

BENGALLA MINING COMPANY PTY LIMITED

**BENGALLA MINE
DEVELOPMENT CONSENT MODIFICATION**

ENVIRONMENTAL ASSESSMENT

Prepared by:

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March 2008

for:

Bengalla Mining Company Pty Limited
LMB 5
MUSWELLBROOK NSW 2333

ENVIRONMENTAL ASSESSMENT STATEMENT

Submission of Environmental Assessment (EA)

Under Section 75W of the *Environmental Planning and Assessment Act 1979*

EA Prepared by

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In Respect Of: Bengalla Mine Development Consent Modification

Applicant Name:

Bengalla Mining Company Pty Limited

Applicant Address:

LMB 5
MUSWELLBROOK NSW 2333

Land to which modification

See **Appendix A** of Modification Application

Application applies:

Proposed modification sought:

Development Consent Modification as described in
Section 3.0 of this EA (March 2008).

Environmental Assessment:

An EA for this Modification is attached.

Certification:

I certify that I have prepared the contents of this EA, and to the best of my knowledge:

- it is in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979*;
- it contains all available information that is relevant to the environmental assessment of the activity to which this EA relates; and
- the information contained in this EA is neither false nor misleading.

Signature:



Name:

James Bailey
Director
Hansen Bailey

Date:

March 2008

EXECUTIVE SUMMARY

INTRODUCTION

This Environmental Assessment supports an Application by Bengalla Mining Company to the Minister for Planning to modify the Bengalla Mine Development Consent under Section 75W of the *Environmental Planning and Assessment Act 1979*.

This Modification to the Bengalla Mine Development Consent is required to:

- Allow the construction of the remaining section of the Bengalla Link Road, Stage 2, on an alternative alignment to that originally approved; and
- Defer the relocation of the Run of Mine coal hopper as approved in a modification which was granted to the Bengalla Mine Development Consent in November 2006.

BENGALLA LINK ROAD STAGE 2

Following substantial consultation with neighbouring industry, Muswellbrook Shire Council and the community, the preferred alignment of Bengalla Link Road Stage 2 continues from the end of the existing Bengalla Link Road at the Bengalla Mine entrance; intersects Roxburgh Road and links with Wybong Road to the north-west of Bengalla Mine.

The construction of Bengalla Link Road Stage 2 will implement an essential component of Muswellbrook Shire Council's *Western Roads Strategic Traffic Study* (ERM Mitchell McCotter, 1997a) which was undertaken in 1997 to determine the required road network modifications to the west of Muswellbrook resulting from proposed mining developments in the area.

Bengalla Link Road Stage 2 will be constructed to the standard stipulated in the Bengalla Mine Development Consent and to Muswellbrook Shire Council's and the Roads and Traffic Authority's requirements.

It will provide an alternative, 100 kilometres per hour public road for traffic travelling to and from the region west of Muswellbrook.

The construction of Bengalla Link Road Stage 2 will have minimal impact on the local environment. Hours of construction activities audible at nearby non-mine owned receivers will be restricted to day time hours only, from Monday to Saturday. The road will be constructed to comply with the New South Wales Roads and Traffic Authority's Guidelines and Bengalla Mining Company's safety and environmental management systems, in a manner which minimises potential environmental impacts to the neighbouring community and natural environment.

ROM HOPPER RELOCATION

As a result of externalities that have been experienced by Bengalla Mining Company, the relocation of the Run of Mine coal hopper has not occurred in the timeframe described in the *Statement of Environmental Effects Modifications to Mining Operations* (Hansen Consulting, 2006). As such, Bengalla Mining Company is seeking approval to defer the relocation of the Run of Mine coal hopper which is now scheduled to be completed by 31 March 2009.

The required deferral of the relocation of the Run of Mine coal hopper will result in the delay of the infilling of the internal southern haul road and the rehabilitation of the eastern face of the overburden emplacement area as described in the *Statement of Environmental Effects Modifications to Mining Operations* (Hansen Consulting, 2006). Rehabilitation of the eastern face of the overburden emplacement area will continue as areas become available.

In order to manage adverse environmental impacts during the deferral period, Bengalla Mining Company proposes to constrain Run of Mine coal production at Bengalla Mine to less than 8.7 Million tonnes per annum as approved in the original Bengalla Mine Development Consent.

The acoustics impact assessment undertaken for these constrained operational conditions concludes that the noise levels to the east of Bengalla Mine would be up to 2 decibels greater than those currently approved. However, predicted noise levels under neutral weather conditions will continue to remain within the noise criteria which were imposed on Bengalla Mine in the original Bengalla Mine Development Consent.

The air quality impact study undertaken as part of this Environmental Assessment concludes that the dust emissions from Bengalla Mine will continue to remain within the predictions from the *Statement of Environmental Effects Modifications to Mining Operations* (Hansen Consulting, 2006) and meet relevant criteria at all non-mine owned receivers.

It is predicted that the currently approved high visual impacts will continue to be experienced by sensitive receivers located to the east of Bengalla Mine as a result of this Modification. Following the rehabilitation of the eastern face of the overburden emplacement area, these visual impacts will decrease to low as a result of reduced visual effects.

CONCLUSION

Despite the application of a stringent, contemporary environmental impact assessment, this Environmental Assessment has not identified any significant additional environmental impacts associated with this minor Modification to those in the *Environmental Impact Statement for Bengalla Coal Mine* (Envirosciences, 1993), the *Statement of Environmental Effects Modifications to Mining Operations* (Hansen Consulting, 2006) and the *Wantana Extension Statement of Environmental Effects* (Hansen Bailey, 2007).

Bengalla Mining Company has committed to managing any environmental impacts from this Modification to its Development Consent (including during the construction of the Bengalla Link Road Stage 2) through its International Standards Organisation 14001 accredited Environmental Management System, which will ensure best practice environmental management and ongoing environmental regulatory compliance at Bengalla Mine.

Approval of this Modification will result in the completion of a critical component of the Muswellbrook Shire Council's *Western Roads Strategic Traffic Study* (ERM Mitchell McCotter, 1997a). The construction of Bengalla Link Road Stage 2 will provide improved access to Muswellbrook for those stakeholders travelling between Muswellbrook and destinations to the west.

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1.0 BACKGROUND

1.1 INTRODUCTION

Bengalla Mine (Bengalla) is located in the Upper Hunter Valley of New South Wales (NSW), approximately 130 kilometres (km) north-west of Newcastle and 4 km west of Muswellbrook. Bengalla is generally bound by Wybong Road to the north, Overton Road to the east, the Muswellbrook to Ulan Rail Line and the Hunter River floodplain to the south and Roxburgh Road to the west (see **Figure 1**).

Bengalla Mining Company (BMC) was granted Development Consent (Development Application (DA) 211/93) by the Minister for Planning on 7 August 1995 for the development of an open-cut coal mine and associated facilities. The supporting document to the Development Consent is the *Environmental Impact Statement for Bengalla Coal Mine* dated November 1993 (Bengalla EIS) (Envirosciences, 1993).

A modification to the Development Consent (DA 211/93 (M1)) was granted by the Minister for Planning on 9 November 2006 which permits:

- A Run of Mine (ROM) coal production rate of up to 10.7 Million tonnes per annum (Mtpa);
- The relocation of the ROM coal hopper (ROM hopper) and associated infrastructure to allow the early rehabilitation of the eastern face of the Overburden Emplacement Area (OEA);
- An increase in height of the OEA to a Reduced Level (RL) of 270 metres (m); and
- Other operational flexibilities.

