**Section 5.2**
4	15	**Property Inspection** 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.	**Section 5.3**
4	16	If the Applicant receives a written request for a property inspection from any landowner within 2 km of the site, the Applicant shall: (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 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.	**Section 5.4**
4	17	**Cumulative Impacts** The Applicant shall 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.	**Section 5.1**
4	18	**Operating Conditions** During mining operations at the Wambo Mining Complex, the Applicant shall: (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	**Section 5.0**

Schedule	Condition	DA305-7-2003	BMP Section
		- 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.	**Section 5.1** **Section 5.2**
4	19	The Applicant shall 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 writing of the terms of this agreement, or the Applicant has: 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.	**Section 4.3**
4	20	**Blast Management Plan** The Applicant shall prepare and implement a Blast Management Plan for the Wambo Mining Complex to the satisfaction of the Secretary. This plan must: (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: - 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: - 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	**This Plan** **Appendix B** **Section 3.2** **Section 5.0** **Appendix E** **Section 4.3** **Section 3.1** **Section 6.0** **Section 6.5**

Schedule	Condition	DA305-7-2003	BMP Section
		South, HVO North and Mt Thorley Warkworth mines) to minimise the cumulative blasting impacts of these mines and the Wambo Mining Complex.	**Section 5.1**
4	20A	The Applicant shall not carry out more than 1 blast a day within 500 metres of Wallaby Scrub Road or the Golden Highway.	**Section 4.3**
4	21	**Property Investigations** 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: (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 (b) give the landowner a copy of the property investigation report within 14 days of receiving the report. 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. 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. If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process.	**Section 5.4** **Appendix B**
4	63	**Wambo Homestead Complex – Blasting** 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.	**Section 6.2**
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.	**Section 5.11**
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 *Australian Standard AS 2187.2-1993 (or its latest version) "Explosives – Storage Transport and Use" for Sensitive and Heritage Structures* to prevent damage to the heritage items.	**Section 3.3**
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.	**Section 5.11**
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 days after blasting monitoring which exceeds the structural damage assessment	

Schedule	Condition	DA305-7-2003	BMP Section
		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.	
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.	**Section 5.11**
4	80	**Traffic Management Plan** 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 road 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.	**Appendix E**
6	3	**Adaptive Management** 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. Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; (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 (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.	**Section 7.0**
6	4	**Management Plan Requirements** The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: - the relevant statutory requirements (including any relevant consent, licence or lease conditions); - any relevant limits or performance measures/criteria; - the specific performance indicators that are proposed to be used to judge the performance of, or guide the	**Section 2.0** **Section 1.4** **Section 3.0**

Schedule	Condition	DA305-7-2003	BMP Section
		implementation of, the project or any management measures; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/ criteria; (d) a program to monitor and report on the: - impacts and environmental performance of the Wambo Mining Complex; - effectiveness of any management measures (see c above); (e) a contingency plan to manage any unpredicted impacts and their consequences; (f) a program to investigate and implement ways to improve the environmental performance of the Wambo Mining Complex over time; (g) a protocol for managing and reporting any: - incidents; - complaints; - non-compliances with statutory requirements; and - exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan.	**Section 6.5** **Section 5.0** **Section 6.0** **Section 7.1** **Section 8.0** **Section 9.0**

Table 3: DA177-8-2004 Requirements for the BMP

Schedule	Condition	DA177-8-2004	BMP Section
4	8	**Airblast Overpressure Limits** The Applicant shall 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. *Table 3: 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%	**Section 3.1**

<table>
<tr><th>Schedule</th><th>Condition</th><th>DA177-8-2004</th><th>BMP Section</th></tr>
<tr><td>4</td><td>9</td><td>Ground Vibration Impact Assessment Criteria
The Applicant shall 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.
Table 4: Ground vibration impact assessment criteria<table><tr><th>Peak particle velocity (mm/s)</th><th>Allowable exceedance</th></tr><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></table></td><td>Section 3.2</td></tr>
<tr><td>4</td><td>10</td><td>Structural Assessment
10. Within 3 months of this consent, the Applicant shall:
(a) engage a suitably qualified, experienced, and independent structural engineer, whose appointment has been approved by the Secretary, 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
(b) advise the Secretary of any measures required to be implemented to reduce the impacts of the development on the church..</td><td>Section 1.4.1

Appendix B</td></tr>
<tr><td>4</td><td>11</td><td>11. The Applicant shall implement these measures to the satisfaction of the Secretary.</td><td>Appendix B</td></tr>
</table>

Table 4: EPL 529 Requirements for the BMP

<table>
<tr><th>Section</th><th>EPL 529</th><th>BMP Section</th></tr>
<tr><td>P1 Location of monitoring/discharge points and areas</td><td>P1.4 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or setting of limits for the emission of noise from the point.<table><tr><th>EPA ID No.</th><th>Type of monitoring point</th><th>Location description</th></tr><tr><td>10</td><td>Air blast overpressure and ground vibration peak particle velocity monitoring</td><td>Monitoring location identified as BM02 (Figure 3)</td></tr><tr><td>11</td><td>Air blast overpressure and ground vibration peak particle velocity monitoring</td><td>Monitoring location identified as BM05 (Figure 3)</td></tr><tr><td>12</td><td>Air blast overpressure and ground vibration peak particle velocity monitoring</td><td>Monitoring location identified as BM07 (Figure 3)</td></tr></table></td><td>Section 4.1</td></tr>
</table>

Section	EPL 529	BMP Section
L5 Blasting	L5.1 Blasting in or on the premises must only be carried out between 0900 hours and 1700 hours, Monday to Saturday. Blasting in or on the premises must not take place on Sundays or Public Holidays without the prior approval of the EPA.	**Section 3.1**
	L5.2 The airblast overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	**Section 3.1**
	L5.3 The airblast overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	**Section 3.2**
	L5.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	**Section 3.2**
	L5.5 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.	**Section 3.2**
	L5.6 Offensive blast fume must not be omitted from the premises. *Definition:* *Offensive blast fume means post-blast gases from the detonation of explosives at the premises that by reason of their nature, duration, character or quality, or the time at which they are emitted, or any other circumstances"* 1. *are harmful (or likely to be harmful to) a person that is outside the premises from which it is emitted, or* 2. *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted.*	**This Plan**

1.5 Stakeholder Consultation

As required by Condition 20, Schedule 4 of DA305-7-2003, WCPL must revise the BMP for the Mine to the satisfaction of the Secretary. This BMP and the Blast Fume Management Strategy (**Appendix A**) have been reviewed and updated in consultation with the Department of Planning and Environment (DP&E).

The Road Closure Management Procedure for blasting within 500m of the Golden Highway was prepared in consultation with the RMS and Singleton Shire Council (**Appendix E**).

The review of the BMP includes the mitigation measures proposed by WCPL (in consultation with the EPA) regarding management and response of blast fume events, including:

- Implementation of a Blast Fume Incident Notification Procedure (**Section 5.2.2**); and
- Use of a mobile weather station (**Section 6.1.1**).

Correspondence in relation to the BMP is attached as **Appendix B**.

2.0 Baseline Data

WCPL has been monitoring airblast overpressure and ground vibration around the Mine since February 2004. Monitoring locations are shown in **Figure 3 (Section 6.2)**. In the preparation of this review of the BMP, the airblast overpressure and ground vibration results for the period February 2004 to June 2015 were collated. A summary of the results and their performance against respective blasting criteria is presented in **Table 5** and **Table 6.**

Table 5: Review of Blast Overpressure Results from February 2004 to June 2015

Period	No. Blasts for Period	Monitoring Location	>115bB(L) 5%	>120bB(L) 0%	Overpressure (dBL) Ave	Overpressure (dBL) Max
2007/2008	109	BM02	1.8%	0%	105.0	115.2
		BM05	0.9%	0%	109.4	117.8
2008/2009	98	BM02	1.0%	1.0%	101.9	120.3
		BM05	0%	0%	107.6	115.0
2009/2010	62	BM02	0%	0%	96.9	107.0
		BM05	0%	0%	102.4	113.6
2010/2011	68	BM02	0%	0%	99.0	107.5
		BM05	1.5%	1.5%	100.7	124.4
2011/2012	76	BM02	0%	0%	99.5	111.0
		BM05	1.3%	0%	102.6	118.5
2012/2013	70	BM02	2.9%	1.4%	99.9	120.6
		BM05	0%	0%	103.5	114.6
		BM07	1.4%	0%	103.3	115.2
2013/2014	73	BM02	0%	0%	98.4	109.5
		BM05	0%	0%	103.2	114.4
		BM07	0%	0%	101.8	111.5
2014/2015	78	BM02	0%	0%	101.3	113.1
		BM05	0%	0%	102.5	113.0
		BM07	0%	0%	102.5	112.4

Since February 2004 a total of 1093 blasts have been undertaken across the Mine. There have been no exceedances of the 5% allowable over the 115dBL of the total number of blasts during a twelve month period.

There have been twelve results over 115dBL or approximately 1.1% of all blasts since February 2004. The results over 115dBL included;

- BM02 (Kelly) has recorded five results
- BM05 (Muller) has recorded six results; and
- BM07 (Thelander) has recorded one result.

WCPL has recorded a total of four blasts which exceeded the 0% limit for blasts exceeding the 120dBL. This represents approximately 0.4% of all blasts since February 2004. The results over 120dBL included;

- BM02 (Kelly) has recorded two results; and
- BM05 (Muller) has recorded 1 result.

There has not been an overpressure result greater than 115dBL recorded by WCPL external blast monitoring units at a private residence since the 2012/2013 reporting period.

Table 6: Review of Ground Vibration Results from February 2004 to June 2015

Period	No. Blast for Period	Monitoring Location	>5mm/s 5%	>10mm/s 0%	Vibration (mm/s) Ave	Max
2007/2008	109	BM02	0%	0%	0.40	0.90
		BM05	0%	0%	0.52	1.34
2008/2009	98	BM02	0%	0%	0.44	0.97
		BM05	0%	0%	0.40	0.95
2009/2010	62	BM02	0%	0%	0.24	0.38
		BM05	0%	0%	0.40	1.02
2010/2011	68	BM02	0%	0%	0.57	1.74
		BM05	0%	0%	0.51	2.92
2011/2012	76	BM02	0%	0%	0.21	0.72
		BM05	0%	0%	0.35	1.03
2012/2013	70	BM02	0%	0%	0.16	0.55
		BM05	0%	0%	0.48	1.38
		BM07	0%	0%	0.55	1.40
2013/2014	73	BM02	0%	0%	0.15	0.53
		BM05	0%	0%	0.40	1.83
		BM07	0%	0%	0.39	1.86
2014/2015	78	BM02	0%	0%	0.16	0.65
		BM05	0%	0%	0.38	1.37
		BM07	0%	0%	0.43	1.44

There has not been an exceedance for either the >5mm/s and >10mm/s ground vibration limits recorded by WCPL external blast monitoring units at a private residence since DA305-7-2003 was granted.

Since blast fume monitoring commenced on 2 July 2012, all blasts at WCPL have been assessed based on their blast fume ranking (**Table 7**). 97% of all blasts have been assessed as Category 2 or below. One Category 4 blast fume event occurred in 2012.

Table 7: Blast Fume Rankings Results from July 2012 to June 2015

NOx Fume Ranking	2012	2013	2014	2015	Total
0	67%	85%	85%	79%	79%
1	15%	5%	11%	17%	11%
2	12%	6%	3%	5%	7%
3	4%	3%	1%	0%	2%
4	1%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%
Total No. Blasts	**67**	**62**	**75**	**42**	**246**

3.0 Blast Criteria

3.1 Airblast Overpressure Criteria

Table 8 describes WCPL's airblast overpressure criteria from DA305-7-2003 and EPL 529. Airblast overpressure limits are to be met at any residence on privately owned land[1].

Table 8: Airblast Overpressure Assessment Criteria

Airblast Overpressure Level (dBLin Peak)	Allowable Exceedance
115	5% of the total number of blasts over a period of 12 months
120	0%

3.2 Vibration Criteria

Table 9 describes WCPL's ground vibration criteria from the DA305-7-2003 and EPL 529. Ground vibration limits are to be met at any residence on privately owned land.

Table 9: Ground Vibration Assessment Criteria

Peak Particle Velocity (mm/s)	Allowable Exceedance
5	5% of the total number of blasts over a period of 12 months
10	0%

In accordance with Condition 20(b), Schedule 4 of DA305-7-2003, the BMP must propose and justify any alternate ground vibration limits for any public infrastructure on the vicinity of the Wambo Mining Complex. If required, WCPL will review the BMP in accordance with this requirement shall the need arise to alternate ground vibration limits on public infrastructure.

3.3 Wambo Homestead Criteria

Ground vibration and air blast levels experienced at the Wambo Homestead Complex (WHC) blast monitoring station are not to exceed the structural damage assessment criteria prescribed by *Australian Standard AS 2187.2-2006 'Explosives—Storage and use Part 2: Use of explosives'* to prevent damage to the heritage items.

The latest version of *AS 2187.2-2006* no longer has reference to *Sensitive and Heritage Structures* which previously placed a PPV at 5mm/s criteria for the WHC. WCPL will continue to apply this conservative PPV limit but will continue to undertake further monitoring and assessments if there is a need to modify this criteria in the future.

[1] In 2009 WCPL purchased the Skinner property. The blasting criteria, as outlined in Table 8 and Table 9, is not relevant to the former Skinner property.

3.4 Performance Indicators

The following performance indicators will be used to judge the performance of the Mine:

- Blast monitoring results show 100% compliance with the Blast Criteria in **Table 8** and **Table 9;**
- Blast monitoring results show 100% compliance with the 5mm/s criteria applied to Wambo Homestead Complex;
- No 'Rating 3' fume events leaving the Approved Surface Development Area (Project Area (**Figure 2**) or closed portion of a public road; and
- No 'Rating 4' or 'Rating 5' fume events.

Section 7.1 details the contingency measures to be implemented to manage any unpredicted impacts. **Section 9.5** details the reporting that will be undertaken by WCPL against the above performance indicators.

4.0 Blasting Restrictions

4.1 Blasting Hours

WCPL will only carry out blasting activities between 9am and 5pm, Monday to Saturday inclusive.

No blasting will be carried out on Sundays, public holidays, or at any other time without the written approval of the EPA.

4.2 Blasting Frequency

WCPL will comply with the following blast frequency[2] restrictions:

- A maximum of 3 blasts a day (unless an additional blast is required following a blast misfire); and
- A maximum of 15 blasts a week (for all operations at the Wambo Mining Complex).

WCPL will not carry out more than 1 blast a day within 500m of Wallaby Scrub Road or the Golden Highway.

4.3 Blasting Within 500m of Public Roads or Private Land

WCPL will not undertake blasting within 500m of:

- Any public road without the approval of the appropriate road authority; or
- Any land outside the site that is not owned by WCPL, unless:
    - WCPL 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
    - WCPL has 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
    - The BMP is updated to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land.

Blasting is scheduled within 500m of the Golden Highway in July 2017. The Road Closure Management Procedure was approved by the RMS and Council in June 2017 (**Appendix E**).

[2] 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.

5.0 Blast Management and Control Measures

WCPL will implement best practice blast management procedures to minimise blast overpressure, ground vibration, flyrock, fume, and dust and odour impacts. In addition, the management measures will be undertaken to minimise impacts to Aboriginal heritage and European heritage sites for the duration of the Project. Blast management procedures will be implemented, including:

- Training all relevant personnel on environmental obligations and safe handling of explosives;
- Inspections and preparation of proposed blast areas to ensure all soft, loose or blast damaged material is removed prior to drilling;
- Designing blasts to ensure that ground vibration and airblast overpressure limits are met, and there is no damage to life or property from flyrock, including consideration of wind speed, direction and other meteorological factors prior to blasting to minimise impacts on neighbours;
- Notification of blasting times to Private Receivers and maintenance of a free-call Blasting Information Line;
- Use of adequate stemming, a delay detonation system, and careful drilling and hole loading to ensure that the required blast design is implemented;
- Implementation of a Pre-Blast Decision Procedure and Fume Incident Notification Procedure (**Appendix C**);
- Monitoring of blasts at the closest private residences (or within a representative location) to determine whether airblast and ground vibration limits are met;
- Completion of the Blast Controller Checklist;
- Review of monitoring results and modification of the blast design, if necessary;
- Documentation of the date and time of the blast, location of blast holes and quantity of explosive used in each blast;
- Maintain all plant and equipment in a proper and efficient condition;
- Operate all plant and equipment in a proper and efficient manner; and
- Periodic review of blast management practices to evaluate performance and identify responsive action, if required.

5.1 Cumulative impacts

To prevent cumulative blasting impacts with surrounding mines, WCPL includes the Drill & Blast Supervisors from Bulga Operations, Mount Thorley Operations, Warkworth Operations, and Hunter Valley Operations on all blast email notifications.

In the event of a blast event being rescheduled, further e-mail notification is made alerting neighbouring mining operations of the change.

5.2 Public Notification

5.2.1 Pre-blast notification

WCPL operate a Blasting Hotline and SMS message service[3] to enable the public to get up-to-date information on blasting operations at the Mine. The Drill and Blast (D&B) Superintendent (or delegated authority), updates the Blasting Hotline 24hrs prior to the scheduled blast event. If a blast event is rescheduled, a revised schedule is posted. The contact details for the blasting hotline are:

- **24hr Blasting Information Line: (02) 8250 5205**

WCPL operate a Community Enquires Line and email address to enable the public to either make an enquiry or register a complaint regarding WCPL operations. The contact and email details for the community enquiries line and email address are:

- **24hr Community Enquiries Line: (02) 6570 2245**
- **E-mail Enquiries** – wambocommunity@peabodyenergy.com

WCPL undertake the following notifications on an annual basis:

- Advertise both the Community Enquiries Line and Blasting Information Line in local newspapers; and
- Notify the occupants of any land within 2km of the site of the Community Enquiries Line and Blasting Information Line

5.2.2 Fume Incident Notification

In the event that a blast fume event has been identified (as a result of a WCPL blast event) and having the potential to leave the Project Area towards the direction of adjacent neighbouring properties, the Environment and Community (E&C) Manager (or delegate) will initiate the Fume Incident Notification Procedure (**Appendix C**).

