# BLAST MANAGEMENT STRATEGY

For Boggabri – Tarrawonga – Maules Creek Complex

**APRIL 2020** 

**Idemitsu Australia Resources** Boggabri Coal Pty Ltd

Whitehaven Coal Pty Ltd
Tarrawonga Coal Pty Ltd, Maules Creek Coal Mine









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Company	Position
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## **Glossary**

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Glossary	
AEMR	Annual Environmental Management Report
BCEP	Boggabri Coal Expansion Project
BCM	Boggabri Coal Mine
BCOPL	Boggabri Coal Pty Limited
BLMP	Blast Management Plan
BLMS	Blast Management Strategy
BTM Complex	Boggabri-Tarrawonga-Maules Creek Complex
CCC	Community Consultative Committee
CL	Coal Lease
DAWE	Commonwealth Department of Agriculture, Water and Environment
DP&I	NSW Department of Planning and Infrastructure (now DPIE)
DPIE	NSW Department of Planning, Industry and Environment
EA	Environmental Assessment
EP&A Act	Environmental Planning and Assessment Act, 1979
GHG	Greenhouse Gas
IAR	Idemitsu Australia Resources Pty Limited
MCCM	Maules Creek Coal Mine
Mtpa	Million Tonnes Per Annum
OEH	NSW Office of Environment and Heritage
PAC	NSW Planning Assessment Commission
ROM	Run of Mine
TCM	Tarrawonga Coal Mine



## Introduction 1.

## 1.1 **Background and purpose**

The purpose of this cumulative Blast Management Strategy (BLMS) is to document the approach that will be taken by mines within the Boggabri-Tarrawonga-Maules Creek Complex (BTM Complex)<sup>1</sup> to monitor and collectively manage cumulative blasting impacts. This strategy details the relevant cumulative blasting impact assessment criteria for each mine and outlines the cumulative blast management protocols that will be implemented within the BTM Complex.

The BTM Complex is an existing mining precinct located within and around the Leard State Forest, approximately 15 kilometres (km) north-east of Boggabri in the Narrabri Local Government Area (LGA). The BTM Complex includes the Tarrawonga Coal Mine (TCM) in the south, the Boggabri Coal Mine (BCM) to the north and the Maules Creek Coal Mine (MCCM) to the north-west. The extent of the relevant tenements for each of the mines that comprise the BTM Complex are presented in Figure 1.1.

BCM is managed by Boggabri Coal Operations Pty Limited (BCOPL), a wholly owned subsidiary of Idemitsu Australia Resources Pty Limited (IAR).

TCM is managed by Tarrawonga Coal Pty Ltd, a wholly owned subsidiary of Whitehaven.

MCCM is managed by Maules Creek Coal Pty Ltd, a wholly owned subsidiary of Whitehaven Coal Mining Limited (Whitehaven).

A summary of the ownership details for mines within the BTM Complex is provided below in Table 1.1.

Table 1.1 Management and ownership of BTM Complex mines

Mine	Management	Ownership	Share
Boggabri Coal Mine	Boggabri Coal Pty Limited	Idemitsu Australia Resources	80%
		Chugoku Electric Power Australia Resources Pty. Ltd	10%
		NS Boggabri Pty Limited	10%
Tarrawonga Coal Mine	Tarrawonga Coal Pty Limited	Whitehaven Coal Mining Limited	100%
Maules Creek Coal Mine	Maules Creek Coal Pty Limited	Aston Coal 2 Pty Limited (owned 100% by Whitehaven Coal Limited)	75%
		Itochu Coal Resources Australia Maules Creek Pty Ltd (ICRA MC)	15%
		J-Power Australia (J-Power)	10%

<sup>&</sup>lt;sup>1</sup> In previous environmental assessments and approval documents this group of mines has been referred to as the Leard Forest Mining Precinct. For the purposes of this strategy and all other relevant cumulative impact management documents, all references to the 'Leard Forest Mining Precinct' have been replaced with the term 'BTM Complex'.



Development applications for the continued operation of the BCM (Project Approval 09 0182) and the development of the MCCM (Project Approval 10 0138) were determined by the NSW Planning Assessment Commission (PAC) in July and October 2012 respectively, under delegation by the NSW Minister for Planning and Infrastructure. Subsequent to this, the Commonwealth Department of Agriculture, Water and Environment (DAWE) (then the Commonwealth Department of Environment [DoE]), granted conditional approval for both the BCM (EPBC 2009/5256) and the MCCM (EPBC 2010/5566) on 11 February 2013. These projects were granted approval subject to stringent conditions related to the management of cumulative impacts.