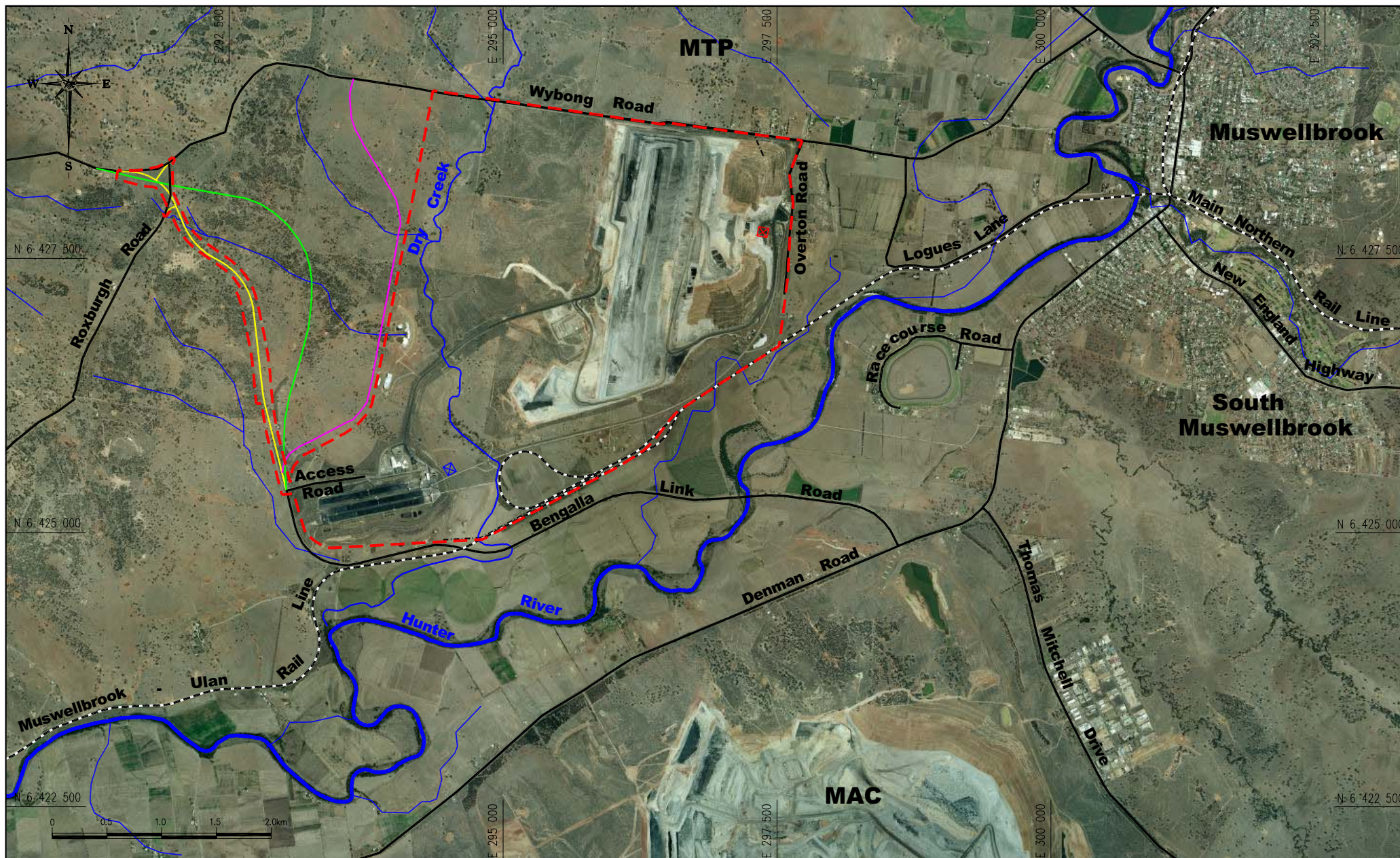
The activities associated with this modification are fully described in the supporting document to DA 211/93 (M1), *Statement of Environmental Effects Modifications to Mining Operations* (Bengalla SEE) (Hansen Consulting, 2006).

A second modification to the Development Consent (DA 211/93 (M2)) was granted under Ministerial delegation by the Department of Planning (DoP) Executive Director, Chris Wilson on 6 December 2007 to allow the extension of mining operations into the Wantana Extension, a 32 hectare (ha) area to the south of the existing operations and for minor infrastructure modifications. The supporting document to this second modification is the *Wantana Extension Statement of Environmental Effects* (Wantana Extension SEE) (Hansen Bailey, 2007).

This Application seeks approval for a Modification to Development Consent (DA 211/93) under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to allow the:

- Construction of the remaining section of the Bengalla Link Road (Bengalla Link Road Stage 2) on an alternative alignment to that originally approved in DA 211/93; and
- Deferral in the relocation of the ROM hopper and associated infrastructure which is now scheduled to be completed by 31 March 2009.

This Environmental Assessment (EA) has been collated to support the Application which will be lodged with DoP for determination by the Minister for Planning. This EA has been compiled in accordance with the Director-General's Environmental Assessment Requirements (EARs) which were issued by DoP for this Modification on 6 December 2007. These are reproduced in **Appendix A**. A checklist of each EAR and where it is addressed in this EA is presented in **Section 5.4**.



Legend

- DA Boundary
- Bengalla Link Road Stage 2
- ◆ Approved ROM Hopper Relocation
- ◆ Existing ROM Hopper Location
- Bengalla Link Road Alignment (1997 MTP EIS)
- Bengalla Link Road Alignment (1993 BMC EIS)

Hansen Bailey



Co-ordinate System: MGA Zone 56
Aerial Data : Dec 2006

BENGALLA MINE

Bengalla Site Plan

Cad File: 02595F.dwg

Date: 06.12.07

Drawn: JD

Figure
1

1.2 THE PROPONENT

BMC is managed by Coal & Allied (CNA) Bengalla Pty Limited. The Bengalla Joint Venture (BJV) owns the exploration and mining rights within the Bengalla Mining Leases. The current participants and their interests in the BJV are as follows:

- CNA Bengalla Investments Pty Limited (a wholly owned subsidiary of CNA Industries Limited, a Rio Tinto Group Company) 40%;
- Wesfarmers Bengalla Limited (a wholly owned subsidiary of Wesfarmers Limited) 40%;
- Taipower Bengalla Pty Limited (a wholly owned subsidiary of Taiwan Power Company) 10%; and
- Mitsui Bengalla Investment Pty Limited (a wholly owned subsidiary of Mitsui Coal Holdings Pty Limited) 10%.

1.3 LAND OWNERSHIP

Table 1 lists non-mine owned land surrounding Bengalla and should be read in conjunction with **Figure 2** which shows land ownership and receivers within and surrounding Bengalla relevant to this Modification. A schedule of land to which this EA applies is presented in **Appendix B**.

This EA refers to non-mine owned landholders as either receivers or properties. Receivers refer to land surrounding Bengalla which has a residence, while the term property is used to describe land which does not have a residence.

Consultation materials provided to non-mine owned landholders in relation to this Modification are reproduced in **Appendix C** and are discussed further in **Section 5.0**.

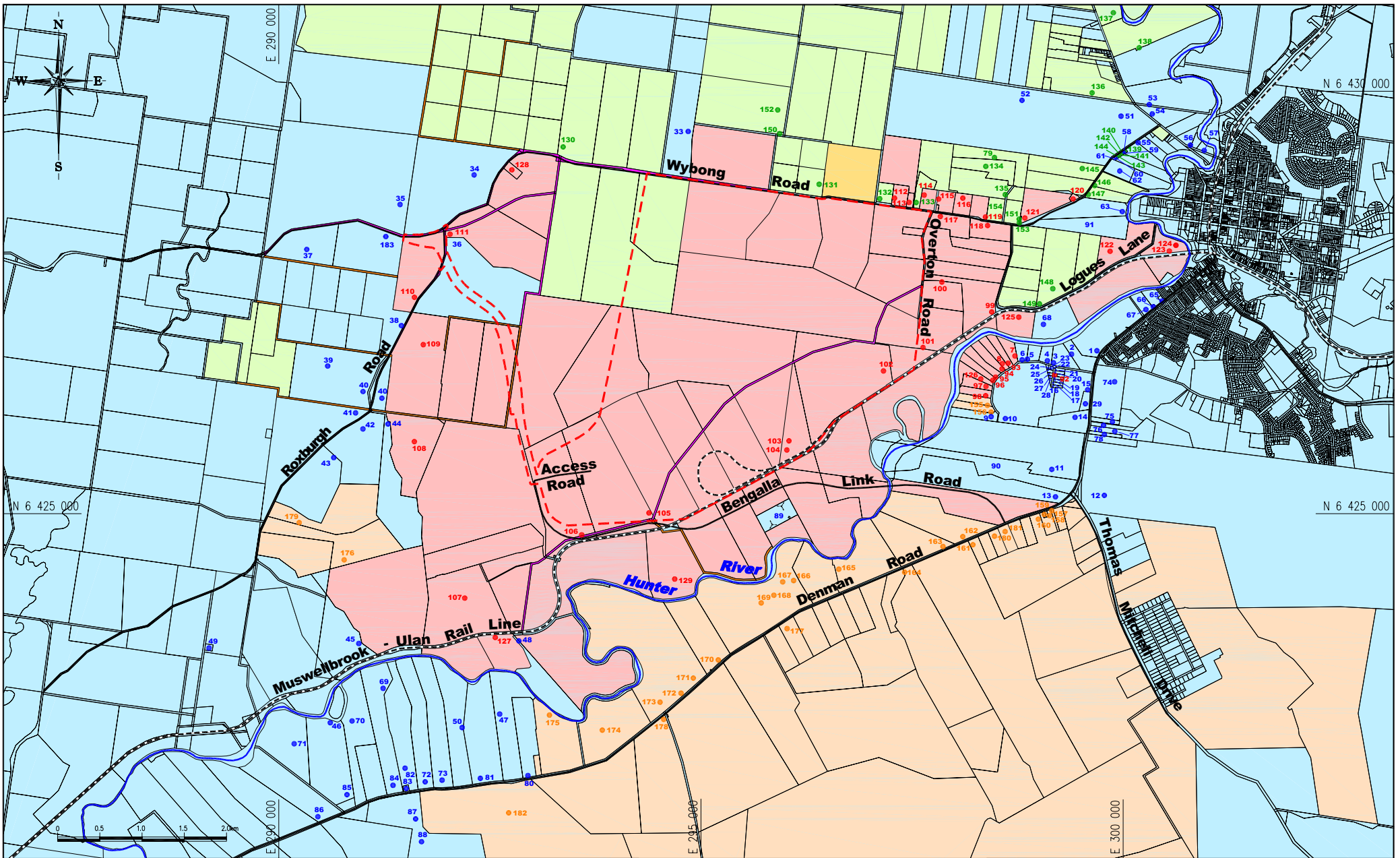
Figure 2 shows land ownership surrounding Bengalla. Non-mine owned land is illustrated in blue. Orange indicates land owned by Mount Arthur Coal (MAC). The CNA managed Mount Pleasant Project (MTP) owned land is denoted green, with BMC owned land illustrated in red.