The E&C Manager (or delegate) will notify affected landholders of a potential fume event approaching their property and to proceed with measures to avoid potential exposure to the blast fume. Current contact details for landholders who may potentially be impacted by a blast fume event at the Mine are detailed in Section 3.4 of WCPL's Fume Incident Notification Procedure (**Appendix C**).

In the event the Fume Incident Notification Procedure is initiated, the E&C Manager will proceed with correspondence to those affected neighbours and government authorities in accordance with **Section 7.0** and **Section 9.5** of this BMP.

[3] WCPL provide a blast SMS notification service to members of the community who have registered for the service. The SMS message with blasting details is sent out the day before the scheduled blast event.

5.3 Property Inspections

Prior to commencing blasting activities in 2005, WCPL advised all landowners within 2 km of the site that they were entitled to a property inspection. If WCPL receives a written request for a property inspection from any landowner within 2 km of the site, WCPL will:

- 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 the land, and recommend measures to mitigate any potential blasting impacts; and
- Give the landowner a copy of this property inspection report within 14 days of receiving the report.

5.4 Property Investigations

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, WCPL will:

- 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
- Give the landowner a copy of the property investigation report within 14 days of receiving the report.

If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then WCPL will repair the damages to the satisfaction of the Secretary. If WCPL or landowner disagrees with the findings of the independent property investigation, then either party 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 (**Appendix D**).

5.5 Pre-Blast Meteorological Assessment

WCPL will only proceed with a scheduled blast event if suitable meteorological conditions that minimise the potential for blast generated dust and fume remain favourable. Data for the pre-blast meteorological assessment is taken from a range of meteorological monitoring locations, as discussed in **Section 6.1**.

A pre-blast meteorological assessment will be completed periodically throughout the course of the day leading up to the scheduled time of the blast. The pre-blast meteorological assessment will consider wind speed and direction, however other meteorological conditions that may influence the impact of blasts on the community such as temperature inversions will also be considered.

To identify favourable and unfavourable meteorological conditions, WCPL have developed a Pre-Blast Decision Procedure to decide if the scheduled blast can proceed. The Pre-Blast Decision Procedure considers occupational health and safety risks to personnel and potential impacts to community members. Prior to each blast, a range of variables are taking into consideration in developing specific blast permissions for each blast (Table 10). A traffic light system is used to inform whether the relevant variables indicate blasting is approved to proceed or not. Variables taken into consideration include:

- Location of the blast;

- Distance to nearest sensitive receivers;
- Wind speed and direction;
- Fume risk; and
- Appropriate factors of safety.

Table 10: Blast Permissions Traffic Light System

Trigger	Risk	Action
Code Green	Low	Blast is OK to proceed
Code Yellow	Medium	Undertake additional risk assessment process to determine whether blast is OK to proceed. Assessment should include shot size, sleep time, and fume risk. Where practicable, delay or postpone the blast pending more favourable blasting conditions
Code Red	High	Delay, postpone or cancel the blast pending more favourable blasting conditions

The Pre-Blast Decision Procedure considers dust and fume dispersion and direction, and assesses the potential for compliance and community impact risks and is used to prevent impacts to sensitive receivers. In determining an acceptable wind direction, and therefore likely fume or dust dispersion direction, the angle of offset from the sensitive receiver ever increases with shorter distances.

The Pre-Blast Decision Procedure includes clear guidelines on when blasting is to be delayed, postponed or cancelled. In the event that unfavourable blasting conditions are identified, the D&B Superintendent will liaise with the E&C Manager to determine the appropriate course of action.

Where conditions are determined to be unfavourable, the blast will be delayed, postponed or cancelled until favourable meteorological are observed.

There may be circumstances in which a blast event needs to be fired in less than ideal weather conditions. Failure to initiate blasts may indeed increase the potential for fume generation and or occupational health and safety risks to personnel and community members. In these specific and rare circumstances, the final decision making process will be elevated to the General Manager (or in their absence, to the delegated authority) with relevant input from D&B Engineer, D&B Superintendent and E&C Manager. The General Manager (or delegate) must approve the blast in writing by signing the appropriate section on the Blast Checklist.

5.6 Fume Management

WCPL have prepared and implemented a Blast Fume Management Strategy (BFMS) in accordance with correspondence received from Department of Planning and Environment outlining the general requirements under Stage 2 of the fume minimisation measures (*Elements of a Blast Fume Management Strategy)*. The purpose of the BFMS is to provide fume minimisation measures at WCPL for all surface blasting activities. A copy of the approved BFMS is provided in **Appendix A.**

5.7 Blast Design

Blast design is considered critical in the hierarchy of control measures when considering mitigating blast impacts. The D&B Engineer is responsible for every blast design at WCPL. The following are important blast control measures considered by the D&B Engineer when preparing a blast design, including but not limited to:

Review Historical Blast Results

- The D&B Engineer as part of the blast planning and design process is to review past blast data to identify and develop appropriate design and mitigation strategies from historical blast events.

Survey Control

- Initial blast designs are produced using recent survey and/or 3D geological modelling technology with specialised mining computer software e.g. Vulcan by Maptek, to define the limits and location of the blast pattern.

Bulk Explosives

- Where water is found to be present, the blastholes will be loaded with a suitable water resistant product as per the manufacturer's recommendations.

Stemming Height

- The D&B Engineer will design the shot with adequate stemming to minimise the chance of flyrock and overpressure, based on the results from previous blasts.

Stemming Material

- Quality aggregate will be used to stem blast holes to provide enhanced confinement over traditional drill cuttings) to prevent explosive ejection.

Face Burden

- Blast holes shall be designed to provide adequate burden to prevent face blow out and thus reduce the possibility of flyrock and airblast overpressure. Where necessary face surveying (laser profiling) techniques may be employed to measure overburden between the blast face and blast holes to ensure sufficient burden is present to prevent blowouts and blast anomalies.

Blast Hole Length/Depth

- This is initially determined from the geological model of the coal seams at WCPL. Holes are drilled from the floor of the coal seam through the interburden to the top of next coal seam. Where the length of the blast hole is deemed to be excessive and there is a risk of exceeding the maximum instantaneous charge (MIC) required to comply with site environmental conditions, the blast shall be redesigned. The D&B Engineer will assess the viability of options such as reducing the depth of the blast by drilling to a chosen reduced level (RL), reducing the diameter of the blasthole or reducing the MIC by deck loading the blasthole with an interhole delay.

5.8 Blast Planning

There are several important steps undertaken at WCPL to ensure blast design is implemented correctly in the field to minimise blast impacts. The D&B Superintendent is responsible for carrying out the correct procedures when implementing each blast design at WCPL. The following are essential steps overseen by the D&B Superintendent when preparing a blast. They include, but are not limited to:

Drill Preparation

- The area for the proposed drill pattern is cleaned and then inspected by the D&B Superintendent prior to the setting out of the drill pattern.

Drill Pattern Set Out

- WCPL survey department are provided with the coordinates of the designed drill pattern and this is set out in the field using GPS technology and traditional survey techniques. GPS units are attached to each drilling unit to accurately drill the blast pattern as per design.

Drill Blast Holes

- Daily records are kept by the Drill Operators or Blast Contractors documenting hole depths and anomalies in the predicted geology. This information is then utilised by the D&B Engineer to ensure the holes are not over drilled, thus reducing the possibility of coal damage and overloading of holes with bulk blasting product.

Survey Control

- Where planned face holes are unable to be set out in the correct location the surveyors provide the adducted positions back to the D&B Engineer to modify the design.

Blast Hole Dipping

- The Blast Contractor or shot crew dips the holes to test their depth and identify for the possible presence of water. This information is then used by the D&B Engineer to calculate the explosive quantities per hole and make any modifications as required. Where any trace of water is recorded a suitable water resistant bulk explosive is assigned to the hole/s to minimise the generation of fume.
- Where possible holes that have a small amount of standing water at the bottom of the hole are sealed off with a gas bag just above the water level to isolate the explosives from the water.
- Where holes are found to be completely water logged, a dewatering unit will be employed to purge the water from the holes. A check is then made to ensure the holes are not refilling with water before filling with bulk explosives.

Blast Loading

- Field data is used by the D&B Engineer to produce ‘load sheets’ which stipulate the quantity of the explosives and stemming to be placed in each hole to achieve the designed powder factor. The load sheets are printed off and used by the Blasting Contractor or shot crew to load each hole specific to the requirements of the load sheet. Specially constructed mobile manufacturing units (MMU’s) are used by the Blasting Contractor to ensure the correct mix of product is achieved and correct stemming height is obtained.

- Where possible blasts are designed to ensure the prompt loading of drill holes and subsequent firing of the shot to minimise ‘sleep time’ and exposure to moisture.

Blast Tie Up

- The D&B Engineer in consultation with the D&B Superintendent and Shot Firer creates a ‘Tie Up Plan’ detailing the method for connecting and firing the shot. A paper plan is produced and given to the contracted Shot Firer who implements the Tie Up in the field.
- Upon completion of the Tie Up, the Shot Firer in conjunction with the D&B Supervisor carries out the Pre Blast Checklist prior to detonating the shot.

Fume Assessment

- A pre-shot fume assessment is to be undertaken by the designated Shot-Firer and the D&B Engineer and Blast Controller.

5.9 Blast Exclusion Zones

- An appropriate exclusion zone for personnel will be established around each blast site prior to firing a blast. The exclusion zone will be established beyond the expected range of any fly rock with an additional safety margin. The establishment of this zone will minimise the risk of any injuries to people or livestock due to fly rock;
- Any unusual level of fly rock generated by blasting, with the potential to cause a safety risk will be noted for each blast. This information will be used to continually re-assess the adequacy of blast design controls in reducing the generation of fly rock. The information will also be used to re-assess the size of the safety exclusion zone established for people and livestock in the vicinity of a blast; and
- If fume or dust potential generation is identified, the D&B Superintendent may choose to extend the exclusion zone downwind from the blast to minimise the chance of exposure to personnel.

5.10 Flyrock Management

To ensure WCPL reduce the potential for flyrock generation, the following key mitigation measures will be implemented, including, but not limited to:

- Implement appropriate blast exclusion zones for each blast event. The blast exclusion zone considers the expected range of any fly rock with an additional safety margin that reduces the risk for damage to WCPL owned property, equipment or other infrastructure from flyrock;
- In addition, WCPL landholdings are security patrolled, fenced, sign posted and also provide a sufficient buffer between neighbouring private landholders and their livestock from WCPL blasting activities;
- All designs will clearly identify hole inclination to avoid the possibility of reduced face burden, thus avoiding the potential for flyrock incidents; and
- Any unusual level of fly rock generated by blasting, with the potential to cause a safety risk, will be noted for each blast. This information will be used to continually re-assess the adequacy of blast design controls in reducing the generation of fly rock. The information will also be used to re-assess the size of the safety exclusion zone established for people and livestock in the vicinity of a blast.

5.11 Heritage Sites

5.11.1 Aboriginal Cultural Heritage

A survey and assessment of Aboriginal cultural heritage within the Project Area was conducted during the 2003 Environmental Impact Statement (2003 EIS). No blasting related impacts to Aboriginal heritage were predicted as a result of the Mine's operations.

Disturbance of Aboriginal heritage artefacts located within the Project Area are subject to a Section 90 Permit issued under the *National Parks & Wildlife Act 1976.* An Aboriginal Heritage Impact Permit (AHIP) No. 2222 has been issued to WCPL under the *National Parks & Wildlife Act 1976*, expiring on the 1 March 2025.

Should further Aboriginal cultural heritage artefacts be found, which are not subject to AHIP No. 2222 and determined at risk of impact from blasting activities, then a further assessment will be undertaken in consultation with WCPL archaeological specialists.

5.11.2 Wambo Homestead

WCPL currently monitors and reports on potential ground vibration impacts on the Wambo Homestead Complex (WHC). The following mitigation measures are implemented:

- Monitoring is undertaken at the WHC for all blasts within 2km of the Complex.;
- A suitably qualified and experienced structural engineer, with expertise in vibration and blast monitoring has been appointed to examine all monitoring records from the WHC blast monitoring station. The appointment of the structural engineer was approved in writing by the Director of the NSW Heritage Branch (formally the NSW Heritage Office) in November 2005 (**Appendix B**);
- The structural engineer reports to WCPL on the monitoring results each month for blasting within 2km of the WHC and 6 monthly for the remainder of the Mine. Recommendations are made to ensure ongoing conservation and damage prevention. Copies of these reports are forwarded to the NSW Heritage Branch;
- The structural engineer will inspect the WHC structures annually and as soon as practical, but no later than 3 days after blasting monitoring which exceeds the ground vibration level of 5mm/s; and
- The structural engineer will make an assessment of whether blasting within 2km of the WHC 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 Branch. 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 Branch.

6.0 Blast Monitoring Program

WCPL's Blast Monitoring Program includes monitoring of airblast overpressure and ground vibration for all blasts at locations as close as reasonably practical to the nearest Private Receiver. Monitoring will also be undertaken at relevant public infrastructure, Aboriginal heritage sites and the Wambo Homestead Complex (**Table 11** and **Figure 3**).

The objective of the monitoring program is to obtain assurance that amenity overpressure and vibration limits are being achieved at Private Receivers and that damage criteria are being achieved for public infrastructure, Aboriginal heritage sites and the Wambo Homestead Complex.

6.1 Meteorological Monitoring

WCPL maintains a continuous on-site meteorological monitoring station that complies with the requirements of the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007). The location of this meteorological monitoring station is identified on **Figure 3**.

The meteorological station is routinely calibrated and maintained by appropriately accredited technicians. The following parameters are monitored:

- Rainfall;
- Relative humidity;
- Temperature – measured at 2, and 10m above ground level;
- Wind speed – horizontal and vertical;
- Wind direction – measured at 10 m above ground level;
- Sigma theta;
- Pasquil stability classification;
- Solar radiation; and
- Temperature lapse rate.

WCPL also maintain 4 remote weather stations for environmental management purposes which are available for use in the Pre-Blast Meteorological Assessment.

6.1.1 Mobile Weather Station

WCPL also maintains a mobile weather station to provide localised weather readings for blast events at the northern end of the Mine. This weather station will remain available while blasting occurs at the northern end of the Mine. These readings will be used in addition to the weather readings taken from the meteorological station approved under the EPL 529. Meteorological data from both weather stations will be used during the Pre-Blast Meteorological Assessment to assess dust and fume risks associated with each blast.

6.2 Blast Monitoring Locations

Monitoring locations for overpressure and ground vibration are shown in **Table 11** and **Figure 3.**

Table 11: Blast Monitoring Sites

Location	Site ID	Purpose	Easting	Northing	Justification
Wambo Homestead	BM01	Structural	311539	6393221	Data used to assess damage in accordance with *Australian Standard AS 2187.2-1993 "Explosives – Storage Transport and Use" for Sensitive and Heritage Structures*
Kelly (Warkworth Village)	BM02	Compliance	314120	6394560	Representative of the nearest sensitive receiver to east of the Mine
Harris (Wambo Road)	BM03	Performance	311155	6390609	Performance based monitoring on WCPL owned land to the south of the Mine
Muller (Jerrys Plains)	BM05	Compliance	305919	6399662	Representative of the nearest sensitive receiver to north-east of the Mine
Thelander (Jerrys Plains)	BM07	Compliance	304496	6398655	Representative of the nearest sensitive receiver to north west of the Mine

6.3 Methodology

Instrumentation used to measure and record the airblast overpressure and ground vibration levels will meet the requirements of *Australian Standard AS 2187.2-2006 (Explosives – Storage, Transport and Use - Use of Explosives).*

Monitoring equipment used on-site will typically include a geophone (e.g. standard 4.5 hertz geophone with a range of up to ± 556 mm/s) and microphone (e.g. with a range of between 80 to 140 decibels). The monitoring equipment will display the due date of upcoming calibration. Calibration of the monitoring units will be undertaken in accordance with manufacturer's specifications.

All blasts will be video recorded to enable a post blast assessment of potential dust and fume impacts.

6.4 Data Collection

WCPL utilise both permanent fixed and temporary roaming blast monitoring units to collect relevant blast monitoring data. Fixed units utilise a radio transmitter to enable instantaneous transfer of data to relevant personnel. This data can be immediately accessed to enable an initial compliance assessment. Data from the roaming units is collected and stored within the unit and is available for download upon return to the office. All blast monitoring data is retained in a consolidated data base maintained by WCPL Environmental Department.