The TCM application for continuation of mining was approved on 22 January 2013, with similar cumulative impact management conditions to those detailed in the BCM and MCCM. The (now) DAWE granted EPBC approval (EPBC 2011/5923) to the Tarrawonga project on 11th March 2013.

Approval conditions require the preparation of a suite of environmental strategies developed in partnership by all three mines of the BTM Complex. This BLMS has been developed to satisfy each mine's project approval conditions. Approval conditions relevant to the management of cumulative blast impacts within the BTM Complex are detailed in Table 1.2.

Table 1.2 Approval requirements for cumulative blasting impact management

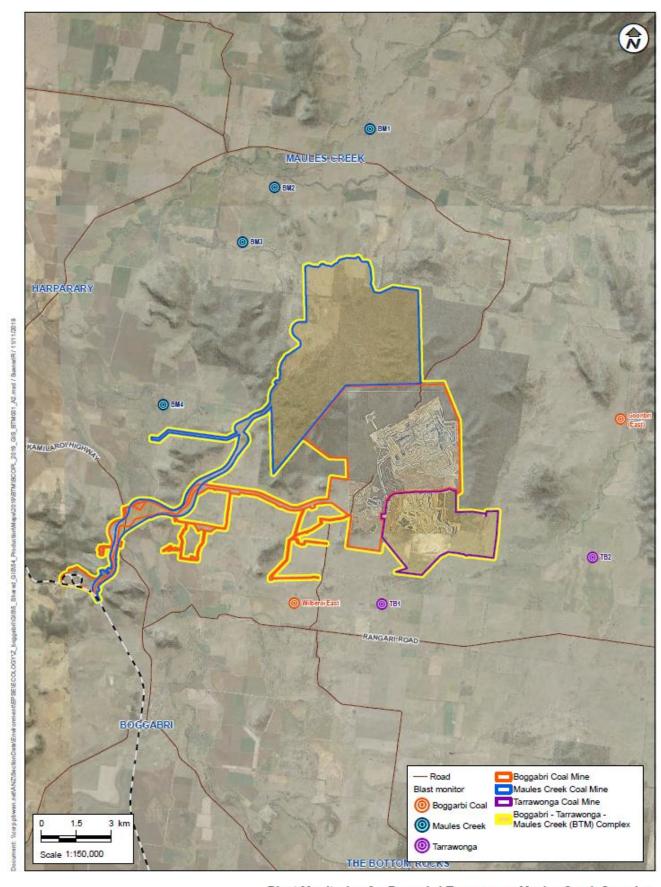
Project/ Approval	Condition	Details	
Boggabri Coal Mine	Schedule 3, Condition 20	During mining operations on site, the Proponent shall	
Project Approval 09_0182		(b) co-ordinate the timing of blasting on site with the timing of blasting at other mines within the Leard Forest Mining Precinct to minimise the cumulative blasting impacts of the mines; and	
	Schedule 3, Condition 22	The Proponent shall prepare and implement a Blast Management Plan for the project to the satisfaction of the Secretary. The plan must	
		(h) include a Leard Forest Mining Precinct Blast Management Strategy that has been prepared in consultation with other mines within the Leard Forest Mining Precinct to minimise cumulative blasting impacts*.	
Tarrawonga Coal Mine	Schedule 3, Condition 19	During mining operations on site, the Proponent shall	
		<ul> <li>(b) co-ordinate the timing of blasting on site with the timing of blasting at other mines within the Leard Forest Mining Precinct to minimise the cumulative blasting impacts of the mines;</li> </ul>	
	Schedule 3, Condition 21	The Proponent shall prepare and implement a Blast Management Plan for the project to the satisfaction of the Secretary. The plan must	
		(h) include a Leard Forest Mining Precinct Blast Management Strategy that has been prepared in consultation with other mines within the Leard Forest Mining Precinct to minimise cumulative blasting impacts*.	
Maules Creek Coal	Schedule 3, Condition 23	During mining operations on site, the Proponent shall	
Mine Project Approval 10_0138		<ul> <li>(b) co-ordinate the timing of blasting on site with the timing of blasting at other mines within the Leard Forest Mining Precinct to minimise the cumulative blasting impacts of the mines; and</li> </ul>	
	Schedule 3, Condition 25	The Proponent shall prepare and implement a Blast Management Plan for the project to the satisfaction of the Secretary. The plan must	
		(h) include a Leard Forest Mining Precinct Blast Management Strategy that has been prepared in consultation with other mines within the	



Leard Forest Mining Precinct to minimise cumulative blasting impacts of all mines within the precinct\*.