Table 1
Non-Mine Owned Land

ID	Owner	ID	Owner	ID	Owner
1	R Duncan		Mine Owned Land (MTP 150) - Previously Scriven *	63	C Horne
2	S & K Barkley	33	C & G Bates		Mine Owned Land (MTP 153) - Previously Mclean, Hofman, Scriven & Warner *
3	F Almond	34	J Moore	65	Telstra Corporation
4	C & P Englebrecht	35	M Moore	66	Muswellbrook Council
5	K & J Barnett	36	J & H Hofman #	67	The NSW Greyhound Breeders Owners & Trainers Association
6	McGoldrick	37	Lebreton	68	Jabetin Pty Limited
	Mine Owned Land (BMC 7) – Previously J Bowen *	38	R & J Hamilton	69	M & L Latham
	Mine Owned Land (BMC 8) – Previously P Farrell *	39	P Ellis	70	Rosemount Estates Pty Limited
9	J & B Englebrecht	40	P Ellis	71	A & R Boyle
10	Upper Hunter Race Club	41	M & M Peel	72	L, M, K & S Halloran
11	M Drake	42	B Moore	73	J & E Zahra
12	F Webber	43	P Ellis	74	Muswellbrook Shire Council
13	J Scriven	44	P & C Lane	75	Monadelphous Properties Pty Limited
14	J Drake	45	T Roots	76	J & J Buckley
15	B Kirkby	46	Banugi	77	S & R Ray
16	R Englebrecht	47	B & E Rankin	78	Trevlyn Pty Limited
17	J Cridland	48	M Chudyk		Mine Owned Land (MTP 79) – Previously K O'Keefe & P Fellowes *
18	Cridland	49	H Brown	80	B & E Rankin
19	A Good	50	J & E Zahra	81	B & E Rankin
20	R Keevers	51	F Blake	82	M & L Latham
21	S Gleeson	52	F Blake	83	L Latham
22	M Sweeney	53	Oafox Pty Limited	84	M & L Latham
23	M & L Dobie	54	Oafox Pty Limited	85	Banugi
24	J & D Robinson	55	R & N Googe	86	M & M Duncan
25	D Smith	56	Oafox Pty Limited	87	Rosemount Estates Pty Limited
26	L & J Barby	57	L & C Kelman	88	Rosemount Estates Pty Limited
27	G Andrews	58	W Clark	89	Aliform Pty Limited #
28	Solway	59	N & M Sormaz	90	F Webber #
29	D & C Tubb	60	R Parkinson	91	C Horne #
	Mine Owned Land (MTP 151) - Previously Scriven *	61	J Simpson	183	B & T Strachan
	Mine Owned Land (MTP 152) - Previously Scriven *	62	R & N Googe		

* Land identified in the Bengalla SEE or Wantana Extension SEE as non-mine owned which has since been acquired by BMC, MTP or MAC.

Denotes land is a property, without a residence.



Legend

---	DA Boundary	180	MAC Property (Residence)	150	MTP Property
	Crown Land	50	Non-Mine Owned Property (Residence)	150	MTP Property (Residence)
---	Crown Roads (NSW)		BMC Property		
---	Crown Roads (MSC)		BMC Property (Residence)		
	MAC Property				

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Co-ordinate System: MGA Zone 56
Source: LPI (2006)

BENGALLA MINE

Land Ownership

Cad File: 02596B.dwg

Date: 09.11.07

Drawn: JD

Figure

2

2.0 EXISTING OPERATIONS

Operations at Bengalla are conducted generally in accordance with DA 211/93 and its supporting documents; the Bengalla EIS, the Bengalla SEE and the Wantana Extension SEE.

Bengalla is an open-cut strip mining operation where mining generally advances to the west based on dragline strips approximately 60 m in width. Mining operations at Bengalla commenced in October 1998 with the first coal exported in April 1999. A total of 31 strips will be mined within the existing DA Boundary as described in the Bengalla SEE and illustrated in **Figure 1**. At the end of 2006, 15 strips had been fully mined with coal extraction occurring in strip 16.

The approved mining area contains a multi-seam coal deposit consisting of eight open-cut mineable coal seams. BMC extracts coal from the Warkworth seam to the Edderton seam which form part of the Wittingham Coal Measures.

Bengalla is situated on the western limb of the Muswellbrook Anticline with the coal seams generally dipping to the west at approximately 5 degrees. The average strip ratio at Bengalla is approximately 3.6 bank cubic metres (bcm) of overburden to each ROM tonne (t) of coal recovered.

Topsoil is initially stripped using dozers, loaders and trucks, and either stockpiled in a designated area or where possible, spread onto shaped overburden prior to rehabilitation. Pre-stripped overburden is removed by loader and/or excavator and trucks in advance of the dragline operation and subsequent coaling.

Mining operations at Bengalla are conducted by an equipment fleet consisting of a dragline, loading units, a fleet of trucks and other ancillary open-cut mining equipment. Excavators and front end loaders are used to mine coal from the pit. Coal is transported via truck to the ROM hopper, currently located to the east of the OEA (see **Figure 1**).

BMC was originally granted approval to extract up to 8.7 Mtpa of ROM coal over a period of 21 years. DA 211/93 (M1) allowed for an increase in the approved production rate to a maximum of 10.7 Mtpa of ROM coal. During the 2005 and 2006 calendar years, Bengalla produced 7.5 and 7.1 Million tonnes (Mt) of ROM coal respectively. As a result of port and rail constraints during 2007 ROM coal production was limited to 6.4 Mt.

The initial proposal for Bengalla envisaged, as described in the Bengalla EIS, the construction of a road (Bengalla Link Road) which would link Denman Road directly with Wybong Road. The Bengalla Link Road was to be dedicated to Muswellbrook Shire Council (MSC) as a public road.

The existing section of Bengalla Link Road was constructed in 1997 in conjunction with the development of Bengalla and provides access to the mine site and some privately owned properties from Denman Road, crossing the Hunter River at Keys Bridge.

Since the granting of DA 211/93 in 1995, a number of alternative alignments for the remaining section of the Bengalla Link Road (Bengalla Link Road Stage 2) have been explored to identify a preferred alignment to satisfy the requirements of neighbouring industry and MSC. These alignments are discussed further in **Section 3.1.1**.

As approved in DA 211/93 (M1), the ROM hopper and associated facilities are required to be relocated from their existing locations to an area adjacent to the Coal Handling and Preparation Plant (CHPP) facilities by the end of 2007. Construction activities for the relocated ROM hopper are anticipated to take approximately 12 months to complete and have not commenced to date as a result of externalities being experienced beyond BMC's control. Further details on these external constraints are provided in **Section 3.2.1**.

DA 211/93 (M2) allows BMC to extend mining operations into the Wantana Extension, a 32 ha area to the south of the existing mining operations.

This approval allows the extraction of an additional 7.5 Mt of ROM coal over a period of approximately five years, however, the total annual production from Bengalla is not proposed to change as a consequence of mining the area.

As part of the CNA operations within the Hunter Valley, Bengalla operates within the CNA Environmental Management System (EMS), accredited to the International Standards Organisation (ISO) 14001.

The CNA EMS is designed so that BMC can effectively manage its environmental issues, ensure compliance with regulatory requirements, continually improve its environmental performance and satisfy the expectations of all stakeholders, including the local community.