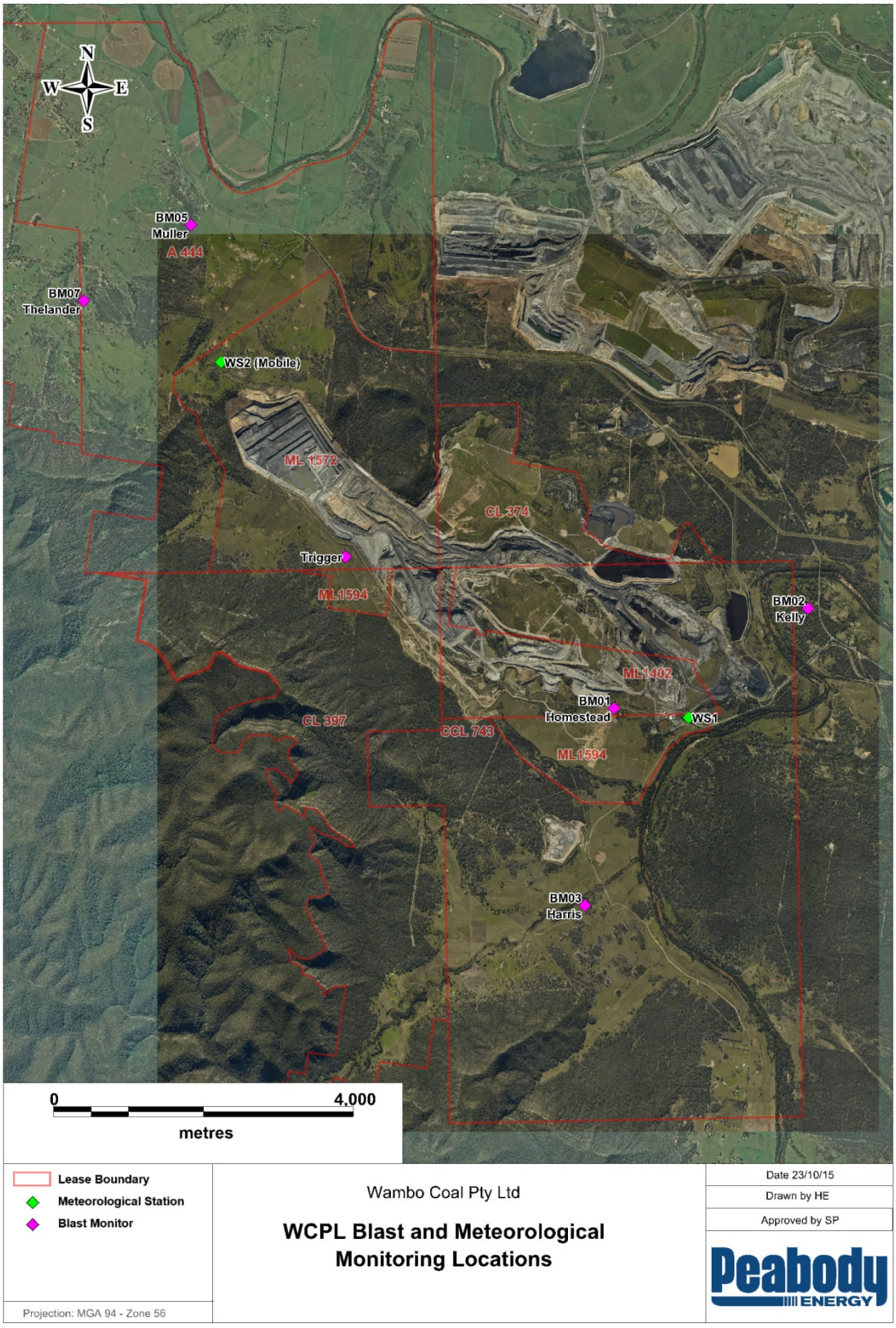

Figure 3: Blast Monitoring Locations

6.5 Evaluation of Performance

All blast monitoring results, video recordings of the blast and visual assessments made by relevant WCPL personnel, will be evaluated following the blast to determine compliance with the blast criteria and performance indicators in **Section 3.0**, and to determine whether the best practice measures in **Section 5.0** have been successful.

WCPL will be deemed in non-compliance when airblast overpressure and ground vibration results exceed the blast criteria in Table 8 and Table 9 when monitored at locations representative of privately owned residence/s.

WCPL will record an incident where a 'Rating 3' blast fume vent is observed leaving the Project Area or closed portion of a public road, or in the event of a 'Rating 4' or 'Rating 5' fume event.

If a blast fume event is observed leaving the Project Area towards a sensitive receiver location, the Fume Incident Notification Procedure will be initiated in accordance with **Section 5.2.2.**

Notification of reportable incidents to the relevant government authorities will be in accordance with **Section 9.5**.

6.6 Mitigation Strategies to Prevent Reoccurrences

In the event of a reportable environmental incident, all corrective actions identified through an investigation process will be implemented to mitigate the potential for a reoccurrence. Blasting mitigation and corrective management measures will consider:

- Proximity of future blast activities to sensitive receivers;
- Appropriate meteorological conditions;
- A review of the Pre-Blast Decision Procedure; and
- A review of blast design and planning protocols.

7.0 Adaptive Management

7.1 Contingency Plan to Manage Unpredicted Impacts

Blasting controls (**Section 5.0**) and monitoring (**Section 6.0**) have been implemented to minimise blast related impacts and monitor for fume events, ground vibration and airblast overpressure at neighbouring properties and other sensitive locations.

In the event that unpredicted impacts occur as a result of blasting activities at the Mine WCPL will:

- Initiate Fume Incident Notification Procedure in regards to a fume event leaving the Project Area in the direction of adjacent neighbouring properties;
- Implement Fume Incident Notification Procedure (**Section 5.2.2**) to clarify the immediate post-incident responsibilities in regards to a blast fume event leaving the Project Area;
- Review the current blast controls and monitoring, to ensure it is effective and Blast Criteria is being met;
    - If the system is effective and Blast Criteria is being met, continue implementation of blast controls and monitoring;
- If the system is not effective and Blast Criteria is being exceeded, undertake reporting in accordance with **Section 9.0**;
- Develop and implement additional blast management or mitigation measures in consultation with the affected landowners; and
- Undertake follow-up blast monitoring to assess the effectiveness of the additional measures.

WCPL have identified several applicable blasting scenarios that pose a potential risk to achieving the outcomes of the BMP. A Trigger Action Response Plan (TARP) as provided by **Table 12** provides contingency measures, responsibilities and management for unforseen impacts as a result of blasting activities.

Table 12: BMP Trigger Action Response Plan

Unpredicted Impacts	TARP Code	BMP 'Achieved'	BMP 'Not Achieved'
Generation of excessive fume	**Trigger**	• No detectable blast fume	• Any blast fume verified leaving the Project Area in the direction of adjacent neighbouring properties • Blast fume verified **Level 3** or above and/or leaving Project Area
	Action	• No immediate action required other than monitor fume for changes	• Implement the Blast Fume Management Strategy (**Appendix A**) • Fume Incident Notification Procedure • Implement PIRMP • Record incident as required by

Unpredicted Impacts	TARP Code	BMP 'Achieved'	BMP 'Not Achieved'
			Section 9.0
	Response	• Implement mitigation strategies to prevent reoccurrence after completion of investigation	
	Responsible Persons	• E&C Manager • D&B Engineer	

Unpredicted Impacts	TARP Code	BMP 'Achieved'	BMP 'Not Achieved'
Exceedance of blast specific criteria	**Trigger**	• Blast monitoring reports confirm blast specific criteria were achieved at: - Private Residences - Wambo Homestead Complex (WHC)	• Blast monitoring reports confirm specific criteria was exceeded at: - A Private Residence (**Table 8** and **Table 9**); and - Confirms results are in the reportable range (**Section 9.0**); and/or • Ground vibration and air blast levels at the WHC exceed the structural damage assessment criteria (**Section 3.3**)
	Action	• No immediate action required	• Report exceedances over 120dBL and 10mm/s at privately owned as required by **Section 9.0** and in accordance with the **PIRMP** • Inform property owner/s within 14 days in accordance with **Section 5.4** • Initiate property inspections at the formal request of property owner/s in accordance with **Section 5.4** • E&C Manager to engage WCPL approved structural engineer to inspect the WHC structures as soon as practical, but no later than 3 days after blast monitoring results (**Section 5.11.2)** • Advise if action is required to repair damage to WHC in consultation with NSW Heritage Branch • Record incident as required by **Section 9.0**
	Response	• Implement mitigation strategies to prevent reoccurrence after completion of investigation	
	Responsible Persons	• E&C Manager • D&B Engineer	

Unpredicted Impacts	TARP Code	BMP 'Achieved'	BMP 'Not Achieved'
Failure of Blasting Mitigation Measures	**Trigger**	• Project specific blast criteria achieved and other blast mitigation measures working to control fly rock and dust generation in accordance with BMP	• Project specific blast criteria achieved however other mitigation measures did not aedately control fly rock and/or excessive dust generation in accordance with BMP
	Action	• No immediate action required	• Implement **PIRMP** if dust poses threatening material harm to the environment or community • Record incident as required by **Section 9.0**
	Response	• Implement mitigation strategies to prevent reoccurrence after completion of investigation	
	Responsible Persons	• E&C Manager • D&B Engineer	

8.0 Community Complaint Response

All blasting related community complaints received by WCPL will be recorded within the Community Complaints Register. The E&C Manager will investigate the complaint, which will include, where possible, contacting the complainant within 24 hours to discuss the complaint. A review of the effectiveness of the corrective or preventative actions will be conducted within a month of the complaint and the relevant work procedures updated if required.

Preliminary investigations will commence as soon as practicable upon receipt of a complaint to establish if WCPL is responsible. All efforts will be made to determine the likely causes contributing to the complainants concerns using information such as the climatic conditions at the time of blast, the nature of activities taking place and recent monitoring results.

WCPL will attempt to address the complainants concerns such that a mutually acceptable outcome is achieved. However, if required, the Independent Dispute Resolution Process would be referred to (**Appendix D**).

In the event that exceedances of the blasting criteria are detected, any affected landowner will be notified within fourteen days of the confirmation of the exceedance.

Details of all community complaints will be included in the Monthly Environment Monitoring Report. WCPL will retain a copy of the Community Complaints Register for at least four years. The E&C Manager will ensure the latest Community Complaints Register is posted on the WCPL website.

9.0 Review and Reporting

9.1 Review

The performance of the blast monitoring and management programs outlined in the BMP is to be reviewed annually by the E&C Manager and the D&B Engineer. A complete review of the BMP will occur:

- Every three years;
- When there are changes to consent or licence conditions relating to blast management or monitoring;
- Following significant blast related incidents at WCPL;
- Following an independent environmental audit which requires BMP review; or
- If there is a relevant change in technology, practice or legislation.

The revised BMP will be re-submitted to the Secretary for approval as required by Condition 20, Schedule 4 and Condition 6, Schedule 6 of DA305-7-2003.

9.2 Annual Review

Prior to the end of March each year, WCPL will review the environmental performance of the Mine and submit an Annual Review report to the DP&E. This report will:

- Describe the development (including any rehabilitation) that was carried out in the past year, and the development that is proposed to be carried out over the next year;
- Include a comprehensive review of the monitoring results and complaints records of the Project over the past year, which includes a comparison of these results against the:
    - Relevant statutory requirements, limits or performance measures/criteria
    - Monitoring results of previous years; and
    - Relevant predictions in the EA;
- Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- Identify any trends in the monitoring data over the life of the Project;
- Identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- Describe what measures will be implemented over the next year to improve the environmental performance of the Project.

9.3 EPL Reporting

WCPL will prepare and submit an Annual Return comprising a certified Statement of Compliance and a signed Monitoring and Complaints Summary to the EPA at the end of each EPL 529 reporting period.

WCPL will include the results of all blast monitoring required by EPL 529 as a Blast Monitoring Report with the Annual Return. The Blast Monitoring Report will include the

following information relating to each blast carried out within the premises during the reporting period covered by the Annual Return:

- The date and time of each blast;
- The location of each blast on the premises;
- The blast monitoring results (airblast overpressure and ground vibration) and at each blast monitoring location; and
- An explanation for any missing blast monitoring results.

The Annual Return for the reporting period will be supplied to the EPA by registered post not later than 60 days after the end of each reporting period. WCPL will retain a copy of the Annual Return for a period of at least four years after the Annual Return was due to be supplied to the EPA.

9.4 Website Updates

A comprehensive summary of the blast monitoring results will be made publicly available at WCPL website:

http://www.peabodyenergy.com/content/404/australia-mining/new-south-wales/wambo-mine)

Information on the website will be updated regularly as required by DA305-7-2003.

WCPL will also ensure that any information relevant to blast management is uploaded to the website (and kept up to date). This includes:

- Current statutory approvals;
- Approved strategies, plans or programs required under the DA305-7-2003;
- A community complaints register;
- Minutes of Community Consultative Committee (CCC) meetings;
- Annual Reviews;
- A copy of any Independent Audits and WCPL's response to any recommendations in any audit; and
- Any other matter required by the Secretary.

9.5 Reportable Environmental Incidents

All reportable incidents will be reported via the EPA's Environmental Line on **131 555** by the E&C Manager in accordance with WCPL's Pollution Incident Response Management Plan (PIRMP).

In accordance with the PIRMP, WCPL must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of *Part 5.7* of the *POEO Act*, for example:

- **Fume generation**: The reporting of fume events is discussed in the Blast Fume Management Strategy (**Appendix A**) (Section 6.3 Reporting and Recording of Blast Fume Events);

- **Exceedence of blast specific criteria**: All blast overpressures exceeding 120dBL and ground vibration levels exceeding 10mm/s recorded at any of the external blast monitors located at private residences (internal investigations will be undertaken when blast overpressures exceed 115dBL or ground vibration levels exceed 5mm/s); and
- **Public Safety & Infrastructure Damage**: A blast event that causes damage to public infrastructure, poses a risk to safety of people or livestock in the surrounding area.

For all other incidents that do not cause threatening material harm to the environment associated with the Project, WCPL will notify the Secretary and any other relevant agencies as soon as practicable after WCPL becomes aware of the incident.

Within 7 days of the date of the incident, WCPL will provide the Secretary and any relevant agencies with a detailed report on the incident to include:

- The cause, time and duration of the event;
- Where possible the type, volume and concentration of every pollutant discharged as a result of the event;
- The name, address and business hours telephone number of employees or agents of the licensee who witnessed the event;
- The name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- Action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary;
- Details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- Any other relevant matters.

10.0 Responsibilities

Table 13 below summarises responsibilities documented in the BMP. Responsibilities may be delegated as required.

Table 13: BMP Responsibilities

No	Task	Responsibility	Timing
1	Overpressure and vibration limits as specified in development consent to be met	Open Cut Manager/ D&B Engineer	For each blast event
2	Blasting for open cut to be conducted between the hours of 9am to 5pm, Monday to Saturday only	Open Cut Manager/ D&B Engineer	For each blast event
3	No blasting on Sundays or public holidays without the prior written approval of OEH	Open Cut Manager/ D&B Engineer	As required
4	Where practical, blasting activities will be co-ordinated with surrounding mines to minimise cumulative impacts	D&B Supervisor/ D&B Engineer	As required
5	Airblast overpressure and ground vibration will be monitored at the monitoring locations for each blast event	E&C Manager	For each blast event
6	Fume Incident Notification Procedure implemented	E&C Manager	As required
7	Exceedances of overpressure and/or vibration to be managed in accordance with **Section 7.0**	E&C Manager	As required
8	Blasting Complaints to be responded to in accordance with **Section 8.0**	E&C Manager	As required
9	Annual Review to include blast monitoring results, complaints, mitigation measures undertaken and a review of the monitoring undertaken	E&C Manager	Annually
10	Regulator review to be undertaken of the BMP	E&C Manager	As required
11	Implementation of blast mitigation measures in accordance with **Section 5.0**	D&B Engineer/ E&C Manager	As required
12	Prepare investigation reports and implementation of corrective actions in accordance with **Section 7.0** and **Section 9.0**	E&C Manager/Open Cut Manager/ D&B Engineer/	As required
13	Implementation of the Road Closure Management Procedure when blasting is within 500m of the Golden Highway (**Appendix E**)	D&B Engineer/ E&C Manager	As required

11.0 References

- Development Consent (DA305-7-2003)
- Development Consent (DA177-8-2004)
- Wambo Development Project Environmental Impact Statement (EIS), July 2003
- Resource Strategies Pty Ltd (2003) Wambo Coal Mine Project Environmental Impact Statement. Report prepared for Wambo Coal Pty Ltd
- Wambo Environment Protection Licence (529)
- Standards Australia (2006) Australian Standard (AS) 2187.2-2006: Explosives – Storage and Use – Use of explosives
- Coal Mine Health and Safety Act 2002
- Coal Mine Health and Safety Regulation 2006
- Work Health and Safety Act 2011
- Work Health and Safety Regulations 2011
- Explosives Act 2003
- Explosives Regulations 2005
- MDG 1012 Use of explosives in underground coal mines
- AS 2187.1 - 1998: Explosives – Storage, Transport and Use, Part 1 - Storage
- AS 2187.2 – 2006: Explosives – Storage, Transport and Use, Part 2 – Use of Explosives
- AS 2187.0 –1983: Storage transport and use – Terminology
- Australian Explosives Industry and Safety Group Inc (2011) Code of Practice; Prevention and Management of Blast Generated NOx Gases in Surface Blasting

APPENDIX A
BLAST FUME MANAGEMENT STRATEGY

WAMBO COAL
BLAST FUME MANAGEMENT STRATEGY

Document No. WA-ENV-MNP-507.1
November 2015

Document Control

Document No.	WA-ENV-MNP-507.1
Title	Blast Fume Management Strategy
General Description	Responses and protocols for the minimisation of post blast fume generation
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	Nov 2012	Original Draft	WCPL	TF	
2	Oct 2015	Review and update to ensure consistent with revised Blast Management Plan (BMP) (Version 5)-Draft for Submission to DP&E	WCPL, Palaris	SP	
3	Nov 2015	Updated to address DP&E comments on Rev. 2	WCPL	SP	

CONTENTS

Tables

Figures

LIST OF ATTACHMENTS

1.0 Introduction

1.1 Background

The Wambo Coal Mine (the Mine) is situated approximately 15 kilometres west of Singleton, near the village of Warkworth, New South Wales (**Figure 1**). Wambo is owned and operated by Wambo Coal Pty Limited (WCPL), a subsidiary of Peabody Energy Australia Pty Limited.

A range of open cut and underground mine operations have been conducted at WCPL since mining operations commenced in 1969. Mining under the current Development Consent (DA305-7-2003) commenced in 2004 and permits both open cut, underground operations and associated activities to be conducted.

The approved run-of-mine (ROM) coal production rate is 14.7 million tonnes per annum and all product coal is transported from WCPL by rail. A summary of the approved Wambo Coal Mine is provided in the WCPL Blast Management Plan (BMP) (Table 1).