\*The Leard Forest Mining Precinct Blast Management Strategy can be developed in stages and will need to be subject to ongoing review dependent upon the determination of and commencement of other mining projects in the area.





Blast Monitoring for Boggabri-Tarrawonga-Maules Creek Complex

Figure 1.1 Location of the blast monitors at the BTM Complex mines



#### 1.2 **Document structure**

The structure of this report is as follows:

- Section 1 provides an introduction to the BLMS, including the background to the BLMS, and the scope of the BLMS.
- Section 2 provides an overview of the BTM Complex mines (BCPL, TCM, MCCM).
- Section 3 outlines the requirements for regional strategies.
- Section 4 describes blast management criteria for each individual mine
- Section 5 describes existing monitoring networks and the use of predictive meteorological forecasting to guide blasting activities.
- Section 6 outlines strategies for cumulative impact management, communication, incident management and reporting.
- Section 7 discusses strategies for the management of corrective and preventative actions.
- Section 8 describes the document control process for this BLMS.
- Section 9 provides a list of references used in this document.

## 1.3 Scope

This document is the overarching strategy for management of blasting within the BTM Complex.

Individual mines will manage their ongoing operations and associated blast management impacts in accordance with their site specific BMPs. Statutory requirements relating to blasting will be provided in each individual site's management plan.

It is envisaged that any extensions to mining operations in the BTM Complex will be incorporated into this strategy in the future.



## The BTM Complex 2.

The BTM Complex is located in the Narrabri LGA in the Northwest Slopes and Plains of New South Wales. The BTM Complex is located within and adjoining the Leard State Forest, north-east of Boggabri and south of Maules Creek. The major regional centres of Narrabri and Gunnedah are located approximately 50 km north-west and 40 km south-east of the BTM Complex, respectively.

#### 2.1 **Boggabri Coal Mine**

BCM is an existing open cut mine that consists of an open cut pit, overburden dump, infrastructure area including coal processing facilities, water management structures, and a rail spur.

BCM obtained NSW State Government approval on the 18 July 2012, and Commonwealth Government approval on 11 February 2013. These approvals (as modified) allow operations at BCM to extend for a further 21 years at a rate of 8.6 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. The project approval for BCM provides for operation of existing ancillary equipment; construction and operation of a new coal handling and preparation plant (CHPP); 17 km rail spur line; bridges over the Namoi River and Kamilaroi Highway; a rail load-out facility located at the mine; upgrade of the overburden and coal extraction haulage fleet (with an option for a drag-line); upgrade of electricity transmission lines; and establishment of a water supply borefield and other ancillary infrastructure.

#### 2.2 **Tarrawonga Coal Mine**

TCM is an existing open cut coal mine located immediately south of BCM. TCM initially had approval to extract 2 Mtpa of ROM coal until 2017. TCPL submitted an application in July 2011 under Part 3A of the Environment Planning and Assessment Act 1979 (EP&A Act) for an extension of open cut mining operations to 3 Mtpa of ROM coal for a further 17 years. This application was approved by the NSW State Government on 22 January 2013.

TCM have modified Project Approval 11 0047 on a number of occasions since then, with the most recent being in November 2018. Project Approval 11\_0047 allow operations at TCM until 2030 at a rate of 3 Mtpa of ROM coal.

#### 2.3 **Maules Creek Coal Mine**

A Project Application for the MCCM was submitted to the then NSW Department of Planning (now Department of Planning, Industry and Environment) in August 2010 under Part 3A of the EP&A Act. Project approval was granted by the Planning Assessment Commission under delegation of the Minister for Planning and Infrastructure on 23 October 2012. The project approval allows for the construction and operation of an open cut coal mine, with the recovery of up to 13 million tonnes per annum (Mtpa) of ROM coal for a period of 21 years. Key features of the project include transportation of coal by rail to Newcastle, and development of site infrastructure including a CHPP and associated facilities, a train loading facility and rail spur and loop, a mine access road, communications and power reticulation, explosives storage, and a water pipeline from the Namoi River.

Construction of the MCCM commenced in December 2013. Extraction of first coal commenced in the fourth quarter of 2014.