The CNA EMS relies upon an Environmental Policy, a series of regulatory required and approved management plans, a monitoring program and environmental standards and procedures. The Environmental Policy directs planning which in turn affects implementation and operation, management measures and a continuous review and improvement process.

3.0 MODIFICATION DESCRIPTION

BMC seeks to modify DA 211/93 to allow the:

- Construction of the Bengalla Link Road Stage 2 on an alternative alignment to that originally approved; and
- Deferral of the relocation of the ROM hopper and associated facilities from its existing location to a site adjacent to the CHPP which is now scheduled to be completed by 31 March 2009.

Descriptions of this Development Consent Modification are provided in the following sections.

3.1 BENGALLA LINK ROAD STAGE 2

3.1.1 Background

The original alignment of the Bengalla Link Road was illustrated in the Bengalla EIS and originally approved under DA 211/93. During the development of Bengalla, mine planning for the adjacent MTP was also being undertaken. During the preparation of the MTP Environmental Impact Statement (ERM Mitchell McCotter, 1997b) (MTP EIS), an alternative alignment for the remaining section of the Bengalla Link Road from the Bengalla Access Road to Wybong Road was proposed. This alternative alignment allowed for the refinement of transport corridors for MTP's operations and is shown in **Figure 1**. No planning approval was sought for this alternative alignment.

In recognition of the potential for further coal mining development to the west of Muswellbrook and the impact that this may have on the local roads network, in 1997 MSC commissioned the *Western Roads Strategic Traffic Study* (ERM Mitchell McCotter, 1997a). This study was undertaken with input from both the local community and the various mining companies with interests west of Muswellbrook, including MTP. The *Western Roads Strategic Traffic Study* identified the road alignment of the Bengalla Link Road Stage 2 as generally described in the MTP EIS.

Ongoing evaluation of alternative alignments for Bengalla Link Road Stage 2 has occurred since that time in consultation with MSC, Roads and Traffic Authority (RTA) and CNA's MTP project team. This has resulted in a practical, long-term preferred alignment being identified as compared to that proposed in the Bengalla EIS and the MTP EIS which is consistent with MSC's *Western Roads Strategic Traffic Study*.

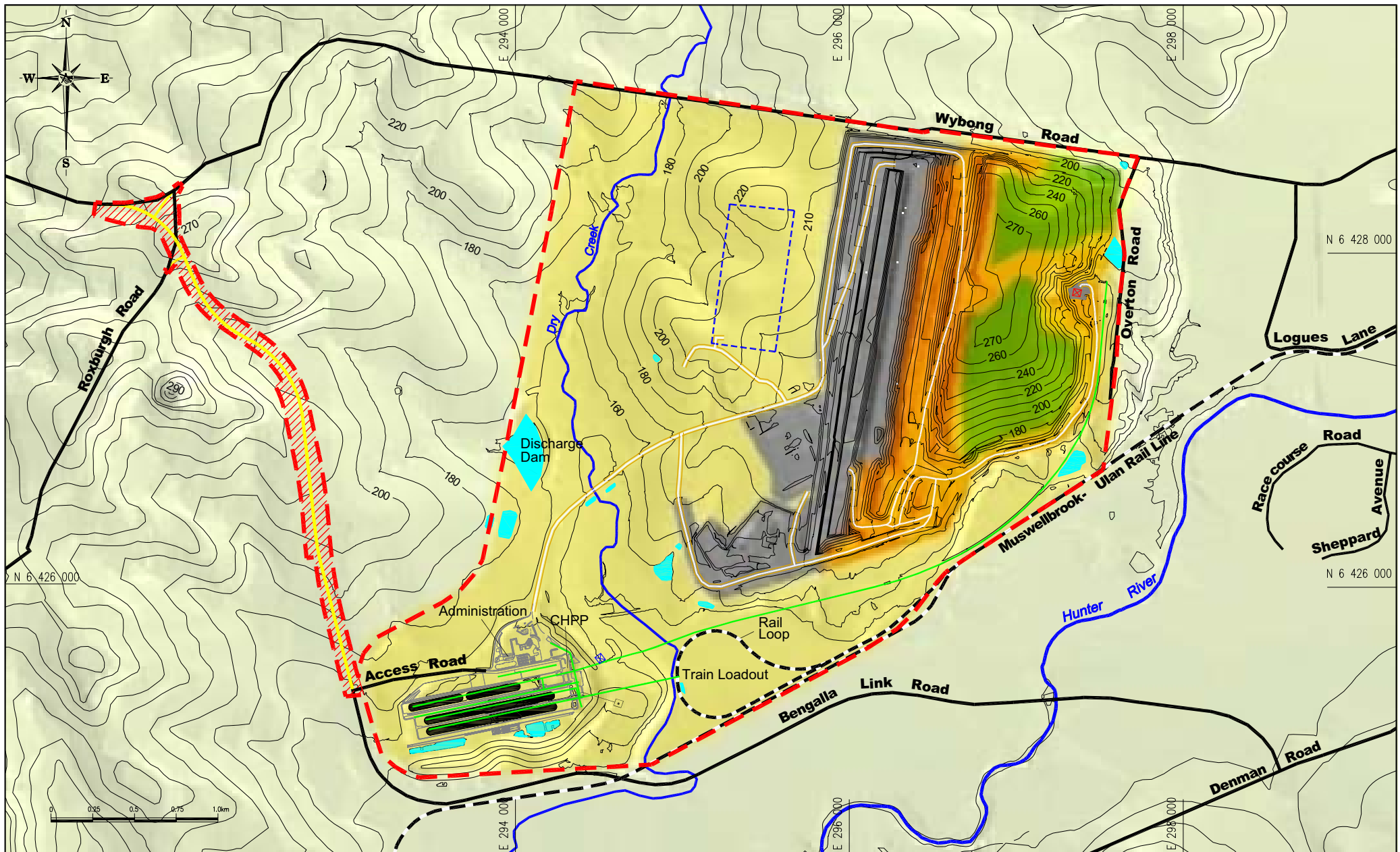
Figure 1 illustrates the proposed alignment of the Bengalla Link Road Stage 2 as approved in the Bengalla EIS, put forward in the MTP EIS, and the now preferred alignment, for which this Modification is seeking approval.

3.1.2 Road Design

The preferred alignment of Bengalla Link Road Stage 2 as agreed with MSC is an approximate 3.6 km section of public road to be constructed from the end of the existing Bengalla Link Road that will intersect Roxburgh Road before continuing on to connect with Wybong Road to the west of the existing intersection between Wybong Road and Roxburgh Road. Minor connector roads will also be constructed from the existing Wybong Road and Roxburgh Road to provide adequate intersections with the Bengalla Link Road Stage 2. The northern most 500 m of Roxburgh Road will be closed with a permanent barrier installed to prevent its use.

As shown in **Figure 2**, the alignment of the Bengalla Link Road Stage 2 crosses one non-mine owned property immediately to the south of Roxburgh Road. BMC is presently in negotiations with this landholder for acquisition of the land in accordance with Schedule 3, Condition 1 of DA 211/93 (M2).

The Bengalla Link Road Stage 2 Survey Area (Survey Area) as illustrated in **Figure 3** covers an area of approximately 46 ha to the west of Bengalla. The construction of the Bengalla Link Road Stage 2 is proposed to involve substantial disturbance inside this area, however disturbance will be kept to a practicable minimum to ensure minimal impact on the surrounding environment.



Legend

- | | | | | | |
|--|----------------------------|--|----------------------------------|--|------------------|
| | DA Boundary | | Rehabilitated Area | | Conveyors |
| | Survey Area | | Existing Dams | | Proposed Tripper |
| | Bengalla Link Road Stage 2 | | Conceptual Haul Roads | | |
| | Mining Area | | Approved ROM Hopper Relocation | | |
| | Overburden Emplacement | | Existing ROM Hopper Location | | |
| | | | Temporary Out Of Pit Emplacement | | |

Hansen Bailey



Co-ordinate System: MGA Zone 56

BENGALLA MINE

Mine Plan 2008

Cad File: 02545E.dwg

Date: 16.11.07

Drawn: JD

Figure

3

A preliminary road design of the Bengalla Link Road Stage 2 has been developed utilising design criteria from the RTA's *Road Design Guide 1999*. The road is designed as a single lane, two directional bitumen sealed road with a minimum design speed of 100 km per hour, similar to the existing section of Bengalla Link Road and as required by DA 211/93. The preliminary design allows for a maximum grade of 6% and shoulder widths of 2 m which will be sealed with bitumen out to 1 m.