This Blast Fume Management Strategy (BFMS) has been prepared in accordance with correspondence received from the NSW Department of Planning and Environment (DP&E), formerly known as the NSW Department of Planning and Infrastructure (D&PI), on 23 August 2012, outlining the general requirements under Stage 2 of the fume minimisation measures (**Attachment A**). Stage 1 of the fume mitigation measures involved the commencement of rating and recording blast fume events following on from the Blast Fume Workshop held in Singleton on 19 June 2012.

1.2 Purpose

The purpose of this BFMS is to detail fume minimisation measures at the Mine for all surface blasting activities. The BFMS is an annexure to WCPL's BMP, a requirement of Condition 19, Schedule 4 of DA305-7-2003.

The structure of the BFMS is aligned with the *Elements of a Blast Fume Management Strategy* as provided by DP&E on 23 August 2012, regarding procedures and fume mitigation measures for:
:

- Monitoring & Reporting
    - Rating and Recording of Blast Fume Events
    - Reporting of Significant fume events
- Fume Mitigation
    - Geology
    - Meteorological Conditions
    - Blast Design
    - Product Selection and Quality
    - Blast Crew Education
    - On bench practices
- Emergency Response Procedures

1.3 Scope

The BFMS applies to all WCPL employees, contractors and sub-contractors, undertaking all or any surface blasting activities within WCPL's mining authorisations and approved mining areas (**Figure 2**).

1.4 Definitions

Definitions of specific technical terms used in the BFMS are detailed in **Table 1** below.

Table 1: Definitions

Term	Definition
ANFO	A mixture of ammonium nitrate and fuel oil with or without a dye colouring agent (Definition from AS2187.0)
Dynamic water	Water that is in motion (i.e. flowing water)
NOx (Oxides of Nitrogen)	A multiple combinations of oxides of nitrogen (N2O2, NO, NO2, N2O3, N2O4, N2O5) with nitrogen dioxide (NO2) being the principle hazardous nitrous fume
Post Blast Fume	Gases generated by the detonation of explosives during blasting
Precursor	A material resulting from a chemical or physical change when two or more substances consisting of fuels and oxidisers are mixed is intended to be used exclusively in the production of an explosive. (Definition from AEMSC Code of Good Practice Precursors for Explosives.
Sleep Time	The time between explosives being loaded into a blast hole and their initiation (Definition from AS2187.0)
Wet holes	Drilled holes that contain water, have been dewatered or moisture is present in the base or walls

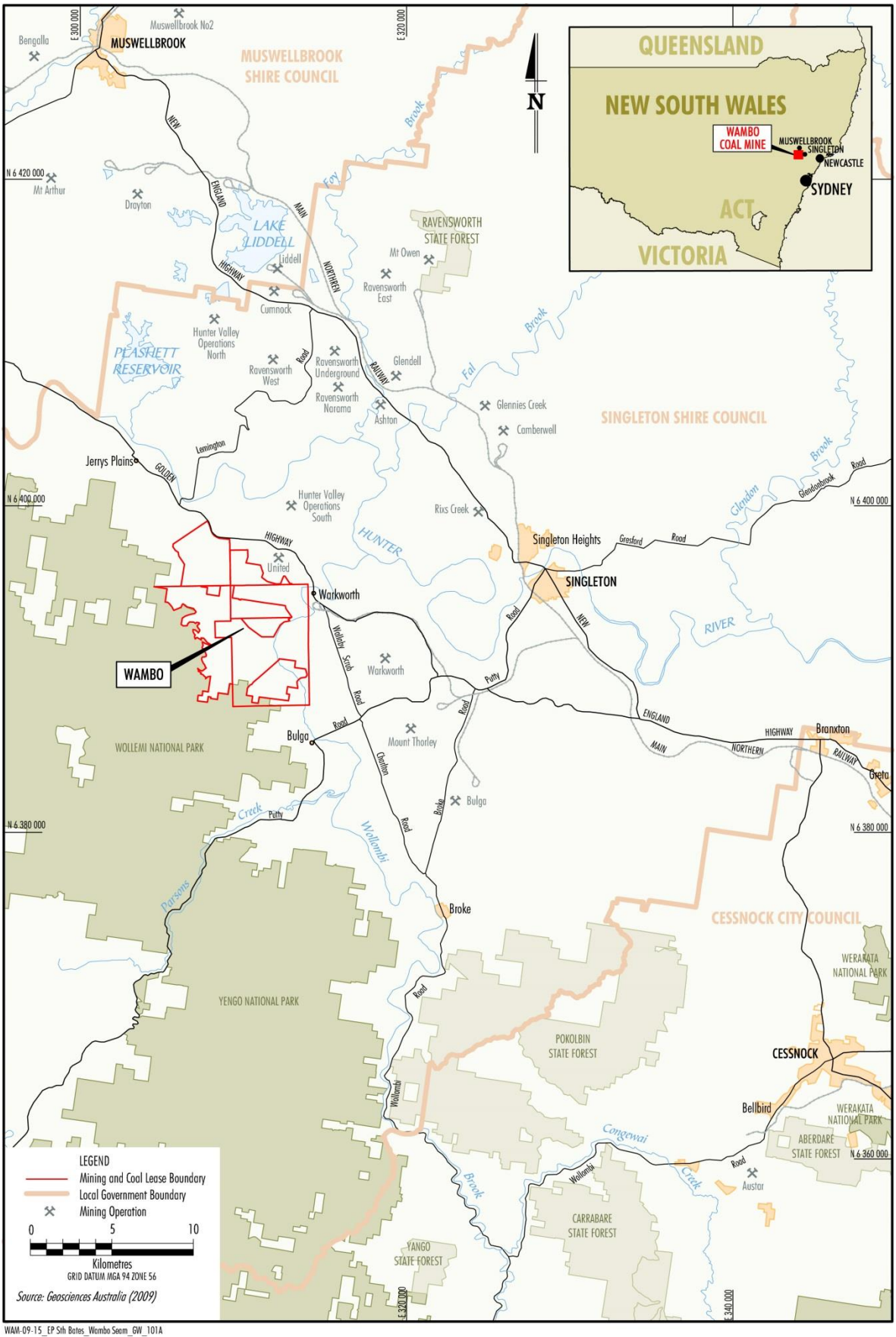

Figure 1: Wambo Coal Regional Location

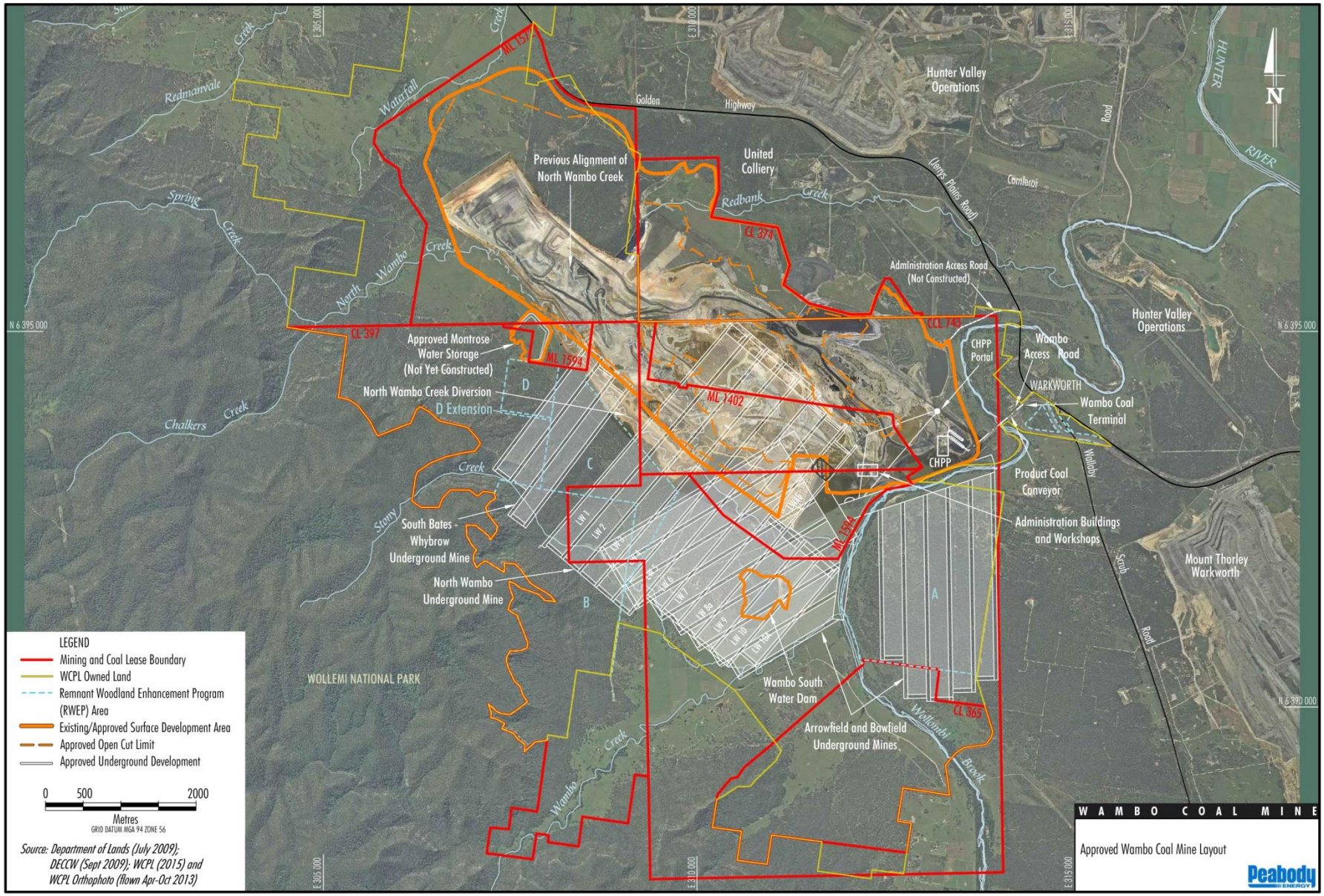

Figure 2: Approved Wambo Coal Mine Layout

2.0 Blast Fume Mitigation

2.1 Blast Process

WCPL has developed a blast process flowchart that summaries the various tasks involved in the blast process, who is responsible for those tasks and what quality assurance processes are in place for the task. This flowchart is provided in **Figure 3**.

Figure 3: Blast Process Flowchart

2.2 Blast Fume Mitigation Matrix

WCPL has developed a blast fume mitigation risk matrix for the Mine, which summarises the fume risk for each seam and the required fume mitigation controls to be implemented for those risks. This matrix is provided in **Table 2**.

Table 2: Fume Mitigation Risk Matrix

Seam	Description	Width (m)	Process	Fume Risk (Low, Med, High)	Fume Mitigation Controls
Whybrow Seam	Waste	30	Blast	***High***	• Appropriate powder factor • Utilise gassed 2070 with appropriate density Minimise sleep time
	WWA	1.178	Free Dig	Not Applicable	
	Partings				
	WWC	0.547			
	Waste				
	WWD1	0.2			
	Waste				
	WWD2	0.335			
Redbank Seam	Waste	6.845	Blast	Low	
	RCA	0.338	Free Dig	Not Applicable	
	Waste	1.5			
	Partings				
	RCC	0.711			
	Partings	0.438			
	RCD	1.289			
Wambo/Rider Seam	Waste	12	Blast	Low	
	WRA	0.538	Free Dig	Not Applicable	
	Waste	11.685	Blast	Low	
	WRC	0.442	Free Dig	Not Applicable	
	Waste	17.145	Blast	***Med***	• Dewatering the holes or use water resistant product • Minimise sleep time <7 days
	WMA	2.031	Free Dig	Not Applicable	
Whynot Seam	Waste	15.5	Blast	***Med***	• Dewatering the holes or use water resistant product • Minimise sleep time <7 days
	WTA	2.615	Free Dig	Not Applicable	

2.3 Blast Fume Factors and Management Strategies

Many factors have been identified as contributing to post blast fume. A combination of these factors or any single factor may contribute to the production of post-blast fumes. These factors have been classified under the following categories and management strategies outlined in
Table 3:

- Geology;
- Meteorological conditions;
- Blast design;
- Product selection and quality;
- Blast crew education; and
- On bench practices.

Table 3: Blast Fume Factors and Management Strategies

Category	Factor	Management Strategy
Geology	Blasting in weak/soft strata (<20m of surface)	• Free dig where possible (drilled holes often fail) and the high moisture content in the clay band results in significant degrade of the AN structure)
	Faulted/fractured ground	• General practice is to stand off the faulted fractured ground by 1-4m. This is dependent on many factors. • Geology should be noted and consideration made in the blast design
	High Clay content holes	• Load the 70 % emulsion product with appropriate powder factor
	Time between drilling & loading	• No correlation noted for holes loaded with varying delays after drilling, this does not include wet weather events or drilling in soft strata as these are considered under separate management strategies.
	Wet holes	• Dewatering drilled holes, check if the water is regenerating. • Gas bag of hole to prevent product contact with wet base • Use blast products suitable for wet conditions.
	Mud/sediment in base of holes	• Where feasible gas bag toe of hole to prevent product contact with wet base
Meteorological Conditions[1]	Rain Events and Strong Winds	• A pre-blast meteorological assessment will be completed periodically throughout the course of the day leading up to the scheduled time of the blast. The pre-blast meteorological assessment will consider wind speed and direction, however other meteorological conditions that may influence the impact of blasts on the community such as temperature inversions will also be considered. • A meteorological and dispersion forecasting tool is actively used to identify the most favourable day, and time of day, for blast initiation. Opportunities are identified to reduce impacts on the local community. • Loaded shots affected by rain will be assessed by the Drill and Blast (D&B) Engineer in consultation with the Shotfirers • Where conditions are determined to be unfavourable, the blast will be delayed, postponed or cancelled until favourable meteorological conditions are observed.
Blast Design	Explosives desensitisation	• Depth can contribute to desensitisation and decked loading style applied, however the depth of drilled holes on the site does not exceed 40m and is therefore not considered a contributor to fume. • Tie up <125m between the holes, no greater than 175ms
	Blast layout	• Increased precision through GPS guided equipment.

Category	Factor	Management Strategy
	Priming	• Boosters placed at design depth RL • Holes deeper than 15m are double primed to ensure full reaction of the column of bulk explosives.
	Blast delays	• Minimise sleep times of loaded shots where possible based on the manufacturers recommendations • Fume risk when blasting outside of these parameters will be assessed by the D&B Engineer in consultation with the Shotfirers
Product Selection and Quality	Blast contractor selected	• Blast contractor selection included the following criteria: ○ Local R&D Team of Engineers to provide support on blast design and product selection
	Explosive product selected	• Selections based on manufacturer's recommendations and consultation with the Blast Contractor
	Compliance to manufactures specifications	• The site D&B Engineer in consultation with the Blast Contractor will continue to monitor and progress product application and management against manufacturer's specifications. This process will result in a defined site specific blast product application.

	Explosives Quality	• Confirmed by the Blast Contractor's Quality Control process inclusive of the following:
		  ○ MPU calibrations
		  ○ Product samples collected for every MPU for each shot
		  ○ Gassing rates and final density recorded on Delivery record

	Mixing of materials	• Product mixed by MPU (calibrated and sampled)
	Delivery system	• MPU calibrated fortnightly at a minimum or as required.
	Product rotation	• Prill stored in Silos • Pre-delivery inspection • Visual inspection on arrival at site
	Stemming materials & techniques	• Stemming diameter 20 to 30mm (Inspected by Shotfirer) • Stemming depth determined by D&B Engineer dependent on individual blast conditions
	Loading sequence & technique	• Loading procedure is driven by product selection and manufacturer's specifications.
	Variation to blast plan	• Any irregularities or variations to the blast plan are to be communicated by the shotfirers to the D&B Engineer and, where relevant, in consultation with the Blast Contractor
	QA & Auditing	• Blast Contractor Auditing and Inspection Schedule
Blast Crew Education	Qualifications of Blast Crew	• Blast Contractor internal policy. • Training records maintained

	Training requirements of blast crew	• Blast Contractor operator training system incorporates the following:
		  ○ Shotfirers permit
		  ○ Unsupervised handling permit
		  ○ Training to open cut site requirements

Category	Factor	Management Strategy
		○ Product development and updates ○ Product Selection ○ Bench practices
On Bench Practices	Bench drainage techniques	• Minimize surface water where possible • Utilise hole savers • Drains for re-directing water
	Sleep time	• Minimise sleep times of loaded shots where possible based on the manufacturers recommendations • Fume risk when blasting outside of these parameters will be assessed by the D&B Engineer in consultation with the Shotfirers
	Shot inspections	• Drill preparation, drilled shot, loading, firing
	Slumping holes	• Loaded holes are checked by the shot crew and any slumping is reported to the D&B Engineer • If dynamic water is present or the holes are slumping the blast plan will be assessed by the D&B Engineer. In this situation it can be decided to fire the shot earlier, not load all the holes or change the product to a more water resistant material. (abnormal circumstances)
	Drill hole location error tolerance	• Drill error tolerance 10-50cm • Visual inspection, identify suspect holes and re-check by survey • Re-drills are to be checked and re-drill approved by the D&B Engineer

Notes:

1: There may be circumstances in which blast events need to be fired in less than ideal weather conditions. Failure to initiate blasts may indeed increase the potential for fume generation and or occupational health and safety risks to mine personnel. In these specific and rare circumstances, the final decision making process will be elevated to the General Manager position (or in their absence, to the delegated authority) with relevant input from D&B Engineer, Shot Firer and Environment and Community (E&C) Manager

.