## Regional strategies 3.

The conditions of approval for the Boggabri Coal Mine and Maules Creek Coal specifically require the three mines of the BTM Complex produce joint strategies for:

- noise management
- blast management
- air quality management
- water management
- regional biodiversity (developed over 3 stages)
- biodiversity offsets.

Additionally, the conditions require cooperation and consultation between the mines with respect to:

- Aboriginal heritage conservation
- operational noise and air quality management, including online communications of onsite activities and monitoring; operating conditions and reactive dust management; and air quality and Greenhouse Gas (GHG) management
- transport, specifically options for transporting workers
- management of social impacts
- membership of Community Consultative Committees (CCC).

This BLMS addresses the requirement for a BLMS over the BTM Complex area and outlines the process that will be followed to scope, select and deliver joint monitoring and data management for blasting. Consultation for the BLMS is described in Appendix A.



## **Blasting criteria** 4.

### 4.1 **Boggabri Coal Mine**

The relevant blasting criteria have been extracted from the most recent BCOPL Project Approval (PA 09\_0182) and are summarised in Table 4.1.

Table 4.1 Boggabri Coal Mine blasting assessment criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on	120	10	0%
privately owned land	115	5	5% of the total number of blasts over a period of 12 months
All public infrastructure	-	50 (or alternatively a specific limit determined to the satisfaction of the Secretary by the structural design methodology in AS2187.3-2006, or its latest version)	0%

The process for day to day management of compliance with respect to these conditions is outlined in the BCOPL Blast Management Plan (BLMP).

## **Tarrawonga Coal Mine** 4.2

The relevant blasting criteria have been extracted from the most recent Tarrawonga Coal Project Approval (PA11\_0047) and are summarised in Table 4.2.

Table 4.2 Tarrawonga Coal Mine blasting assessment criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on	120	10	0%
privately owned land	115	5	5% of the total number of blasts over a period of 12 months
All public infrastructure	-	50 (or a limit determined by the structural design methodology in AS2187.2-2006, or its latest version, to the satisfaction of the Secretary.	0%

#### **Maules Creek Coal Mine** 4.3

The relevant blasting criteria have been extracted from the most recent Maules Creek Project Approval (PA 10\_0138) and are summarised in



Table 4.3 Maules Creek Coal Mine blasting assessment criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on	120	10	0%
privately owned land	115	5	5% of the total number of blasts over a period of 12 months
All public infrastructure	-	50 (or alternatively a specific limit determined to the satisfaction of the Secretary by the structural design methodology in AS2187.3-2006, or its latest version)	0%

The process for day to day management of compliance with respect to these conditions will be outlined in the MCCM BLMP.

## 4.4 **BTM Complex**

Table 4.4 summarises the current assessment criteria for the three mines of the BTM Complex.

Table 4.4 BTM Complex blasting assessment criteria

Criteria	Boggabri	Tarrawonga	Maules Creek
Blasting Hours	9AM – 5PM	9AM – 5PM	9AM – 5PM
Blasting Days	Monday to Saturday inclusive, excluding public holidays. Blasting outside of these days require written approval of the Secretary.	Monday to Saturday inclusive, and no blasting is allowed on Sundays, public holidays or at any other time without the written approval of the Secretary.	public holidays or at any
Blasting Frequency	1 blast per day, unless an additional blast is required following a blast misfire; and 4 blasts a week, averaged over a calendar year.	1 blast per day, unless an additional blast is required following a blast misfire and 4 blasts a week, averaged over a calendar year, for the project.	1 blast per day, unless an additional blast is required following a blast misfire; and 4 blasts a week, averaged over a calendar year.

The EA for Boggabri Coal Mine (PA 09\_0182) also includes the following commitment: 'Boggabri Coal will manage its blasting practices such that the recommended DECCW guidelines, existing at the time of approval; will be met at all privately owned receivers'. (Hansen Bailey, V.1, p. 183)

The EA further states that: 'blast events will continue to be coordinated with the adjacent Tarrawonga Mine and any other future mining operations in the area to avoid any potential cumulative impacts' (Hansen Bailey, V.1, p. 183).



The assessment criteria for the three mines, as outlined in Table 4.4, have been considered in preparation of the BLMS. Day to day management of blasting activities for the mines is detailed in their respective BLMPs.