The preferred alignment will require the construction of three intersections with existing roads. The preliminary intersections have been designed to the relevant AUSTROADS Standards and include:

- Type C intersection which is now known as a Type CH(R) (Channelised Right Turn Auxiliary) at Bengalla Access Road;
- Type A intersection which is now known as a Type BA (Basic) intersection at Roxburgh Road; and
- Type C intersection which is now known as a Type CH(L&R) (Channelised Left and Right Turn Auxiliary) at Wybong Road.

The intersection with Wybong Road will be upgraded from a Type B (now known as AUR (Auxiliary Right Turn)) intersection as required by DA 211/93 to a Type C (now CH(L&R)) intersection. This strategy was agreed with MSC as the favoured option to manage the increased traffic movements now proposed to be travelling on these roads due to other approved mining operations and will result in a more contemporary intersection than that currently approved in the Bengalla EIS.

The proposed Bengalla Link Road Stage 2 alignment crosses a number of small, ephemeral drainage lines which drain to the south-east, towards the Hunter River. The preliminary road design considers these drainage lines, with reinforced concrete culverts of a suitable size for the upstream catchment and resulting flows from a 50 year Average Recurrence Interval (ARI) rainfall event to be installed at the relevant locations.

Where high flow velocities may be experienced at these culverts, rock-filled mattress scour protection will be installed to prevent the occurrence of erosion and will ensure that all runoff water is treated for sediment prior to being directed back onto its natural drainage path. The installation of these culverts along the alignment will result in little to no impacts on the runoff patterns of the drainage lines in this area as a result of the construction of Bengalla Link Road Stage 2.

Ongoing discussions will be held with MSC over their signoff on a final road design that satisfies their requirements. BMC will also continue to liaise with MSC over the ultimate dedication of the Bengalla Link Road Stage 2 as a public road.

3.1.3 Construction

Construction of the Bengalla Link Road Stage 2 is estimated to take approximately eight months to complete and will utilise standard road construction methods (i.e. ripping of topsoil, excavation works, haulage of material and placing and compaction of road material). Construction activities which are audible at nearby non-mine owned receivers will occur during day time hours (i.e. 7:00 am to 6:00 pm) from Monday to Saturday only.

A representative list of equipment for construction purposes is provided in **Table 2**. Approximately 30 personnel will be required for the construction of the road.

Considerable planning in relation to the design and the construction of the Bengalla Link Road Stage 2 has been undertaken. Through this planning and design phase excessively large cut and fill requirements along the road alignment have been minimised with careful adjustments in the vertical and horizontal alignments. A preliminary materials budget for the construction of the Bengalla Link Road Stage 2 is provided in **Table 3**. As shown there is expected to be a slight surplus of material to be produced during the cut and fill earthworks. The remainder of this fill material will be used for visual bunding adjacent to the road as required.

Table 2
Indicative Construction Equipment List

Equipment List	Number
637 Scrapers	3
631 Scrapers	2
Graders	2
Excavators	2
Backhoe	1
Mobile crane	1
Smooth drum / padfoot rollers	4
Flat bed truck with Hiab	1
Fuel truck	1
Watercarts	2
Dozers	2
Trucks	3

Table 3
Indicative Materials Budget

Material	Quantity
Cut Volume as Excavation Works (including topsoil)	66,000 m ³
Fill Material Required from Excavation Works	65,000 m ³
Topsoil Stripping	9,500 m ³
Road Base (including ridge gravel sub-base and base suitable for RTA standard DGB20)	18,000 m ³
Bitumen Seal	38,000 m ²

All pavement material for the road construction will be sourced from suitable regional suppliers to ensure that it meets the relevant criteria for the road design.

In order to manage the potential construction impacts during the construction of the Bengalla Link Road Stage 2, BMC will prepare and implement a detailed Construction Management Plan to the satisfaction of MSC. The Construction Management Plan will include relevant detail on the construction works and any required mitigation and management of environmental impacts.

The construction of the Bengalla Link Road Stage 2 will be undertaken in accordance with the CNA EMS to ensure that all environmental issues are managed appropriately. Reference will be made in the Construction Management Plan to the relevant CNA EMS standards, procedures and the regulatory required management plans.

Traffic impacts during the construction of the Bengalla Link Road Stage 2 are considered to be minimal as discussed in **Section 6.1.3** and will be managed in accordance with a Traffic Management Plan and a Traffic Control Plan which will be developed to the satisfaction of the MSC.

Once construction activities have been completed, the areas that have been disturbed will be fully rehabilitated as these areas become available. Rehabilitation activities along the Bengalla Link Road Stage 2 will be undertaken in accordance with the CNA EMS and the approved Bengalla Rehabilitation and Landscape Management Plan.

Paralleling the construction of Bengalla Link Road Stage 2, BMC also proposes to undertake restoration works on a section of the existing Bengalla Link Road.

As illustrated on **Figure 2**, the road alignment will intercept existing sections of Crown Roads. As these roads will be affected by the construction of Bengalla Link Road Stage 2, BMC is currently in discussions with MSC with regard to transferring the management of the appropriate sections of Crown Roads in the area that are currently managed by the Crown to MSC. Further, it is proposed that an application will be lodged with the NSW Department of Lands (DoL), in parallel with the planning approval process to close the unnecessary sections of Crown Road and to purchase the Crown Land as detailed in **Section 4.4.1**.

This Modification does not seek approval to close Wybong Road. The closure of Wybong Road is described in the MTP EIS and is included as an assumption in the MSC *Western Roads Strategic Traffic Study*. As such, it has been included in the environmental assessments undertaken for this EA to assess the cumulative impacts arising from the closure of Wybong Road if this were to eventuate in the future.

3.2 ROM HOPPER RELOCATION

3.2.1 Background

BMC has experienced events beyond its control since the granting of DA 211/93 (M1). This has resulted in a delay in meeting the requirement to relocate the ROM hopper by the end of 2007 as described in the Bengalla SEE. Specifically the events are described below.

Rail & Port Allocations

Most product coal from Bengalla is railed to the Port of Newcastle for export with the remaining coal railed to regional power utilities. As such, BMC is reliant on both the rail line and port loading infrastructure for the distribution of its product coal to both export and domestic markets.

During 2007, BMC was significantly restricted in its capacity to move coal through the coal chain to the Port of Newcastle.

Further, the restrictions are likely to continue in the near term such that Bengalla will not be able to increase its production level to the approved 10.7 Mtpa of ROM coal in the timeframe as proposed in the Bengalla SEE. The increase in the rate of coal mining was one of the key justifications for the relocation of the ROM hopper and subsequent increase in capacity.

Uncertainties surrounding the future capacity of the coal chain have continued to result in delays in committing to the significant capital requirements for relocating the ROM hopper.