3.0 Monitoring and Reporting

Section 6 of WCPL's BMP details WCPL's Blast Monitoring Program, which has been developed in accordance with the requirements of DA305-7-2003, DA177-8-2004 and WCPL's Environment Protection Licence 529. All blasts at the Mine are monitored for overpressure, ground vibration and visually recorded using video equipment (**Section 3.2**). Meteorological conditions are also monitored and assessed prior to and during blasts.

Reporting of blast results, non-compliances and incidents is undertaken in accordance with Section 9 of the WCPL BMP.

3.1 Pre-Blast Fume Risk Assessment

The potential for blast fume will be considered at the following stages of the Blasting Process:

- Preliminary Design;
- Final Design; and
- Blast Clearance Maps.

A Blast Pack will be developed for each blast and contain all relevant records associated with the design and quality assurance process for each individual shot. A Pre-blast Fume Risk Assessment will be completed prior to each blast as part of the Pre-blast Checklist.

3.2 Rating and Recording of Blast Fume Events

In accordance with Stage 1 of fume minimisation measures, all blasts at Wambo are fume rated applying the Fume Ratings in **Attachment B**. In the case of a fume event, video recording of the blast events is utilised to assist in the determination of an appropriate fume ranking for reporting purposes.

All surface blasts in the open cut will be video recorded to capture the post blast environment. The video camera will be manned where possible in order to follow the path of any fume generated. All videos will be a minimum duration of 1 minute following the blast event or until the fume dissipates, leaves the site or the view of the camera. Video footage will be stored for a minimum of 1 year on site.

Each blast will be ranked when fume is at its greatest extent using the Australian Explosives Industry Safety Group (AEISG) ranking provided in **Attachment B** and all written records kept for a minimum of 2 years.

3.3 Reporting of Significant Blast Fume Events

Blast fume events, as identified from the fume ranking table in **Attachment B**, will be reported by WCPL's E&C Manager (or delegate) to the DP&E Singleton Compliance Office in accordance with WCPL's Pollution Incident Response Management Plan *(PIRMP)* for an event which is a:

- **Rating 3** fume event that leaves the project approval boundary or closed portion of public road; or
- All **Rating 4 or 5** fume events.

4.0 Training and Competence

All training associated with the BFMS is undertaken pursuant to WCPL's Training and Competency Management Plan.

Tool box talks are undertaken with relevant employees and contractors as required, including during reviews of the BFMS. Evidence of participation in these tool box talks is documented in accordance with the WCPL Training and Competency Management Plan. Upon scheduled reviews or authorised changes to the BFMS, additional tool box talks and documentation of participants will be undertaken.

5.0 Emergency Response

In the unlikely event of a major fume generation event, site personnel will be notified via the Mine's Emergency Response Procedure. Fume events with a material and not a trivial risk to harm the environment shall be reported immediately without delay as described in the WCPL Fume Incident Notification Procedure (WA-ENV-PRO-507.2) and WCPL PIRMP.

The Environment and Community (E&C) Manager (or delegate) will notify affected landholders of the potential fume event approaching their property and to proceed with measures to avoid potential exposure to the blast fume. Current contact details for landholders who may potentially be impacted by a blast fume event at the Mine are detailed in Section 3.4 of WCPL's Fume Incident Notification Procedure (WA-ENV-PRO-507.2).

6.0 Audit/Review

The BFMS will be reviewed:

- During each review of the BMP (refer to Section 9.1 of the BMP); and/or
- Following any blast event:
    - Rated 4 or greater produced from a blast event, or
    - With a rating of 3 which leaves the project approval boundaries or a closed portion of public road.

7.0 Responsibilities

Table 4 below summarises responsibilities documented in the BFMS. Responsibilities may be delegated as required.

Table 4: BFMS Responsibilities

No	Task	Responsibility	Timing
1	Ensure resources are available to WCPL personnel to facilitate the completion of responsibilities under this BFMS	General Manager	As required
2	Ensure that all process and procedures under this BFMS and all other relevant management plans in relation to Blast events are followed	D&B Engineer	As required
3	Ensure that all relevant personnel have reviewed the BFMS and any amendments to the BFMS	D&B Supervisor	As required
4	Ensure BFMS is implemented across all relevant personnel	E&C Manager	As required
5	Liaise with all relevant stakeholders, including external regulatory bodies, regarding all aspects of the BFMS	E&C Manager	As required
6	Ensure that the community is informed via the Blasting Information Hotline and the Peabody Wambo SMS blasting notification messaging service of a blast event	E&C Manager	by COB the day before the blast
7	Investigate and report to all relevant stakeholders of any fume generated events which are required under this BFMS and any other relevant approved management plan	E&C Manager	As required

8.0 References

- Development Consent (DA305-7-2003)
- Development Consent (DA177-8-2004)
- WCPL Environmental Protection Licence (529)
- Australian Explosives Industry Safety Group (AEISG) Code of Practice - *Prevention and Management of Blast Generated NOx Gases in Surface Blasting* (Edition 2. August 2011)
- Queensland Government - Queensland Guidance Note - *Management of Oxides of Nitrogen (No2) in Open Cut Blasting* (QGN 19. Version 1. 31 May 2011)
- NSW DP&E *Elements of a Blast Fume Management Strategy* (23 August 2012)
- AS 2187.0 –1983: Storage transport and use – Terminology
- AS 2187.1 - 1998: Explosives – Storage, Transport and Use, Part 1 - Storage
- AS 2187.2 – 2006: Explosives – Storage, Transport and Use, Part 2 – Use of Explosives

ATTACHMENT A
CONSULTATION

NSW GOVERNMENT | Planning & Infrastructure

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Mr Peter Baker
General Manager
Wambo Mine
PMB 1
Singleton NSW 2330

Dear Mr Baker

Blast Fume Management Strategy

I refer to the Blast Fume Workshop held in Singleton on 19 June 2012 and the Department's letter dated 26 June 2012 requesting the Upper Hunter mines commence rating and recording blast fume events from 2 July 2012 as the first stage of fume minimisation measures.

The purpose of this letter is to now request that mines commence the second stage of the proposed minimisation measures by submitting a Blast Fume Management Strategy for approval, within three months from the date of this letter. The suggested minimum requirements for the Strategy, listed in Attachment 1, have been amended in consideration of industry comments from the above Workshop.

It is intended that each mine's Blast Fume Management Strategy, once approved, would be annexed to the mine's Blast Management Plan or, in the absence of a Blast Management Plan, to an appropriate operational management plan.

I appreciate your co-operation in developing and implementing a strategy to minimise amenity impacts from blast fume.

If you wish to further discuss this matter, please call the Department's Singleton office on 6575 3405.

Yours sincerely

23.2.12

Chris Wilson
Executive Director
Major Projects Assessment

Attachment: Elements of a Blast Fume Management Strategy

cc. Environment Protection Authority
Department of Trade and Investment, Regional Infrastructure and Services
NSW Health
NSW Minerals Council

Department of Planning & Infrastructure
22-33 Bridge Street Sydney NSW 2000 | GPO Box 39 Sydney NSW 2001 | T 02 9228 6111 | F 02 9228 6455 | www.planning.nsw.gov.au

ATTACHMENT 1: Elements of a Blast Fume Management Strategy

For the Blast Fume Management Strategy to be effective it will need to comprehensively address all the known factors that can affect the generation of fume. Further, it will need to address how post blast fume is rated and reported. Please find below suggestions for sources of information and topics to be included in your Blast Fume Management Strategy. These suggestions form minimum requirements for topics to be included in the Management Strategy. Mines are encouraged to enhance or add to these topics in drafting their Management Strategies based on operational experience and continuing research.

1. ***Rating and recording of blast fume events*** *(as requested in the Department's 26 June 2012 letter)*

- Rate and record the fume characteristics of all shots using the rating system in Appendices 2 and 3 of the Australian Explosives Industry and Safety Group Inc Code of Practice titled "Prevention and Management of Blast Generated NOx Gases in Surface Blasting, Edition 2, August 2011" (the "AEISG Code") available at http://aeisg.org.au/index.php/cop.html. This includes all blasts even if there is no visible post blast fume. The fume is to be rated when it is at its greatest extent. Further information is also available from the Queensland Dept of Employment, Economic Development and Innovation at: http://mines.industry.qld.gov.au/safety-and-health/631.htm.
- Records of fume ratings are to be kept on the mine site. The Department may take up the option of reviewing and discussing these results with the mine from time to time. Written records are to be kept for a minimum of 2 years. It is intended that these records would not currently be placed on the company's website.
- Video record each blast where a risk of post blast fume is identified. The forthcoming blast fume management strategy would define when such a risk is likely to occur.
- All video footage is to be stored for at least 1 year. All videos should be a minimum duration of 1 minute following the blast and should capture any post blast fume until the fume dissipates, leaves the site, or leaves the view of the camera.
- The rating and recording of post blast fume is to be kept from 2 July 2012.

Additional suggestions:

- When video recording fume events, suggest keeping the camera in one place and using the zoom to follow the fume, if necessary.
- A camera on the mine boundary could be helpful to confirm whether the fume extends beyond the mine site.

3

2. ***Reporting significant fume events to the Department***

- Notify the Department of Planning and Infrastructure compliance office in Singleton of any blast producing post blast fume that rates 3 at it highest extent and leaves the site (see definition below), and any blast that rates 4 or 5. It is not the intention that all shots required to be reported will require a formal incident report, as this will depend on a number of factors. Within this report the quantity of explosive and / or the number of blast holes should be included. The purpose of this is to provide a guide to size the fume event;

- *Site - includes any active mine site's project approval boundary and any closed portion of public road.*

3. ***Developing a management plan to minimise fume emissions by addressing those factors known to contribute to fume generation. The following should be considered.***

Geology

- A risk matrix for the site should be established based on geology and past blasting outcomes, then used as a guide for shot size, sleep time and product selection. The risk matrix will require frequent updating and as such should form a sub set of the Management Strategy;
- Blasting in weak and soft strata (primarily within approx 20m of surface);
- Areas known to contain a high incidence of faulted/fractured ground;
- Holes with high clay content;
- Time between drilling and loading;
- Ground movement/product desensitization;
- Industry has recognised that wet holes should be defined as those which contain water, have been dewatered or holes where moisture is present in the base or walls. The Management Strategy will need to define "wet" and "dry" holes so their different management requirements can be identified;
- Mud/sediment in the base of holes.

Meteorological conditions

- Meteorological forecasting for storms, rain events, strong winds and inversions;
- If rain is forecast what precautions are planned.

Blast Design

- Explosives desensitization;

4

- Blast layout and delays;
- Priming.

Product Selection, Quality and Blast Crew Education

- Choice of explosive product;
- Compliance with manufacturers recommendations and procedure for variations to manufacturers recommendations;
- Education and training on product selection and bench practices;
- How and where the blasting products are used;
- Explosive quality, QA and auditing, mixing of materials, delivery system, contractor, product rotation, etc;
- Stemming materials and techniques;
- Loading sequence and techniques;
- Product variation from approved blast plan.

On Bench Practices

- Bench drainage techniques;
- Sleep time taking into account a number of different hole conditions or forecast weather and a maximum sleep time for each product;
- Process for exceeding recommended or maximum sleep times;
- Inspection regime of sleeping shots;
- Management of slumping of holes;
- Tolerance of error allowable for the location of the drill holes.

Emergency response procedures

- Fume events with a material risk of harm to the environment should be addressed under statutory emergency response procedures, such as a "pollution incident response plan" consistent with EPA Environmental Guidelines: Preparation of pollution incident response management plans (March 2012).

Contact: Scott Brooks
Phone: 6575 3401
Fax: 6575 3415
Email: scott.brooks@planning.nsw.gov.au
Our ref: 305-7-2003

The General Manager
Wambo Mine
PMB 1
SINGLETON NSW 2330

Attention: Steve Peart

Dear Steve

Wambo Coal – Approval of Blast Management Plan

Thank you for forwarding the Wambo Blast Management Plan and the Blast Fume Management Strategy and notification procedure as required under project approval DA 305-7-2003 for the Department's consideration.

The Department has reviewed these plans, and relevant attachments, and is satisfied that they generally address the requirements set out in the relevant conditions of the project approval. Consequently, I would like to advise you that the Secretary has approved the plan.

This Plan comes into force on the 30th November 2015 and remains in force until replaced by any future updated approved Plans.

Could you please forward finalised copies of the above plan (preferably in PDF format with a copy of this approval letter appended) for the Department's records by the end of November 2015.

If you require further information or clarification in this matter please contact Scott Brooks on 6575 3401 or by email to scott.brooks@planning.nsw.gov.au.

Yours sincerely

Scott Brooks
Investigations (Lead), Compliance
27-11-2015
As Nominee for the Secretary, Planning & Environment

ATTACHMENT B
AEISG FUME RANKING

Level	Typical Appearance
Level 0 No NOx gas	
Level 1 Slight NOx gas	
1A Localised	
1B Medium	
1C Extensive	
Level 2 Minor yellow/orange gas	
2A Localised	
2B Medium	
2C Extensive	
Level 3 Orange gas	
3A Localised	
3B Medium	
3C Extensive	
Level 4 Orange/red gas	
4A Localised	
4B Medium	
4C Extensive	
Level 5 Red/purple gas	
5A Localised	
5B Medium	
5C Extensive	

APPENDIX B
CORRESPONDENCE WITH REGULATORY AGENCIES

Contact: Scott Brooks
Phone: 6575 3401
Fax: 6575 3415
Email: scott.brooks@planning.nsw.gov.au
Our ref: 305-7-2003

The General Manager
Wambo Mine
PMB 1
SINGLETON NSW 2330

Attention: Steve Peart

Dear Steve

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The Department has reviewed these plans, and relevant attachments, and is satisfied that they generally address the requirements set out in the relevant conditions of the project approval. Consequently, I would like to advise you that the Secretary has approved the plan.

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If you require further information or clarification in this matter please contact Scott Brooks on 6575 3401 or by email to scott.brooks@planning.nsw.gov.au.

Yours sincerely

Scott Brooks
Investigations (Lead), Compliance
27-11-2015
As Nominee for the Secretary, Planning & Environment

From: Scott.Brooks@planning.nsw.gov.au [mailto:Scott.Brooks@planning.nsw.gov.au]
Sent: Wednesday, 18 November 2015 12:12 PM
To: Peart, Steven D
Subject: Wambo Blast Management Plan_Rev.5_DRAFT.docx

Steve,
Please find attached a copy of the Wambo Blast Management Plan with comment.

Scott

DP&E comments on Wambo BMP summarised in the table below

Section	DP&E Comment
5.2.2 Fume Incident Notification	What is the registration process? Details of the Fume Incident Notification System will need to be provided as discussed.
5.4 Property Investigations	All references to the DG should be changed to Secretary
5.5 Pre-Blast Meteorological Assessment	Where is the weather assessed. You will need to outline the sources of the info for the assessment.
	Most mines use a blast permissions page. Whilst this plan may not need the exact permissions list, as it can vary from time to time, we need to know it exists so we can check against it, should an incident occur.
5.11.2 Wambo Homestead	This is ambiguous. Monitoring is undertaken at the WHC for blasts within 2km of the Complex.
6.1 Meteorological Monitoring	Do we now have a weather station at the north end of the Montrose pit? If so it should be stated that it will be available for all blasts.
9.1 Review	Can be 3 years
	Should also refer to Condition 6 Schedule 6.
9.5 Reportable Environmental Incidents	Whilst we do not need to be advised, you should conduct an internal investigation if the blast is over 115dBL

From: Scott.Brooks@planning.nsw.gov.au [mailto:Scott.Brooks@planning.nsw.gov.au]
Sent: Thursday, 19 November 2015 7:53 AM
To: Peart, Steven D
Subject: Wambo Blast Fume Management Strategy_Rev.2_DRAFT.docx

Steve,
Please find attached blast fume management strategy comments.

Scott

DP&E comments on Wambo BFMS summarised in the table below

Section	DP&E Comment
2.3 Blast Fume Factors and Management Strategies	Most mines now choose a suitable blast day based on weather and schedule back from this time to know when to start loading.
	You may want to look at the Mt Arthur coal

Section	DP&E Comment
	fume management plan, as it has a number of actions found to be successful.
5.0 Emergency Response	Is this the same as the Fume Incident Notification System described in the Blast Management Plan. If so the names should be aligned.
	This section should include the community advice covered in the Blast Plan.
6.0 Audit/Review	To be consistent with our notification requirements this should say 4 or greater

WAMBO COAL PTY LIMITED

ABN 13 000 668 057

JERRY'S PLAINS ROAD, WARKWORTH, VIA SINGLETON NSW 2330
PMB 1 SINGLETON NSW 2330
TELEPHONE: 02 6570 2200
FAX: 02 6570 2290

12 July 2005

The Director-General
Department of Infrastructure Planning & Natural Resources
PO Box 3927
SYDNEY NSW 2001

Attention: Mr David Kitto

Dear Mr Kitto,

WAMBO COAL PTY LIMITED BLAST MONITORING PROGRAM

Pursuant to Development Consent (DA305-7-2003) dated February 2004, Wambo Coal Pty Limited (WCPL) are required to develop a Blast Monitoring Program approved by the Director-General of the Department of Infrastructure Planning and Natural Resources (DIPNR).

The specific requirement for the Monitoring Program is contained in Schedule 4, Conditions 18 and 19, of the above development consent, which state:

> *"18. The Applicant shall monitor the airblast overpressure and ground vibration impacts of the development at a minimum of four locations around the site.*
>
> *19. Before carrying out any development, the Applicant shall prepare a Blast Monitoring Program for the development, in consultation with Department of Environment and Conservation, and to the satisfaction of the Director-General."*

Please find attached the "Wambo Coal Pty Limited Blast Monitoring Program" dated July 2005 for your consideration.

I look forward to receiving your approval of the attached Monitoring Program at your earliest convenience. If you wish to discuss any aspects of the BMP further, please do not hesitate to contact me on 02 6570 2206.