## **5. Blast monitoring**

## 5.1 **Existing monitoring network**

The mines of the BTM Complex already have comprehensive blast management systems in place. The existing blast monitoring network will continue to be used. The locations of monitors within the existing blast monitoring network are shown in Figure 1.1.

It is expected that little change will be required to the existing blast monitoring network to continue to ensure compliance with respect to blasting in the BTM Complex. However, there will need to be additional cooperation between mines of the BTM Complex, to minimise the potential for cumulative impacts. Protocols described in this BLMS will be used with the existing monitoring programs to ensure that blasting schedules are coordinated to avoid cumulative impacts on sensitive receivers.

## 5.2 Predictive forecast meteorology

Details of the predictive meteorology system are included in the approved BTM Complex Air Quality Management Strategy (2017). The forecast meteorology system gives hourly weather forecasts up to 48 hours in advance. This system prepares daily forecasts reports that are used to guide the planning of blasting activities.

As with any predictive forecast, confidence reduces with longer predictions, however the hourly 48-hour forecasts provide useful information for guiding the drilling and loading of blasts at each mine within the BTM Complex. The forecasts for the next 24-hour and 12-hour periods provides more confidence in predictions for the day ahead and how weather may affect the proposed schedule for firing a blast.



## **Cumulative blast management** 6.

#### 6.1 Mitigation of cumulative blast impacts

The key management measure for the mitigation of cumulative blast impacts will be scheduling of blasts to ensure each mine fires their blast at separate times. Processes to mitigate blasting impacts associated with operations will be addressed in each mines' individual BLMPs. Each mine has developed a BLMP that outlines a consistent approach for the scheduling of blasts in consultation with other mines in the BTM Complex.

Blast notifications will be provided no later than the day prior to a proposed blast. If there is no conflict regarding the scheduled blast times, there will be no further correspondence. If there are conflicting blast times between the mines, a revised schedule for firing the blasts will be agreed upon. The schedule will be developed to ensure blasts are fired with a minimum 15 minute time gap between them to reduce any potential cumulative impacts.

#### 6.2 Communication

Regular meetings will be held by the BTM Complex to discuss any concerns relating to cumulative impacts associated with blasting. Meeting minutes will be documented and distributed to each site.

#### 6.2.1 Pre-blast communication

Each mine will send an email notification to the other mine advising date, blast ID number, exclusion zone map and estimated time of the blast. Other way of communication can also be used to discuss any conflictive date or time of blast.

Prior to blasting, if a dust and or fume event are likely cross onto a neighbouring mine lease or operation area, The Blast Engineer will make positive contact with the neighbouring operation. It is expected that the Mining Superintendent or OCE will be contacted by phone and informed of what could potentially occur. If positive contact is not made, then the blast will not be fired until positive communication has occurred.

#### 6.2.2 Post blast communication

When blasting criteria are identified as exceeded as a consequence of blasts from two or more mines, discussions will be held within the BTM Complex and the agencies and affected landholders (where an exceedance occurs on privately-owned land). This will include confirmation from the BTM Complex as to the blast time and identified time of exceedance from monitor reports to assist in identifying if the impact was due to more than one blast, or if it relates to single mines blasting activities.

The mines of the BTM Complex will also, if required, share baseline property inspection reports that are completed at the request of neighbouring landholders, in accordance with each site's Project Approval. Process to identify main source of blasting impacts.

If there is uncertainty around the source of a blasting related incident (e.g. exceedance of assessment criteria or damage to a neighbouring building or other infrastructure), a meeting will be held by the BTM Complex representatives to review relevant data and investigate the cause of the incident. If the cause cannot be determined, then the BTM Complex will engage a suitably qualified expert to undertake an



independent blast impact investigation. The outcomes of the investigation will help determine the responsibility of the mines for any corrective actions.

### 6.3 **Blasting related incidents**

Blasting related incidents such as misfires or exceedances of assessment criteria will be reported and managed in accordance with each mines' BLMP and incident management process. Incidents will be managed in accordance with the requirements of the Protection of the Environment Operations Act 1997 and the Work Health and Safety (Mining) Act, 2013.

### 6.4 Reporting

External reporting will include:

- Individual Company websites
- Community Consultative Committees (CCCs)
- Annual review (formerly AEMR)
- Annual returns
- Exceedance reporting.



## **Corrective and preventative actions 7.**

## 7.1 **Blasting criteria exceedance**

If the monitoring results of a blast identify an exceedance of the mine's relevant criteria, written notification of the exceedance will be provided to the other mines within the BTM complex, in addition to any investigation undertaken according to the respective mine's BLMP.