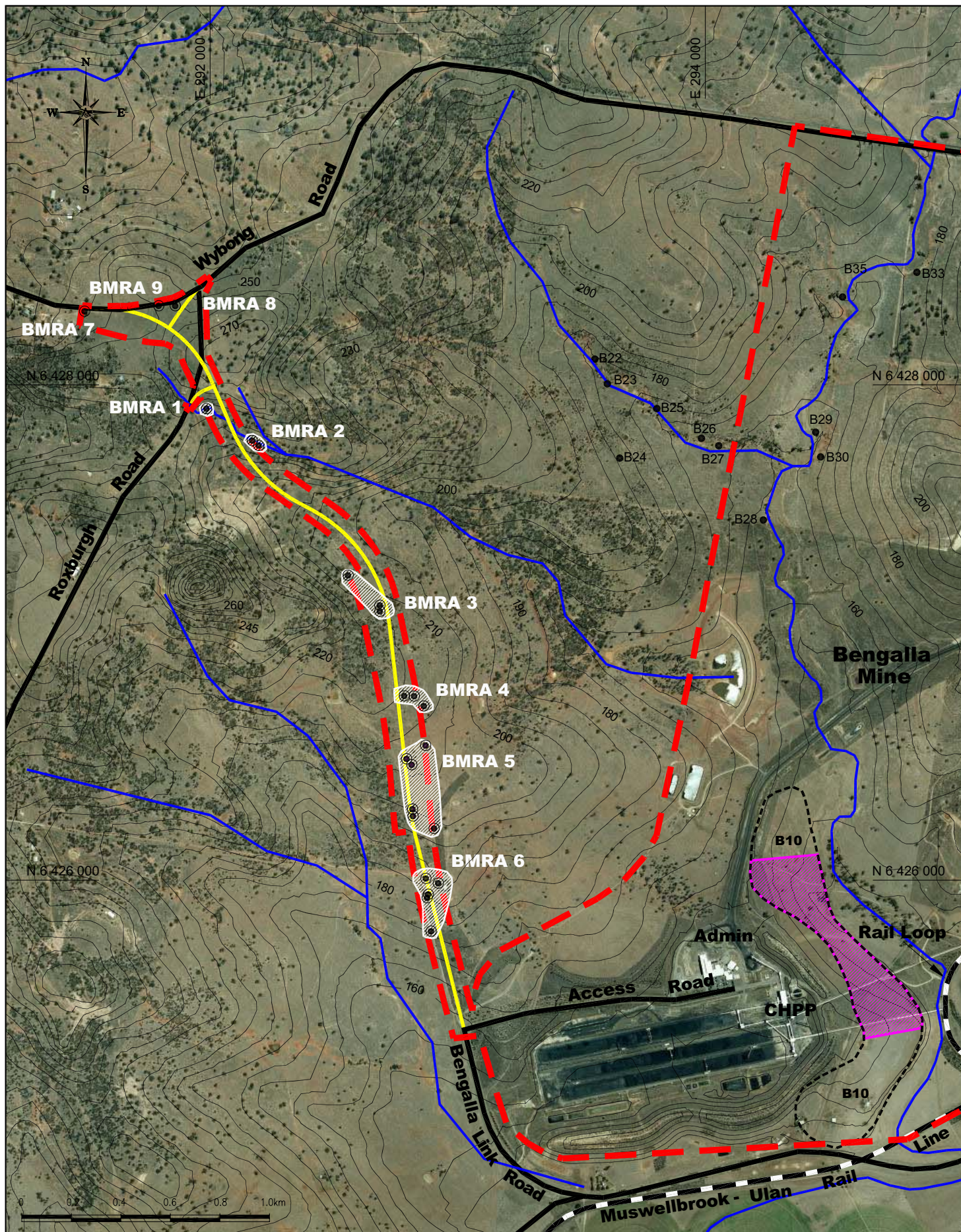
Consent to Destroy Aboriginal Objects

In addition to the reduction in rail line and port allocations, BMC has experienced a delay in the granting of the relevant approval under the *National Parks and Wildlife Act 1974* (NPW Act). This approval was required for the salvage of Aboriginal material over the relocated ROM hopper site, prior to the commencement of construction.

BMC submitted an application for Consent to Destroy under Section 90 of the NPW Act to the Department of Environment and Climate Change (DECC) on 10 November 2006. This application was made to allow the salvage of the identified Aboriginal material in the areas proposed to be disturbed as a result of the mine plan changes described in the Bengalla SEE.

Consent to Destroy permit number 2621 was granted on 17 May 2007 for all sites listed on the application, with the exception of Site B10 which is located in the area required for the construction of the relocated ROM hopper (see **Figure 4**).

Site B10 was identified in the Aboriginal archaeological assessment undertaken in the Bengalla EIS. Site B10 has previously been partially destroyed (under Consent to Destroy permit number SZ133) to accommodate the existing conveyor belt which runs through the site.



- Legend**
- DA Boundary
 - Bengalla Link Road Stage 2
 - Artefacts (2007)
 - Artefact Scatter Site
 - Existing Archaeological Sites (1993 EIS)
 - Ephemeral Creeks
 - Area to be Salvaged

Hansen Bailey



Co-ordinate System: MGA 56
Aerial Data: Dec 2006

BENGALLA MINE

Aboriginal Archaeology

Cad File: 02653C.dwg

Date: 07.01.2008

Drawn: JD

Figure
4

Extensive consultation with both the Aboriginal community and DECC has been undertaken throughout the process of seeking the Consent to Destroy required for the salvage of Aboriginal material from Site B10 to allow the construction of the relocated ROM hopper. Throughout the consultation process, BMC has received support from the local Aboriginal community in relation to the salvage of the Aboriginal material from this site.

DECC granted a revised Consent to Destroy permit number 2621 on 11 October 2007 for the partial salvage of Aboriginal material from Site B10 to facilitate the construction of the proposed relocated ROM hopper.

3.2.2 Construction

The construction activities associated with the relocation of the ROM hopper and associated facilities are now scheduled to commence in early 2008 and are anticipated to be completed by 31 March 2009. Construction and operation of the relocated ROM hopper will be carried out as described in the Bengalla SEE.

3.2.3 Operational Constraints

Operational constraints to the mine plan that may occur during 2008 as a consequence of this Modification are described below.

Mining Process

Mining activities carried out during the deferral period (i.e. to 31 March 2009) will continue in accordance with that currently approved and described in the Bengalla EIS and Bengalla SEE.

ROM coal will continue to be transported via the southern loop road to the ROM hopper at its existing location until the construction of the relocated ROM hopper and associated facilities are completed. **Figure 3** shows the general arrangement of Bengalla at the end of 2008 which shows the existing ROM hopper in its current location during 2008, whilst the relocated ROM hopper is being constructed.

Coal mining proposed to occur in the Wantana Extension as described in the Wantana Extension SEE will not commence until the relocated ROM hopper has been completed. However, the construction of the various infrastructure alterations as sought in that modification will commence.

Landform Management

Overburden will continue to be placed, shaped and rehabilitated on the OEA as described in the Bengalla EIS and Bengalla SEE. As shown in **Figure 3**, the OEA will continue to be extended to a maximum height of RL 270 m as approved in DA 211/93 (M1).

The infilling of the southern loop road will commence once the relocation of the ROM hopper has been completed. Rehabilitation of the eastern faces of the OEA will continue progressively as areas of shaped overburden become available.

Rehabilitation activities on the eastern face of the OEA will continue to be undertaken during day time hours only, consistent with BMC's commitments in the Bengalla SEE.

Production

In order to mitigate potential noise and air quality impacts on sensitive receivers to the east of Bengalla during 2008, BMC will maintain production at up to 8.7 Mtpa ROM coal, generally consistent with that described in the original Bengalla EIS. Once the relocated ROM hopper and associated facilities are completed, Bengalla may increase the production rate to up to 10.7 Mtpa ROM coal as approved by DA 211/93 (M1).

4.0 REGULATORY FRAMEWORK

4.1 BACKGROUND

BMC was originally granted Development Consent (DA 211/93) under Part 4 of the EP&A Act for the 'Construction and operation of a surface coal mine, coal preparation plant, rail loop, loading facilities and associated facilities' on 7 August 1995. The supporting document for DA 211/93 is the Bengalla EIS.

A modification to DA 211/93 (DA 211/93 (M1)) was granted by the Minister for Planning on 9 November 2006. It is supported by the Bengalla SEE.

A second modification to DA 211/93 (DA 211/93 (M2)) was granted by the DoP Executive Director on 6 December 2007 to facilitate the extension of mining operations into the Wantana Extension area and for minor infrastructure modifications. It is supported by the Wantana Extension SEE.

This Modification now sought to DA 211/93 (DA 211/93 (M3)), supported by this EA seeks planning approval for the construction of the Bengalla Link Road Stage 2 on an alternative alignment to that originally approved in DA 211/93; and to defer the relocation of the ROM hopper and associated facilities (as modified in DA 211/93 (M1)) which is now planned to be completed by 31 March 2009.

4.2 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

This application seeks to modify DA 211/93 which was originally granted for the purpose of carrying out surface coal mining activities and requires the construction of the Bengalla Link Road from Denman Road to Wybong Road.

4.2.1 Section 75W Power to Modify

Section 75W of the EP&A Act provides for the modification of planning approvals issued under Part 3A of the Act as follows:

- "(2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
- (3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
- (4) The Minister may modify the approval (with or without conditions) or disapprove of the modification."*

4.2.2 Application of Section 75W to the Bengalla Development Consent

DA 211/93 that is sought to be modified was granted under Part 4 of the EP&A Act prior to the commencement of the operation of Part 3A of the Act.

Clause 8J(8) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) allows, in certain circumstances, for a Development Consent which was in force immediately before the commencement of Part 3A of the EP&A Act, to be modified under Section 75W of the EP&A Act. Clause 8J(8) of the EP&A Regulation states:

“A development consent in force immediately before the commencement of Part 3A of the Act may be modified under section 75W of the Act as if the consent were an approval under that Part, but only if:

- (a) the consent was granted with respect to development that would be a project to which Part 3A of the Act applies but for the operation of clause 6(2)(a) of State Environmental Planning Policy (Major Projects) 2005, and*
- (b) the Minister approves of the development consent being treated as an approval for the purposes of section 75W of the Act.*

The development consent, if so modified, does not become an approval under Part 3A of the Act.”

Bengalla would, but for the operation of clause 6(2)(a) of the *State Environmental Planning Policy (Major Projects) 2005* (Major Projects SEPP) be a Major Project as it is “*development for the purpose of mining that: (a) is coal ... mining*” as provided in item 5(1)(a) of Schedule 1 to the Major Projects SEPP, thus satisfying clause 8J(8)(a) of the EP&A Regulation.