Yours faithfully
WAMBO COAL PTY LIMITED

Tony Sutherland
Technical Services Manager

N:\Environmental Management System\Management Plans\EMP007 Blast Monitoring Program\Letter DIPNR Approval.doc

APPENDIX C
FUME INCIDENT NOTIFICATION PROCEDURE

WAMBO COAL
FUME INCIDENT NOTIFICATION PROCEDURE

Document No. WA-ENV-PRO-507.2
November 2015

Document Control

Document No.	WA-ENV-PRO-507.2
Title	Fume Incident Notification Procedure
General Description	Blast Fume Management at WCPL
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	Nov 2015	Original Draft	WCPL	SP	

1.0 Purpose

The purpose of this Fume Incident Notification Procedure is to provide a process for notifying community members who are predicted to be impacted by a fume event following initiation of a blast.

2.0 Scope

This Fume Incident Notification Procedure relates to all blasting activities undertaken at WCPL. The Fume Incident Notification Procedure forms part of WCPL's Blast Management Plan and Blast Fume Management Strategy.

3.0 Procedure

3.1 Prior to Blast Initiation

1. The D&B Engineer is to nominate and assign responsibility to a designated "Community Response Coordinator" prior to each blast
2. Prior to and during all blasts, the "Community Response Coordinator" must maintain positive communication with the Blast Controller
3. The "Community Response Coordinator" must logon to the Blast Notification System (SMSer) and prepare for initiation of the Fume Incident Notification (**Section 3.3**)

3.2 Following Blast Initiation

1. The Blast Controller is to assess blast fume generation and plume migration
2. Where blast fume is likely to disperse offsite towards neighbouring properties, the Blast Controller must immediately notify the "Community Response Coordinator"
3. The notification should be to effect that "…blast fume has been generated and appears to be migrating in a northerly (or alternate) direction with the potential to impact on neighbouring properties"
4. The "Community Response Coordinator" must immediately send the Fume Incident Notification (**Section 3.3**)
5. The "Community Response Coordinator" must record the date, time and relevant details of both internal and external notifications

3.3 Fume Incident Notification (SMSer)

1. Login into http://www.smsertech.com

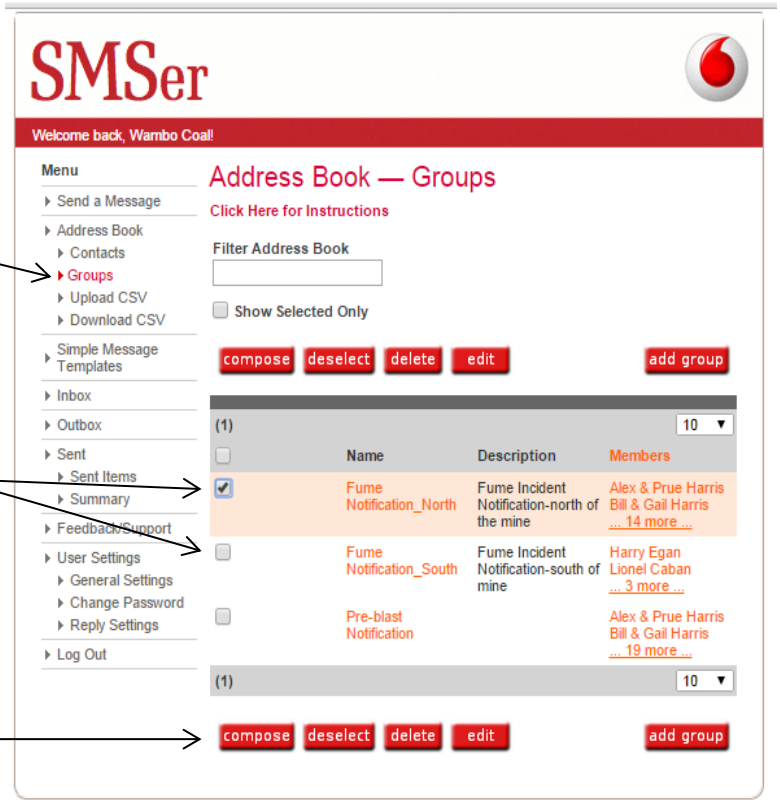
   Username: XXXXXX
   Password: XXXXXX
2. Select “Groups”
3. Select the required group based on the predicted direction of travel of the fume. The predicted direction of travel should be based on the wind direction during the pre-blast weather assessment
4. Select “Compose”
5. Select “Use Message Template”
6. Select “Fume Incident Notification”
7. Update “time” and “date” of the blast, and “direction” of travel of the fume
8. Select “send standard message”

Step 1
Login to SMSer

Step 2
Select “Groups”

Step 3
Check the required “Group”

Step 4
Select “Compose”



Step 5
Select “Use Message Template”

Step 6
Select "Fume Incident Notification"

Step 7
Update "time" and "date" of the blast, and "direction" of fume

Step 8
Select "send standard message"

3.4 Action to be taken if the SMSer service is unavailable

In the event that the SMSer service is inoperable, the “Community Response Coordinator” is to contact affected neighbours in **Table 1** (North) or **Table 2** (South) in descending order, stating the following:

> *“Wambo Coal has just initiated a blast. A blast plume is potentially headed in your direction. Please take all precautionary measures to move out of the plume's path. We recommend you head indoors, and close all doors and windows until the plume passes. We are in the process of notifying a number of residents and appreciate your understanding. We will be in contact again once the plume has dispersed”*

Table 1: Fume Incident Notification_North Contact Details

Contact Order	Name	Contact	Group
1	Contact Details omitted for privacy purposes		Fume Notification_North
1			Fume Notification_North
1			Fume Notification_North
1			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
2			Fume Notification_North
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2			Fume Notification_North

Table 2: Fume Incident Notification_South Contact Details

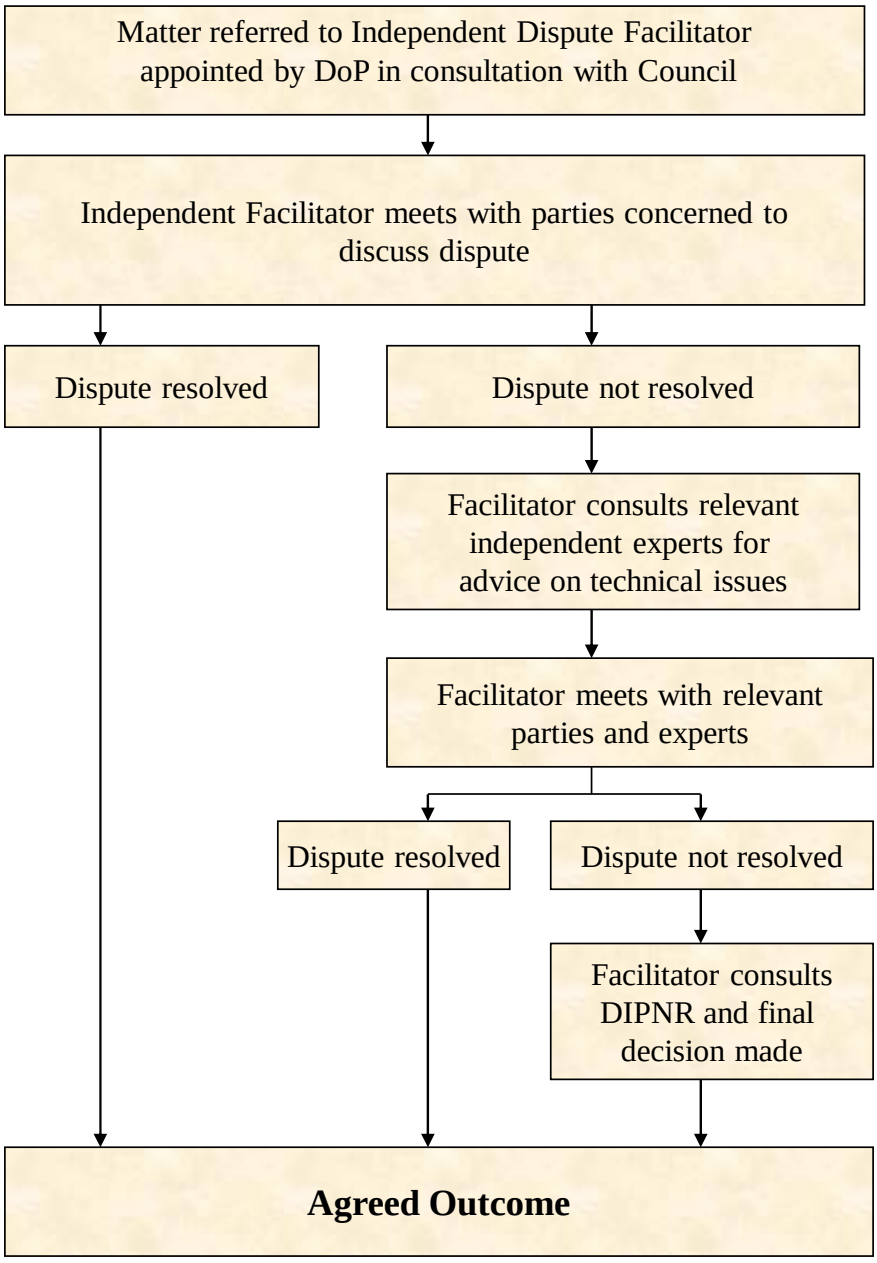
Contact Order	Name	Contact	Group
1	Contact Details omitted for privacy purposes		Fume Notification_South
2			Fume Notification_South
2			Fume Notification_South

4.0 Responsibilities

No	Task	Responsibility	Timing
1	Nominating and assigning responsibility to a designated “Community Response Coordinator”	D&B Engineer	Prior to and during each blast event
2	Notifying the “Community Response Coordinator” of a blast fume event that is likely to disperse offsite towards neighbouring properties	Blast Controller	Immediately following each blast
3	Sending the Fume Incident Notification	Community Response Coordinator	As required
4	Recording all details including date and time of the Fume Incident Notification	Community Response Coordinator	After sending the Fume Incident Notification
5	Maintaining and updating the contact details in SMSer and the WCPL Fume Incident Notification Procedure	Environment & Community Manager	As contact details change

APPENDIX D
INDEPENDENT DISPUTE RESOLUTION PROCESS

Independent Dispute Resolution Process



APPENDIX E
ROAD CLOSURE MANAGEMENT PROCEDURE

WAMBO COAL
ROAD CLOSURE MANAGEMENT PROCEDURE

Document No. WA-ENV-PRO-507.3

June 2017

Document Control

Document No.	WA-ENV-PRO-507.3
Title	Road Closure Management Procedure
General Description	Management procedure for road closure and traffic management plan when blasting is within 500m of the Golden Highway
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	June 2017	Original Draft	Nicole Dobbins		

1.0 Purpose

To provide a management procedure for the temporary closure of public roads whenever blasting is within 500m and may present a risk to road users. Once approved, the procedure will form a component of the Wambo Coal (WCPL) Blast Management Plan.

The procedure is required to address various conditions in relation to blasting within 500m of public roads contained in Schedule 4 of the WCPL Development Consent DA305-7-2003 (the Development Consent).

2.0 Scope

This Road Closure Management Procedure relates to the closure of a section of the Golden Highway which has been identified as the only public road within 500 m of blasting activities at WCPL (see **Appendix A**).

3.0 Regulatory Consultation and Approval

Consultation for road closure was undertaken with the Road and Maritime Services (RMS) and Singleton Council as required by the Development Consent. A copy of the Approval for road closure is included in **Appendix B**.

4.0 Procedure

The Drill and Blast Engineer will determine the need for road closure based on the separation distance between the proposed blast location and the Golden Highway. If the Golden Highway is located within the 500m exclusion zone (as outlined in **Appendix A**), then temporary road closure will be required. It is anticipated that delays on the Golden Highway will be approximately 15 minutes.

4.1 Notification

Where blasting is to take place within 500m of the Golden Highway, the following notifications will take place.

1. Where possible, the WCPL (Drill and Blast Engineer) will advertise the temporary road closures in the local newspaper, the Singleton Argus prior to blasting.

   Note: The Singleton Argus is published once per week on Wednesdays, the cut-off for advertisements is 11am Tuesday.

2. WCPL (Drill and Blast Engineer) will email all interested parties (including Council, Emergency Services and neighbouring mines) of a scheduled road closure as early as practicable the day prior to blasting. The Emergency Services notified are:

   - Singleton Fire Brigade;
   - Singleton Ambulance Services;
   - Singleton Police; and
   - Singleton State Emergency Services.

3. WCPL will update the Blasting Hotline 24hrs prior to the scheduled blast event and advise of road closure.

4. Permanent signage will be erected on the Golden Highway, in a format similar to that outlined in **Appendix C**. Signage will be updated to advise regular users of the likely time, date and duration of road closure, as early as practicable the day prior to blasting.
5. Traffic control will be notified at least two days prior to the blast.

4.2 Restrictions

The Development Consent (Schedule 4) imposes the following restrictions on blasting:

1. Blasting may only be carried out between 9am and 5pm Monday to Saturday (Condition 13);
2. Blasting is not permitted on Sundays; public holidays or any other time without the written approval of the EPA (Condition 13);
3. Minimise the frequency and duration of road closures and avoid road closures during peak traffic periods (Condition 18); and
4. One blast per day is allowed within 500 m of the Golden Highway (Condition 20A).

Blasting is also restricted during adverse meteorological conditions to minimise potential impacts on private landowners.

Blasting notifications will continue to be sent to neighbouring mines to minimise cumulative blasting impacts to the local community.

4.3 Temporary Road Closure

1. Traffic control will be carried out in accordance with Road and Maritime Services (RMS) approval conditions and the RTA ó*Traffic Control at Worksites Version 4*ò 2010 (or the latest version). WCPL will also consider the requirements of the Roads Act 1993 No 33.
2. Traffic control stations will be established in accordance with the Traffic Control Plan presented in **Appendix C**.
3. Traffic controllers will be certified by the RMS and used for all road closures. They will be familiar with the road closure procedures, wear appropriate reflective or protective equipment and carry a hand held radio on the WCPL mine site frequency.
4. Traffic controllers (or sentries) will travel to the road closure points and place all necessary signage in positions in accordance with **Appendix C** at least thirty minutes prior to the anticipated firing time. Once all signage is in place, the traffic controller will inform the Drill and Blast Engineer and await further instruction.
5. Traffic controllers (or sentries) will maintain positive radio contact with the Drill and Blast Engineer until the blast has been cleared. Traffic controllers will be familiar with the site specific WCPL shot firing procedures (as outlined in the Blast Management Plan).
6. The Drill and Blast Engineer will advise the traffic controller when to close the road. All traffic and personnel will be cleared from the affected area and the Drill and Blast Engineer informed when this is completed.
7. All traffic is to be halted for the duration of the blast. Access by emergency vehicles or inadvertent access is addressed in **Section 4.4**.

8. It is anticipated the road will be closed for approximately 15 minutes on each occasion.
9. Traffic controllers (or sentries) will not reopen the road until informed by the Drill and Blast Engineer that it is safe to do so. Prior to reopening, an inspection of the road will be undertaken by WCPL (or other approved) personnel to check for fly rock and other hazards.
10. Once the blast has been cleared and the road inspected, the road can be reopened and the signage removed.

A summary flowchart for the temporary Road Closure Procedure is presented in **Appendix D**.

4.4 Access for Emergency Vehicle or Inadvertent Access

1. Traffic controllers (or sentries) may break radio silence and inform the Drill and Blast Engineer if access is required for emergency (or other) vehicle once shot firing is in progress.
2. If the blast can be halted, emergency (or other) vehicles can be allowed to pass with an escort, and the shot firing recommenced once the road is clear and secured.
3. Alternatively, emergency services vehicles will be escorted through the road closure section, post blast as soon as the route is made safe.