## **Unpredicted contingency** 7.2

Unpredicted events, such as storms or earth tremors, will be identified and reported as impacting on vibration results on a case by case basis.



## **Document control** 8.

The BLMS has been developed with the input of representatives of BCPL, TCM and MCC.

#### **Review and revision** 8.1

In accordance with the project approvals, the BMS will be reviewed within three months of:

- the submission of an annual review
- a blasting incident that causes or threatens to cause material harm, requiring notification of the Secretary / relevant agencies
- the submission of a statutory audit, and
- any modification of a project approval.



## References 9.

Project Approval PA11\_0047 MOD6 (2018) for Tarrawonga Coal Mine

Notice of Modification DA 09\_0182 MOD 6 for the Boggabri Coal Mine.

Project Approval 10\_0138 for the Maules Creek Coal Project.

Boggabri Coal Pty Limited, Boggabri Coal Mine Blast Management Plan (2018), Boggabri Coal Pty Limited, NSW

Whitehaven Mining Pty Limited, Maules Creek Blast Management Plan (2018), Whitehaven Mining Pty Limited, NSW.

Whitehaven Mining Pty Limited, DRAFT Tarrawonga Blast Management Plan (2018),(still under review) Whitehaven Mining Pty Limited, NSW.



## Appendix A

Regulatory Consultation



Consultation	Date	Details	Response
Boggabri Coal BLMP and BTM Complex BLMS lodged with the (then) DP&I	17.01.2013	BLMS for BTM Complex and BLMP lodged with DP&I.	Comments were received from the (then) DP&I in April 2013. Comments received were incorporated in Revision 2 of the BLMS.
Boggabri Coal CCC Meeting April 2013	30.04.2013	BLMP and BLMS was presented to the CCC for comment.	The BLMP and BLMS were presented to the CCC, with opportunity for feedback given. No further comment was received.
Blast Management Plan for Tarrawonga Coal Mine sent to EPA for comment	06.05.2013	The management plan contains details of the proposed BLMS for the BTM Complex	The EPA received the management plan and responded on 06.05.2013 that "the Environment Protection Authority (EPA) encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. However, we do not approve or endorse these documents as our role is to set environmental objectives for environmental/ conservation management, not to be directly involved in the development of strategies to achieve those objectives"
Blast Management Plan for Boggabri Coal Mine sent to EPA for comment	June 2013	The management plan contains details of the proposed BLMS for the BTM Complex	The EPA received the management plan and responded on 18.06.2016 that 'The Environment Protection Authority (EPA) encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. However, we do not approve or endorse these documents as our role is to set environmental objectives for environmental/ conservation management, not to be directly involved in the development of strategies to achieve those objectives'.
Revised Boggabri Coal BLMP and BLMS lodged with (then) DP&I	July 2013	Revised BLMS and BLMP lodged for approval.	Further comments were received and addressed on 14.6.2013. Plans were relodged and approved on 31 July 2013.
Whitehaven Coal joint CCC Meeting November 2013	19.11.2013	The BLMS was presented to the CCC meeting.	The BLMS was reviewed and discussed at the meeting. Comments were considered in preparation of this version of the BLMS.
Blast Management Plan for Boggabri Coal Mine sent to EPA for comment	28.01.2014	The management plan contains details of the proposed BLMS for the BTM Complex	The EPA received the management plan and responded on 12.02.2014 that "the Environment Protection Authority (EPA) encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. However, we do not approve or endorse these documents as our role is to set environmental objectives for environmental/ conservation management, not to be directly involved in the development of strategies to achieve those objectives"



Consultation	Date	Details	Response
Blast Management Plan for Tarrawonga Coal Mine presented to CCC	08.05.2014	BLMP was presented to CCC for comment.	BLMP was signed off at the May CCC meeting on May 8 <sup>th</sup> .
Blast Management Plan for Maules Creek Coal Mine sent to EPA and community members for comment	20.06.2014	The management plan contains details of the proposed BLMS for the BTM Complex	The EPA received the management plan and responded that "the Environment Protection Authority (EPA) encourages the development of such plans to ensure that proponents have determined how they will meet their statutory obligations and designated environmental objectives. However, we do not approve or endorse these documents as our role is to set environmental objectives for environmental/ conservation management, not to be directly involved in the development of strategies to achieve those objectives"