On 30 November 2007, the Minister for Planning approved the Bengalla Development Consent (DA 211/93) “*being treated as an approval for the purposes of section 75W*” of the EP&A Act thus satisfying clause 8J(8)(b) of the EP&A Regulation (see **Appendix A**).

Accordingly, the Minister for Planning may modify DA 211/93 granted under Part 4 by action “... *under section 75W of the Act as if the consent were an approval under that Part*”.

4.2.3 Approval Process Under Section 75W

Due to the above, the determination of this Modification must follow the process as specified under Section 75W of Part 3A of the EP&A Act where the application must be considered as a ‘*Project Application*’. This requires that all procedural aspects of Part 3A in respect of a Project Application apply to this Modification application.

The Minister for Planning has confirmed his requirement for an ‘*Environmental Assessment*’ and as such Division 2 of Part 3A of the EP&A Act applies. In this regard, on the 6 December 2007, a delegate of the Director-General issued EAR’s under Section 75F(3) of the EP&A Act for this Modification application (see **Appendix A**). The EAR’s are addressed throughout this EA. A checklist referencing where each item is addressed is provided in **Section 5.4**.

4.2.4 Consistency of this Modification with Objects of the EP&A Act

This EA has been prepared to ensure that this Modification is consistent with the objectives as specified in Section 5 of the EP&A Act.

Sections 6.0 and 7.0 of this EA provide (at least): consideration of the management, development and conservation of resources to promote social and economic welfare of the community; the orderly and economic use of the land; and the protection of the environment. Public involvement and participation with this Modification has been encouraged throughout the preparation of this EA, with a summary provided in **Section 5.0**.

The key principals of ecological sustainable development (ESD) have also been considered throughout the environmental assessment process and this Modification is consistent with these principles.

4.2.5 Approvals That Do Not Apply & That Must be Applied Consistently

Section 75U of the EP&A Act provides that certain authorisations normally required under various statutes are not required for “an approved project” and that the provisions of any Act that prohibit an activity without such an authority do not apply to “an approved project”.

Such authorisations include: consent under Section 12 of the *Native Vegetation Act 2003* to clear native vegetation from State Protected Land (Section 75U(e) of EP&A Act); a permit under Section 90 of the NPW Act (Section 75U(d) of EP&A Act), a permit under Part 3A of the *Rivers and Foreshores Improvement Act 1948* (RFI Act) (Section 75U(f) of the EP&A Act), Sub-Sections 89 and 91 of the *Water Management Act 2000* (Section 75U(h) of the EP&A Act) and other authorisations.

Section 75V of the EP&A Act provides “an authorisation of the following kind cannot be refused if it is necessary for carrying out of an approved project and is to be substantially consistent with the approval under this part...” The authorisations referenced include a consent under Section 138 of the *Roads Act 1993* (Roads Act) (Section 75V(1)(f) of the EP&A Act).

Each of Sections 75U and 75V of the EP&A Act refers to “an approved project”. Under Section 75A, “an approved project” means “a project to the extent that it is approved by the Minister under this Part”. For the reasons set out above, if this Modification is determined under Section 75W of the EP&A Act, the development consent becomes assessed as if it were a Minister’s approval under Part 3A.

Any approval for a modification given pursuant to Section 75W(3) (or Section 75J) of the EP&A Act is, as such, an approval by the Minister under Part 3A. If this Modification is approved it therefore becomes “an approved project” for the purposes of Sections 75U and 75V of the EP&A Act.

The triggering of Sections 75U and 75V of the EP&A Act removes the need to obtain any of the authorisations specified in Section 75U that would otherwise be required to be obtained in relation to the implementation of this Modification. It also means that any of the authorisations specified in Section 75V must be issued by the relevant authority in terms “substantially consistent with the approval” being this Modification under Section 75W of the EP&A Act.

4.2.6 Landholder Consent

Clause 8F of the EP&A Regulation provides that “the consent of owner of land on which a project is to be carried out is required for a project application unless... (c) the application relates to a mining or petroleum production project...”.

As discussed in **Section 4.2.4**, this Modification is a “project” for the purposes of clause 8A of the EP&A Regulation and the application to modify under Section 75W of the EP&A Act is a “project application”. This Modification relates to a “mining production project”, defined in clause 8F(G) of the EP&A Regulation to mean “any activity that is related to mining production”. As such, clause 8F of the EP&A Regulation removes the need for landholder consent for this Modification application.

Clause 8F(3)(b) of the EP&A Regulation, requires that notice be given of the application “to the public by advertisement published in a newspaper circulating in the area of the project before the end of the period of 14 days after the application is made”. Such a notice was placed in the Muswellbrook Chronicle on 18 January 2008 (see **Appendix C**).

4.3 RELEVANT PLANNING INSTRUMENTS

Under Section 75J(3) of the EP&A Act, the Minister for Planning “may (but is not required to) take into account the provisions of the environmental planning instrument that would not (because of Section 75R) apply to the project, if approved”. Further, this Modification sought under this application is not prohibited by reason of clause 8O of the EP&A Regulation.

The following sections provide a review of the environmental planning instruments that are relevant to this Modification.

4.3.1 Hunter Regional Environmental Plan 1989

The *Hunter Regional Environmental Plan 1989* (HREP) applies to this Modification. Part 5 of the HREP deals with "Transport".

Clause 32 states *"the objectives of this plan in relation to planning strategies concerning roads, railways and public transport are to maximise accessibility and facilitate the movement of people and goods throughout the region in a manner which has regard to social, economic, environmental and safety considerations and, in particular, ... (c) to ensure that new or upgraded roads or railways are constructed to meet identified demands including ..."*.

Clause 35 states *"Councils should identify the regional road hierarchy to meet the needs of the community and ensure that the development and maintenance of the road system is consistent with the following principles ... (b) improving access to subregional and district centres (c) providing adequate access to residential growth areas"*.

Part 6 (Natural Resources), clause 39 of the HREP states *"the objectives of this plan in relation to planning strategies in relation to mineral resources and extractive materials are to (a) manage the coal and other resources and extractive materials of the region in a co-ordinated manner so as to ensure that adverse impacts on the environment and the population likely to be affected are minimised"*.

MSC has adopted the *Western Road Strategic Traffic Study* for the road hierarchy west of Muswellbrook where mining has become intense.

The Bengalla Link Road Stage 2 is consistent with the HREP in that it is in accordance with the MSC *Western Roads Strategic Traffic Study* which addresses the transport objectives as articulated in clause 32 of the HREP.

It also addresses the management of natural resources as articulated in clause 39, in particular in the context that the Bengalla Link Road Stage 2 will provide road access required to be addressed by MSC under Part 5 of the HREP.

The Bengalla Link Road Stage 2 will provide for road access for other coal mining developments to the north and the west of Bengalla as required by Part 6 of the HREP.

This Modification sought will meet the objectives of the HREP.

4.3.2 Muswellbrook Local Environmental Plan 1985

This proposed Modification is located on land zoned within the *Muswellbrook Local Environmental Plan 1985* (Muswellbrook LEP) as partly in Zone 7(L1) Environment Protection General (LA) (Alluvial Areas) and partly in Zone 1(a) (Rural "A" Zone).

The proposed alignment of Bengalla Link Road Stage 2 is located on Zone 1(a) land. Mining is a permissible use in Zone 1(a) land under the Muswellbrook LEP, which is the purpose for which DA 211/93 (which requires construction of the Bengalla Link Road), was originally granted. Additionally, clause 43 of the Muswellbrook LEP makes *'carrying out development on land within any zone for the purposes of roads...'* permissible with Development Consent on land in Zone 1(a).

The ROM hopper is to be relocated on Zone 7(L1) land. Mining is not a permissible use in Zone 7(L1) land under the Muswellbrook LEP. However as provided in **Section 4.3.3**, mining is permissible pursuant to clause 7 of *State Environmental Planning Policy (Mining, Petroleum Production & Extractive Industries)* (SEPP Mining). This component of this Modification will be located entirely within the existing DA Boundary.

This Modification sought will meet the objectives of the Muswellbrook LEP.

4.3.3 SEPP (Mining, Petroleum Production & Extractive Industries)

The objectives of SEPP Mining are:

- (a) *“to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
- (b) *to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
- (c) *to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources”.*

The land upon which this Modification is proposed is zoned 1(a) and 7(L1) land under the Muswellbrook LEP. In accordance with clause 7 of SEPP (Mining), the carrying out of development for the purpose of mining is a use permissible with development consent.