4.5 Shot Firing Procedure

The shot firer will fire the blast in accordance with the WCPL Blast Management Plan and other internal blasting and environmental procedures. The following exceptions apply:

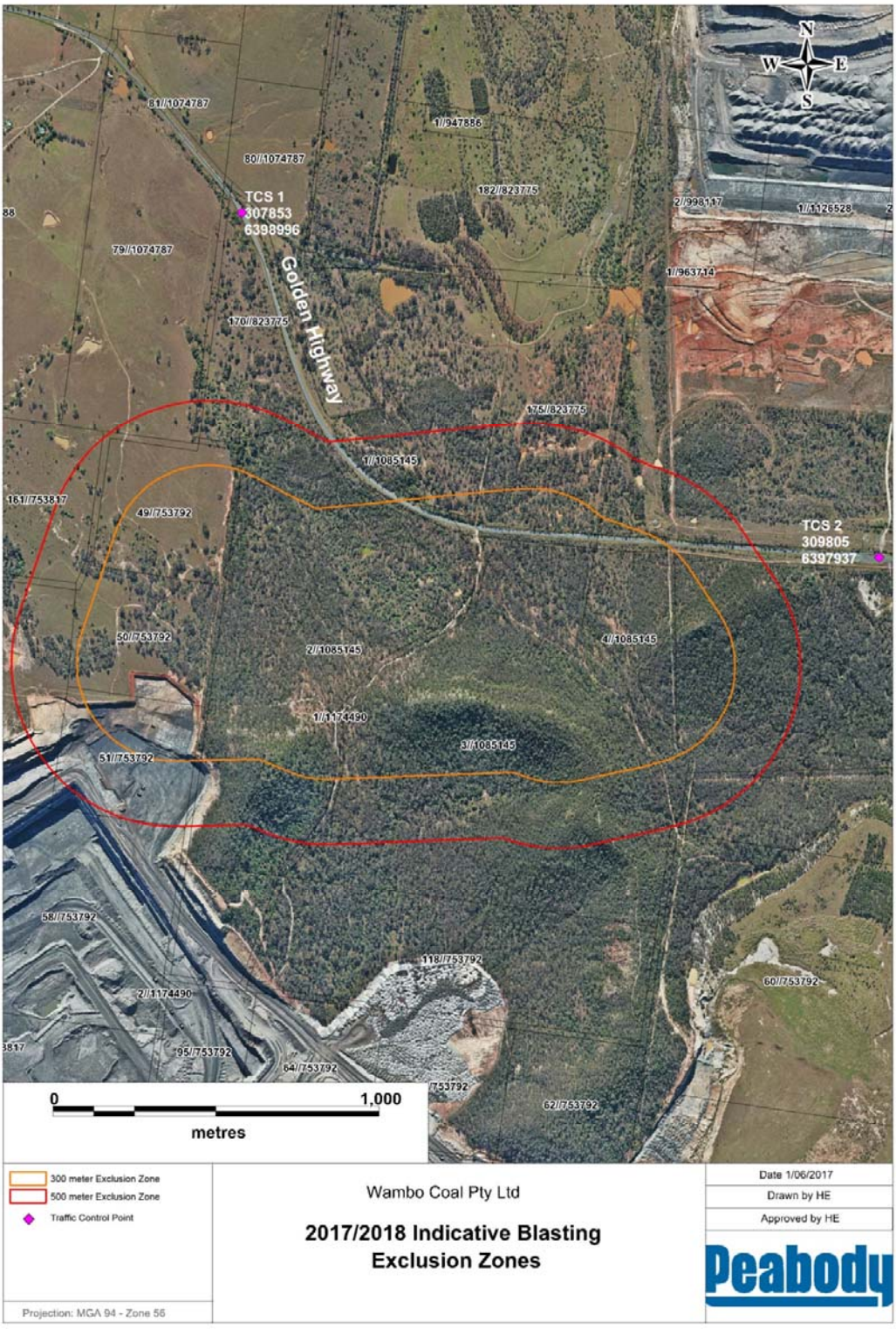
1. Blasting will not take place at times when adverse conditions (or other prevailing conditions) make road closure hazardous.
2. Blasts requiring the closure of the Golden Highway will be tied up on the day of firing and must not be left tied up overnight.
3. If a misfire is identified during the post blast inspection, while the Golden Highway is closed, the following process will be invoked. If it needs to be immediately re-fired for safety reasons, the road may be re-opened after appropriate inspection to allow traffic flow for the duration of the reset period and closed again to fire the secondary shot, or, if the misfire is not a threat to safety, it will be treated as a separate blast in order to prevent lengthy road closures.

5.0 Responsibilities

No	Task	Responsibility	Timing
1	Permanent blast signage to be erected on the Golden Highway	Drill and Blast Engineer	One week prior to blasting event within 500 m of public road
2	Ensure road closures are conducted in accordance with the conditions of the Road Occupancy Licence and blasting is conducted: • between 9am and 5pm Monday to Saturday; • not on Sundays or public holidays or any other time without the written approval of the EPA; and • Not during peak traffic periods.	Drill and Blast Engineer and Environment and Community Manager	Ongoing
3	Ensure not more than one blast per day is undertaken within 500m of the Golden Highway.	Drill and Blast Engineer	Ongoing
4	Where possible, place an advertisement in the Singleton Argus of scheduled road closures	Drill and Blast Engineer	Prior to the Singleton Argus publishing ï currently once per week
5	Inform Singleton Council of scheduled road closure due to blasting	Drill and Blast Engineer	As early as practicable, the previous day
6	Update permanent signage on the Golden Highway of upcoming road closures	Drill and Blast Engineer	As early as practicable, the previous day
7	Inform traffic control operators of road closure requirements	Drill and Blast Engineer	2 days prior to event
8	Ensure traffic controllers are certified by the RMS	Drill and Blast Engineer	Prior to Engagement

APPENDIX A

Indicative Blasting Exclusion Zones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2/1085145
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3/1085145
51/753792
58/753792
118/753792
60/753792
2/1174490
95/753792
64/753792
62/753792
0
1,000
metres
300 meter Exclusion Zone
500 meter Exclusion Zone
Traffic Control Point
Projection: MGA 94 - Zone 56
Wambo Coal Pty Ltd
2017/2018 Indicative Blasting Exclusion Zones
Date 1/06/2017
Drawn by HE
Approved by HE
Peabody

APPENDIX B

Approval for Road Closure

ROAD OCCUPANCY LICENCE

LICENCE NO : 784784

ROADS & MARITIME SERVICES (RMS)

Phone: 0288746806 Monday To Friday 8.30 AM - 4.30 PM

You must notify the TMC on 1800 679 782 before occupying the road and immediately after vacating the road. This licence is for the occupation of road space only. This is not an approval to modify or impact existing RMS Road Infrastructure including signals, signs, the road and kerb.

NON DEVELOPMENT - HAZARD REDUCTION

Project: Not Applicable

This Activity : Temporary road closure for blasting

LOCATION

Subject Road: Golden Highway

From: Pinegrove Road, JERRYS PLAINS

To: Lemington Road, Jerrys Plains

Council: SINGLETON

LICENSEE

Organisation: Wambo Coal Pty Ltd

Ref No:

Name: Dale Harmour

Phone: 0417527585

ONSITE CONTACT

Name: Peter Jaegar

Phone: 0417527585

TRAFFIC MANAGEMENT

Flow Management: Short Term / Intermittent Works; Stop / Slow Control

Closure Type: 1 lane of 1

Closure Lane(s): Lane 1 (kerb lane/s); Shoulder; Median Shoulder

Direction(s): Eastbound and Westbound

LICENCE DURATION

From: 03-Jul-2017

To: 30-Dec-2017

LICENCE CONDITIONS

1 THIS LICENCE IS NOT AN APPROVAL OF THE PROPONENT'S TRAFFIC CONTROL PLAN. PLEASE NOTE WORKCOVER REQUIRES THAT TRAFFIC CONTROL PLANS COMPLY WITH AS1742.3

2 ALL MATTERS RELATING TO NOISE GENERATION OR OTHER ENVIRONMENTAL FACTORS ON SITE ARE UNDER THE JURISDICTION OF THE LOCAL COUNCIL AND/OR THE ENVIRONMENTAL PROTECTION AUTHORITY.

3 SHOULD THE PROPOSED WORKS INVOLVE UNDERBORING OR EXCAVATION OF STATE ROAD ASSETS OR THE REMOVAL OF KERB AND GUTTER, DETAILS OF WORKS MUST BE APPROVED BY THE RMS'S ASSETS MANAGEMENT BRANCH.

4 NOTIFICATION TO AFFECTED BUSINESSES, RESIDENTS AND OTHER STAKEHOLDERS MUST BE UNDERTAKEN AT LEAST 5 BUSINESS DAYS PRIOR TO WORKS COMMENCING

5 * A SHOULDER CLOSURE, THAT IS AT NO TIME A TRAFFICABLE LANE, MAY BE CLOSED DURING THE LICENSED PERIOD(S) ON THE CONDITION THAT THERE IS NEGLIGIBLE IMPACT ON ADJACENT TRAFFIC FLOW AND THAT THE LICENSEE ENSURES THAT WORKSITE TRAFFIC ARRANGEMENTS PROVIDE ADEQUATE FACILITIES FOR PEDESTRIANS AND BICYCLISTS INCLUDING A ROUTE AND/OR SIGNAGE THROUGH OR AROUND THE WORKSITE IN ACCORDANCE WITH THE RMS TRAFFIC CONTROL AT WORKSITES MANUAL.
* SHORT INTERMITTENT TRAFFIC STOPPAGES MAY OCCUR ON THE CONDITION THAT NO STOPPAGE OCCURS WHILE ANY TRAFFIC IS DELAYED BY GENERAL CONGESTION OR ANY TRAFFIC IS STILL DELAYED BY A PREVIOUS STOPPAGE.
*PRIOR TO INSTALLING TRAFFIC CONTROL EACH SHIFT AND WHEN REMOVING TRAFFIC CONTROL EACH SHIFT THE WORKSITE TRAFFIC CONTROL SUPERVISOR MUST TELEPHONE THE TRANSPORT FOR NSW TRANSPORT MANAGEMENT CENTRE ON 1800 679 782 AND IDENTIFY THE ACTIVITY QUOTING THIS LICENSE NUMBER.
* YOUR TRAFFIC CONTROL PLAN HAS NOT BEEN ENDORSED BY ROADS AND MARITIME SERVICES. YOUR TRAFFIC CONTROL PLAN MUST COMPLY WITH AUSTRALIAN STANDARD 1742 AND THE RMS TRAFFIC CONTROL AT WORKSITES MANUAL 2010.
* TRAFFIC CONTROL ARRANGEMENTS MUST SPECIFICALLY ADDRESS END OF QUEUE MANAGEMENT TO ENSURE THAT MOTORISTS ARE ADEQUATELY WARNED BEFORE ARRIVAL AT THE END OF ANY QUEUE ARISING FROM THE TRAFFIC CONTROL.
* EMERGENCY SERVICES MUST BE INFORMED IN ADVANCE OF EACH DAY THIS LICENSE IS ACTIVATED.
* LONG TERM SIGNAGE AT THE DESIGNATED CLOSURE POINTS MUST BE INSTALLED WARNING OF DELAYS ASSOCIATED WITH BLASTING TRAFFIC STOPPAGES INCLUDING A CONTACT TELEPHONE NUMBER FOR PUBLIC INQUIRIES.
* EQUIPMENT TO CLEAR POTENTIAL FLYROCK FROM ROADWAYS MUST ALWAYS BE PROXIMATE TO THE CLOSED PORTION OF ROAD.

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Mon	03	Jul	09:00	-	Mon	03	Jul	17:00
Tue	04	Jul	09:00	-	Tue	04	Jul	17:00
Wed	05	Jul	09:00	-	Wed	05	Jul	17:00
Thu	06	Jul	09:00	-	Thu	06	Jul	17:00
Fri	07	Jul	09:00	-	Fri	07	Jul	17:00
Sat	08	Jul	09:00	-	Sat	08	Jul	17:00
Mon	10	Jul	09:00	-	Mon	10	Jul	17:00
Tue	11	Jul	09:00	-	Tue	11	Jul	17:00
Wed	12	Jul	09:00	-	Wed	12	Jul	17:00
Thu	13	Jul	09:00	-	Thu	13	Jul	17:00
Fri	14	Jul	09:00	-	Fri	14	Jul	17:00
Sat	15	Jul	09:00	-	Sat	15	Jul	17:00
Mon	17	Jul	09:00	-	Mon	17	Jul	17:00
Tue	18	Jul	09:00	-	Tue	18	Jul	17:00
Wed	19	Jul	09:00	-	Wed	19	Jul	17:00
Thu	20	Jul	09:00	-	Thu	20	Jul	17:00
Fri	21	Jul	09:00	-	Fri	21	Jul	17:00
Sat	22	Jul	09:00	-	Sat	22	Jul	17:00
Mon	24	Jul	09:00	-	Mon	24	Jul	17:00
Tue	25	Jul	09:00	-	Tue	25	Jul	17:00
Wed	26	Jul	09:00	-	Wed	26	Jul	17:00
Thu	27	Jul	09:00	-	Thu	27	Jul	17:00
Fri	28	Jul	09:00	-	Fri	28	Jul	17:00
Sat	29	Jul	09:00	-	Sat	29	Jul	17:00
Mon	31	Jul	09:00	-	Mon	31	Jul	17:00
Tue	01	Aug	09:00	-	Tue	01	Aug	17:00
Wed	02	Aug	09:00	-	Wed	02	Aug	17:00
Thu	03	Aug	09:00	-	Thu	03	Aug	17:00
Fri	04	Aug	09:00	-	Fri	04	Aug	17:00
Sat	05	Aug	09:00	-	Sat	05	Aug	17:00
Mon	07	Aug	09:00	-	Mon	07	Aug	17:00

All pages of this Road Occupancy Licence and associated Speed Zone Authorisation(s) must be available on site at all times and must be produced for inspection when requested by representatives of NSW Police, Roads & Maritimes Services, Transport for NSW and other Government Agencies.

ROAD OCCUPANCY LICENCE

LICENCE NO : 784784

ROADS & MARITIME SERVICES (RMS)

Phone: 0288746806 Monday To Friday 8.30 AM - 4.30 PM

You must notify the TMC on 1800 679 782 before occupying the road and immediately after vacating the road. This licence is for the occupation of road space only. This is not an approval to modify or impact existing RMS Road Infrastructure including signals, signs, the road and kerb.

NON DEVELOPMENT - HAZARD REDUCTION

Project: Not Applicable
This Activity : Temporary road closure for blasting

LOCATION

Subject Road: Golden Highway
From: Pinegrove Road, JERRYS PLAINS
To: Lemington Road, Jerrys Plains
Council: SINGLETON

LICENSEE

Organisation: Wambo Coal Pty Ltd
Ref No:
Name: Dale Harmour
Phone: 0417527585

ONSITE CONTACT

Name: Peter Jaegar
Phone: 0417527585

TRAFFIC MANAGEMENT

Flow Management: Short Term / Intermittent Works; Stop / Slow Control
Closure Type: 1 lane of 1
Closure Lane(s): Lane 1 (kerb lane/s); Shoulder; Median Shoulder
Direction(s): Eastbound and Westbound

LICENCE DURATION

From: 03-Jul-2017
To: 30-Dec-2017

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Tue	08	Aug	09:00	-	Tue	08	Aug	17:00
Wed	09	Aug	09:00	-	Wed	09	Aug	17:00
Thu	10	Aug	09:00	-	Thu	10	Aug	17:00
Fri	11	Aug	09:00	-	Fri	11	Aug	17:00
Sat	12	Aug	09:00	-	Sat	12	Aug	17:00
Mon	14	Aug	09:00	-	Mon	14	Aug	17:00
Tue	15	Aug	09:00	-	Tue	15	Aug	17:00
Wed	16	Aug	09:00	-	Wed	16	Aug	17:00
Thu	17	Aug	09:00	-	Thu	17	Aug	17:00
Fri	18	Aug	09:00	-	Fri	18	Aug	17:00
Sat	19	Aug	09:00	-	Sat	19	Aug	17:00
Mon	21	Aug	09:00	-	Mon	21	Aug	17:00
Tue	22	Aug	09:00	-	Tue	22	Aug	17:00
Wed	23	Aug	09:00	-	Wed	23	Aug	17:00
Thu	24	Aug	09:00	-	Thu	24	Aug	17:00
Fri	25	Aug	09:00	-	Fri	25	Aug	17:00
Sat	26	Aug	09:00	-	Sat	26	Aug	17:00
Mon	28	Aug	09:00	-	Mon	28	Aug	17:00
Tue	29	Aug	09:00	-	Tue	29	Aug	17:00
Wed	30	Aug	09:00	-	Wed	30	Aug	17:00
Thu	31	Aug	09:00	-	Thu	31	Aug	17:00
Fri	01	Sep	09:00	-	Fri	01	Sep	17:00
Sat	02	Sep	09:00	-	Sat	02	Sep	17:00
Mon	04	Sep	09:00	-	Mon	04	Sep	17:00
Tue	05	Sep	09:00	-	Tue	05	Sep	17:00
Wed	06	Sep	09:00	-	Wed	06	Sep	17:00
Thu	07	Sep	09:00	-	Thu	07	Sep	17:00
Fri	08	Sep	09:00	-	Fri	08	Sep	17:00
Sat	09	Sep	09:00	-	Sat	09	Sep	17:00
Mon	11	Sep	09:00	-	Mon	11	Sep	17:00
Tue	12	Sep	09:00	-	Tue	12	Sep	17:00

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LICENCE DURATION

From: 03-Jul-2017
To: 30-Dec-2017

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Wed	13	Sep	09:00	-	Wed	13	Sep	17:00
Thu	14	Sep	09:00	-	Thu	14	Sep	17:00
Fri	15	Sep	09:00	-	Fri	15	Sep	17:00
Sat	16	Sep	09:00	-	Sat	16	Sep	17:00
Mon	18	Sep	09:00	-	Mon	18	Sep	17:00
Tue	19	Sep	09:00	-	Tue	19	Sep	17:00
Wed	20	Sep	09:00	-	Wed	20	Sep	17:00
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Fri	22	Sep	09:00	-	Fri	22	Sep	17:00
Sat	23	Sep	09:00	-	Sat	23	Sep	17:00
Mon	25	Sep	09:00	-	Mon	25	Sep	17:00
Tue	26	Sep	09:00	-	Tue	26	Sep	17:00
Wed	27	Sep	09:00	-	Wed	27	Sep	17:00
Thu	28	Sep	09:00	-	Thu	28	Sep	17:00
Fri	29	Sep	09:00	-	Fri	29	Sep	17:00
Sat	30	Sep	09:00	-	Sat	30	Sep	17:00
Mon	02	Oct	09:00	-	Mon	02	Oct	17:00
Tue	03	Oct	09:00	-	Tue	03	Oct	17:00
Wed	04	Oct	09:00	-	Wed	04	Oct	17:00
Thu	05	Oct	09:00	-	Thu	05	Oct	17:00
Fri	06	Oct	09:00	-	Fri	06	Oct	17:00
Sat	07	Oct	09:00	-	Sat	07	Oct	17:00
Mon	09	Oct	09:00	-	Mon	09	Oct	17:00
Tue	10	Oct	09:00	-	Tue	10	Oct	17:00
Wed	11	Oct	09:00	-	Wed	11	Oct	17:00
Thu	12	Oct	09:00	-	Thu	12	Oct	17:00
Fri	13	Oct	09:00	-	Fri	13	Oct	17:00
Sat	14	Oct	09:00	-	Sat	14	Oct	17:00
Mon	16	Oct	09:00	-	Mon	16	Oct	17:00
Tue	17	Oct	09:00	-	Tue	17	Oct	17:00
Wed	18	Oct	09:00	-	Wed	18	Oct	17:00

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LICENSEE

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ONSITE CONTACT

Name: Peter Jaegar
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TRAFFIC MANAGEMENT

Flow Management: Short Term / Intermittent Works; Stop / Slow Control
Closure Type: 1 lane of 1
Closure Lane(s): Lane 1 (kerb lane/s); Shoulder; Median Shoulder
Direction(s): Eastbound and Westbound

LICENCE DURATION

From: 03-Jul-2017
To: 30-Dec-2017

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Thu	19	Oct	09:00	-	Thu	19	Oct	17:00
Fri	20	Oct	09:00	-	Fri	20	Oct	17:00
Sat	21	Oct	09:00	-	Sat	21	Oct	17:00
Mon	23	Oct	09:00	-	Mon	23	Oct	17:00
Tue	24	Oct	09:00	-	Tue	24	Oct	17:00
Wed	25	Oct	09:00	-	Wed	25	Oct	17:00
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Mon	30	Oct	09:00	-	Mon	30	Oct	17:00
Tue	31	Oct	09:00	-	Tue	31	Oct	17:00
Wed	01	Nov	09:00	-	Wed	01	Nov	17:00
Thu	02	Nov	09:00	-	Thu	02	Nov	17:00
Fri	03	Nov	09:00	-	Fri	03	Nov	17:00
Sat	04	Nov	09:00	-	Sat	04	Nov	17:00
Mon	06	Nov	09:00	-	Mon	06	Nov	17:00
Tue	07	Nov	09:00	-	Tue	07	Nov	17:00
Wed	08	Nov	09:00	-	Wed	08	Nov	17:00
Thu	09	Nov	09:00	-	Thu	09	Nov	17:00
Fri	10	Nov	09:00	-	Fri	10	Nov	17:00
Sat	11	Nov	09:00	-	Sat	11	Nov	17:00
Mon	13	Nov	09:00	-	Mon	13	Nov	17:00
Tue	14	Nov	09:00	-	Tue	14	Nov	17:00
Wed	15	Nov	09:00	-	Wed	15	Nov	17:00
Thu	16	Nov	09:00	-	Thu	16	Nov	17:00
Fri	17	Nov	09:00	-	Fri	17	Nov	17:00
Sat	18	Nov	09:00	-	Sat	18	Nov	17:00
Mon	20	Nov	09:00	-	Mon	20	Nov	17:00
Tue	21	Nov	09:00	-	Tue	21	Nov	17:00
Wed	22	Nov	09:00	-	Wed	22	Nov	17:00
Thu	23	Nov	09:00	-	Thu	23	Nov	17:00

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LICENSEE

Organisation: Wambo Coal Pty Ltd

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Name: Dale Harmour

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ONSITE CONTACT

Name: Peter Jaegar

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Direction(s): Eastbound and Westbound

LICENCE DURATION

From: 03-Jul-2017

To: 30-Dec-2017

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Fri	24	Nov	09:00	-	Fri	24	Nov	17:00
Sat	25	Nov	09:00	-	Sat	25	Nov	17:00
Mon	27	Nov	09:00	-	Mon	27	Nov	17:00
Tue	28	Nov	09:00	-	Tue	28	Nov	17:00
Wed	29	Nov	09:00	-	Wed	29	Nov	17:00
Thu	30	Nov	09:00	-	Thu	30	Nov	17:00
Fri	01	Dec	09:00	-	Fri	01	Dec	17:00
Sat	02	Dec	09:00	-	Sat	02	Dec	17:00
Mon	04	Dec	09:00	-	Mon	04	Dec	17:00
Tue	05	Dec	09:00	-	Tue	05	Dec	17:00
Wed	06	Dec	09:00	-	Wed	06	Dec	17:00
Thu	07	Dec	09:00	-	Thu	07	Dec	17:00
Fri	08	Dec	09:00	-	Fri	08	Dec	17:00
Sat	09	Dec	09:00	-	Sat	09	Dec	17:00
Mon	11	Dec	09:00	-	Mon	11	Dec	17:00
Tue	12	Dec	09:00	-	Tue	12	Dec	17:00
Wed	13	Dec	09:00	-	Wed	13	Dec	17:00
Thu	14	Dec	09:00	-	Thu	14	Dec	17:00
Fri	15	Dec	09:00	-	Fri	15	Dec	17:00
Sat	16	Dec	09:00	-	Sat	16	Dec	17:00
Mon	18	Dec	09:00	-	Mon	18	Dec	17:00
Tue	19	Dec	09:00	-	Tue	19	Dec	17:00
Wed	20	Dec	09:00	-	Wed	20	Dec	17:00
Thu	21	Dec	09:00	-	Thu	21	Dec	17:00
Fri	22	Dec	09:00	-	Fri	22	Dec	17:00
Sat	23	Dec	09:00	-	Sat	23	Dec	17:00
Mon	25	Dec	09:00	-	Mon	25	Dec	17:00
Tue	26	Dec	09:00	-	Tue	26	Dec	17:00
Wed	27	Dec	09:00	-	Wed	27	Dec	17:00
Thu	28	Dec	09:00	-	Thu	28	Dec	17:00
Fri	29	Dec	09:00	-	Fri	29	Dec	17:00

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LOCATION

Subject Road: Golden Highway

From: Pinegrove Road, JERRYS PLAINS

To: Lemington Road, Jerrys Plains

Council: SINGLETON

LICENSEE

Organisation: Wambo Coal Pty Ltd

Ref No:

Name: Dale Harmour

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ONSITE CONTACT

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TRAFFIC MANAGEMENT

Flow Management: Short Term / Intermittent Works; Stop / Slow Control

Closure Type: 1 lane of 1

Closure Lane(s): Lane 1 (kerb lane/s); Shoulder; Median Shoulder

Direction(s): Eastbound and Westbound

LICENCE DURATION

From: 03-Jul-2017

To: 30-Dec-2017

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Sat	30	Dec	09:00	-	Sat	30	Dec	17:00

All pages of this Road Occupancy Licence and associated Speed Zone Authorisation(s) must be available on site at all times and must be produced for inspection when requested by representatives of NSW Police, Roads & Maritimes Services, Transport for NSW and other Government Agencies.

Enquiries to: **Paul Smith**
(02) 6578 7290

Our Ref:

Your Ref:

22 June 2017

Wambo Coal
PMB1
Singleton NSW 2330

Dear Sir/Madam,

Re: Blasting application – Golden Highway

Thank you for your application dated 8th June 2017 to operate short term temporary road closures on the Golden Highway for the purpose of blasting.

The Golden Highwayis a classified State Highway and as such the Roads and Maritime Services is the Roads Authority for this road as per the Roads Act 1993. Council is aware that you have obtained the appropriate Road Occupancy Licence from Roads and Maritime Services.

Singleton Council is the responsible Authority for the land under the Golden Highway and as such Council has no objection to the proposed use, subject to the conditions outlined below:

1. The Applicant is to provide notification to Singleton Council by email, for any blast after 7:00am, by 12 noon on the previous working day.

2. The Applicant Ltd shall advertise the temporary road closure in the local newspaper, the 'Singleton Argus', in the issue prior to blasting.

3. The Applicant shall comply with all requirements of the Roads Act 1993.

4. The time of closures not to coincide with changes of shift workers from other mines. Blasting times should be co-ordinated such that they are either a maximum of 5 minutes or a minimum of 45 minutes apart. Further each closure is limited to a maximum of 15 minutes. The road shall be closed for periods no longer than is necessary for the purpose.

5. The road not being closed during those times when adverse weather conditions or any other prevailing circumstances make such closure hazardous.

6. Singleton Council shall be indemnified by The Applicant against any claim arising out of, or in relation to, the temporary road closure for blasting associated with this authority.

Should you require further information please contact Council on 6578 7290.

Yours sincerely,

Peter McMurray
Manager - Infrastructure Strategy Planning and Programming

ABN 52 877 492 396
Address all correspondence to the General Manager:
PO Box 314
SINGLETON
NSW 2330

Administration Centre located at:
Queen Street
Singleton

Ph: (02) 6578 7290
Fax: (02) 6572 4197
Email: ssc@singleton.nsw.gov.au
Website: www.singleton.nsw.gov.au

"Singleton. A progressive community of excellence and sustainability."

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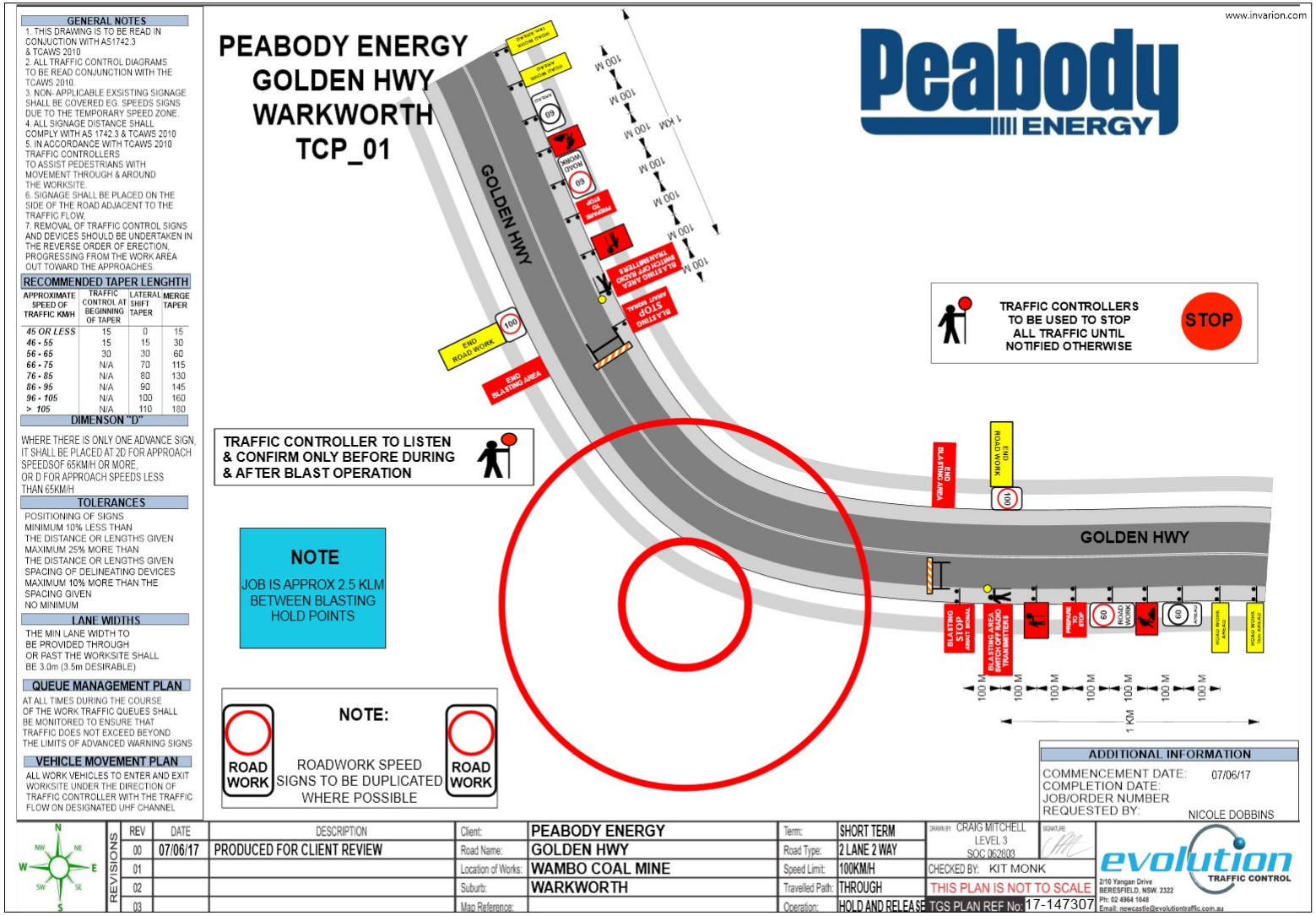
APPENDIX C
Traffic Control Plan


www.invarion.com
PEABODY ENERGY
GOLDEN HWY
WARKWORTH
TCP_01
Peabody
ENERGY
GENERAL NOTES
1. THIS DRAWING IS TO BE READ IN CONJUCTION WITH AS1742.3 & TCAWS 2010
2. ALL TRAFFIC CONTROL DIAGRAMS TO BE READ CONJUNCTION WITH THE TCAWS 2010.
3. NON- APPLICABLE EXSISTING SIGNAGE SHALL BE COVERED EG. SPEEDS SIGNS DUE TO THE TEMPORARY SPEED ZONE.
4. ALL SIGNAGE DISTANCE SHALL COMPLY WITH AS 1742.3 & TCAWS 2010
5. IN ACCORDANCE WITH TCAWS 2010 TRAFFIC CONTROLLERS TO ASSIST PEDESTRIANS WITH MOVEMENT THROUGH & AROUND THE WORKSITE.
6. SIGNAGE SHALL BE PLACED ON THE SIDE OF THE ROAD ADJACENT TO THE TRAFFIC FLOW.
7. REMOVAL OF TRAFFIC CONTROL SIGNS AND DEVICES SHOULD BE UNDERTAKEN IN THE REVERSE ORDER OF ERECTION, PROGRESSING FROM THE WORK AREA OUT TOWARD THE APPROACHES
RECOMMENDED TAPER LENGHTH
APPROXIMATE SPEED OF TRAFFIC KM/H | TRAFFIC CONTROL AT BEGINNING OF TAPER | LATERAL SHIFT TAPER | MERGE TAPER
45 OR LESS | 15 | 0 | 15
46 - 55 | 15 | 15 | 30
56 - 65 | 30 | 30 | 60
66 - 75 | N/A | 70 | 115
76 - 85 | N/A | 80 | 130
86 - 95 | N/A | 90 | 145
96 - 105 | N/A | 100 | 160
> 105 | N/A | 110 | 180
DIMENSON "D"
WHERE THERE IS ONLY ONE ADVANCE SIGN, IT SHALL BE PLACED AT 2D FOR APPROACH SPEEDSOF 65KM/H OR MORE, OR D FOR APPROACH SPEEDS LESS THAN 65KM/H
TOLERANCES
POSITIONING OF SIGNS
MINIMUM 10% LESS THAN
THE DISTANCE OR LENGTHS GIVEN
MAXIMUM 25% MORE THAN
THE DISTANCE OR LENGTHS GIVEN
SPACING OF DELINEATING DEVICES
MAXIMUM 10% MORE THAN THE SPACING GIVEN
NO MINIMUM
LANE WIDTHS
THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE)
QUEUE MANAGEMENT PLAN
AT ALL TIMES DURING THE COURSE OF THE WORK TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARNING SIGNS
VEHICLE MOVEMENT PLAN
ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLER WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL
GOLDEN HWY
100 M
1 KM
END ROAD WORK
END BLASTING AREA
BLASTING STOP AHEAD SIGNAL
BLASTING AREA SWITCH OFF RADIO TRANSMITTERS
PREPARE TO STOP
ROAD WORKS AHEAD
TRAFFIC CONTROLLERS TO BE USED TO STOP ALL TRAFFIC UNTIL NOTIFIED OTHERWISE
STOP
TRAFFIC CONTROLLER TO LISTEN & CONFIRM ONLY BEFORE DURING & AFTER BLAST OPERATION
NOTE
JOB IS APPROX 2.5 KLM BETWEEN BLASTING HOLD POINTS
NOTE:
ROADWORK SPEED SIGNS TO BE DUPLICATED WHERE POSSIBLE
ROAD WORK
ROAD WORK
ADDITIONAL INFORMATION
COMMENCEMENT DATE: 07/06/17
COMPLETION DATE:
JOB/ORDER NUMBER
REQUESTED BY: NICOLE DOBBINS
REVISIONS
REV | DATE | DESCRIPTION
00 | 07/06/17 | PRODUCED FOR CLIENT REVIEW
01
02
03
Client: PEABODY ENERGY
Road Name: GOLDEN HWY
Location of Works: WAMBO COAL MINE
Suburb: WARKWORTH
Map Reference:
Term: SHORT TERM
Road Type: 2 LANE 2 WAY
Speed Limit: 100KM/H
Travelled Path: THROUGH
Operation: HOLD AND RELEASE
DRAWN BY: CRAIG MITCHELL LEVEL 3 SOC 052803
CHECKED BY: KIT MONK
THIS PLAN IS NOT TO SCALE
TGS PLAN REF No: 17-147307
evolution TRAFFIC CONTROL
2/10 Yangan Drive BERESFIELD, NSW. 2322
Ph: 02 4964 1048
Email: newcastle@evolutiontraffic.com.au

Indicative Permanent Road Sign for Temporary Road Closure

To be encased with closing doors

To be encased with closing doors

Size: 1200mm x 1200mm

APPENDIX D

Road Closure Procedure Flowchart

WCPL ROAD CLOSURE PROCEDURE FOR BLASTING WITHIN 500M OF THE GOLDEN HIGHWAY

Prior to Road Closure

Notification

Blast Notification Board on Golden Highway	Singleton Argus - Public Notice	Neighbouring mines, community and emergency services	Singleton Shire Council	Transport Management Centre
5 days prior to blast	Prior to blast	5 days prior to blast	By twelve midday at least one day prior to blast	Prior to installing traffic control

30 Minutes Prior to Road Closure

- Traffic controller in positive radio contact with Drill and Blast Engineer
- Traffic Control Stations (Appendix C)
- Positioning of Signage (Appendix C)

At Time of Road Closure

- Drill and Blast Engineer advises by radio that blast is ready to be fired
- Road is closed and entire route checked to be free of vehicles
- Traffic controller communicates with Drill and Blast Engineer
- Blast fired in accordance with site procedures
- Drill and Blast Engineer announces 'All Clear'
- Traffic controller/sentry inspects road to ensure no blast impacts

Emergency Services/ Other Emergency Access

Escorted through the road closure station as soon as the route can be made safe. This may iclude contacting the blast controller to temporarily delay the firing of the blast.

At Completion of Road Closure

- Signage removed, road reopened
- Notify Transport Management Centre that traffic control has been removed