This Modification sought will meet the objectives of the SEPP Mining.

4.4 OTHER REGULATORY REQUIREMENTS

4.4.1 Roads Act 1993

The Roads Act governs roads in NSW providing for those managed by the RTA and establishes procedures for opening and closing a public road and its classification. Further, the Roads Act regulates the carrying out of various activities on public roads.

BMC is currently in discussions with MSC with regards to transferring the management of the appropriate sections of Crown Roads in the area that are managed by the Crown to MSC.

Transfer of the management of the relevant roads will be undertaken under the provisions of Section 151 of the Roads Act.

Prior to the construction of the Bengalla Link Road Stage 2 on or over public roads, the relevant approval will be sought from MSC (as the appropriate roads' authority) under Section 138 of the Roads Act. Such an approval must be granted consistent with this Modification pursuant to Section 75V of the EP&A Act.

Following the construction of Bengalla Link Road Stage 2, BMC will progress the closure of the adjacent unnecessary Crown Roads under the provisions of Section 34 of the Roads Act.

BMC will also prepare a Plan of Subdivision to dedicate the entire road alignment of the Bengalla Link Road Stage 2 to MSC as a public road under Part 2 of the Roads Act.

5.0 STAKEHOLDER CONSULTATION

5.1 INTRODUCTION

A stakeholder consultation program for this Modification was undertaken by both representatives of BMC and Hansen Bailey Environmental Consultants (Hansen Bailey). The consultation program comprised the identification of stakeholders, scoping of issues and the development of relevant responses to the identified concerns.

BMC has previously commissioned independent and comprehensive stakeholder consultation programs to identify issues for inclusion in the Bengalla SEE and the Wantana Extension SEE as well as identifying concerns regarding the current operations at Bengalla. The programs involved consultation with regulators, distribution of regular newsletters, face-to-face meetings with over 70 non-mine owned landholders surrounding Bengalla and other stakeholders who registered an interest. Issues which were identified during these stakeholder consultation programs, relating to this minor Modification have been included in the BMC Stakeholder Database and incorporated into this EA where relevant.

5.2 STAKEHOLDER IDENTIFICATION

A comprehensive list of stakeholders has been developed based on the stakeholder consultation programs which were undertaken for the Bengalla SEE and Wantana Extension SEE.

The identification process acknowledged approximately 120 individual neighbours within the vicinity of Bengalla likely to have an interest in this Modification. Additionally, numerous regulatory agencies and other stakeholders were identified as parties who may have an interest in this Modification.

5.3 ISSUE SCOPING

The objectives of the issue scoping phase of the consultation program were to provide stakeholders with information on this Modification and the approval process and to identify community issues and concerns.

Consultation was generally conducted through the distribution of Newsletters to all known stakeholders who may have an interest in this Modification and one-on-one meetings held with the relevant regulators. The key issues raised during the issue scoping phase are provided in **Section 5.4**.

Table 4 lists the timing and extent of stakeholder consultation undertaken in relation to this Modification. In addition to the consultation as provided in **Table 4**, extensive presentations have been made to the Bengalla Mine Community Consultative Committee (BMCCC) over the course of the Stakeholder Consultation Program.

5.4 ISSUE RESPONSE

The objective of this stage of the consultation program was to pro-actively respond to all issues raised and to work with stakeholders to develop appropriate strategies to manage impacts associated with this Modification.

Where possible, any issues identified during the consultation program were addressed with stakeholders. This typically involved the provision of further information or incorporating further refinements to this Modification. All issues raised are addressed in this EA.

In response to discussions held with DoP during October and early November 2007 in regard to the required planning approval path for this Modification, DoP issued the EARs on 6 December 2007. The EARs are reproduced in full in **Appendix A**, while **Table 5** lists the requirements and where each is addressed in this EA.

Table 4
Stakeholder Consultation Timeline

Date	Activity
10 May 2005	Meeting with MSC to discuss a number of alternative alignments of Bengalla Link Road Stage 2 and the relevant planning approval path. MSC required the road to be built consistent with the objectives of the <i>Western Roads Strategic Traffic Study</i> . A roundabout at Wybong Road was also requested.
18 November 2005	Meeting with MSC to present the final preferred alignment of Bengalla Link Road Stage 2 that satisfied the requirements of MSC.
28 February 2006	BMC received a letter from MSC (in response to BMC's letter dated 9 December 2006) approving the preferred alignment and planning approval path as a non-designated development through MSC.
27 March 2006	Meeting with MSC to provide an update on the Bengalla Link Road Stage 2. It was confirmed during this meeting that the MSC Traffic Committee had no concerns with the proposed alignment. Additionally, it was agreed that the small, northern section of Roxburgh Road would need to be closed. Discussions were also held over the scope of the traffic assessment to be included in the SEE to accompany the application.
20 September 2006	Meeting with MSC to discuss findings of the traffic assessment undertaken for the inclusion in the SEE to support the non-designated development application.
20 November 2006	Meeting with MSC to discuss results of the environmental assessments undertaken which had been included in a draft SEE to accompany the non-designated development application and the proposed way forward as a result of an obstacle experienced in relation to the application of the NV Act to the construction of the Bengalla Link Road Stage 2. During this meeting, MSC requested that the intersection with Wybong Road to be altered to a T-intersection. A presentation was also provided to the MSC Traffic Committee on the Bengalla Link Road Stage 2.
10 January 2007	Letter received from MSC in response to BMC's letter dated 5 January 2007, approving the revised conceptual T-intersection with Wybong Road.
5 – 9 February 2007	Wantana Extension Newsletter 1 distributed to stakeholders, which included information on the Bengalla Link Road Stage 2 on an alternative alignment to that originally approved in the Bengalla EIS.
9 March 2007	Letter received from DoL providing their landowner consent for the construction of the road over sections of existing Crown Roads.
27 April 2007	Meeting with MSC to discuss the way forward in relation to the application of the NV Act to the Bengalla Link Road Stage 2.
25 May 2007	Letter sent to MSC requesting written confirmation on the proposed way forward.
10 August 2007	Meeting with MSC to further discuss the way forward with the application of the NV Act. MSC required confirmation from DoP over the proposed approvals path.
14 August 2007	Meeting to discuss approvals path for the construction of the Bengalla Link Road Stage 2 and Modification overview with DoP.
29 August 2007	Letter sent to DoP to confirm approval path and required environmental assessments to be included in an application to defer the relocation of the ROM hopper.
5 September 2007	Presentation to MSC Mayor on this Modification to defer the relocation of the ROM hopper and to provide an update on the Bengalla planning approvals.
September 2007 – October 2007	Distribution of Modification Newsletter : Modification Description and Contact Details (see Appendix C).
5 October 2007	Meeting held with MSC where it was confirmed that planning approval for the Bengalla Link Road Stage 2 construction would need to be progressed with DoP.

Table 5
Environmental Assessment Requirements

22

Issue	Description	EA Section
	o A description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage, and/or monitor the impacts of the modification;	6.0
	• A draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures;	7.0
	• A conclusion justifying the project, taking into consideration the environmental impacts of the project, the suitability of the site, and any social, economic and/or environmental benefits that may arise as a result of the project; and	8.0
	• A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.	EA Statement
Key Issues	• Road Design & Construction – Including design criteria; road safety issues; erosion & sedimentation impacts, changes to run-off patterns; impacts to creeks and drainage lines; a materials budget; and preparation of a detailed construction management plan;	3.1
	• Traffic – Including construction and operational traffic impacts;	6.1.3
	• Noise – Including construction and operational noise impacts;	6.1.2 & 6.2.1
	• Air Quality;	6.1.1 & 6.2.2
	• Flora and Fauna – Including impacts on critical habitats (including riparian habitat and groundwater dependent ecosystems), threatened species, populations, ecological communities and native vegetation.	6.1.4
	• Heritage – Both Aboriginal and non-Aboriginal; and	6.1.5, 6.1.6 & 6.1.7
	• Visual – including lighting impacts.	6.1.8 & 6.2.3
References	The Environmental Assessment must take into account relevant State Government technical and policy guidelines. While not exhaustive, guidelines which may be relevant to the project are included in the attached list.	10.0
Consultation	During the preparation of the Environmental Assessment, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the Environmental Assessment. In particular you must consult with: • Department of Environment and Climate Change; • Department of Water and Energy; • Department of Primary Industries; • NSW Roads and Traffic Authority; and • Muswellbrook Shire Council.	5.0

Issues identified by stakeholders during the stakeholder consultation process are provided in **Table 6** with reference to the section of this EA where each issue is addressed.

5.5 ABORIGINAL COMMUNITY CONSULTATION

The requirements of the DECC *Interim Community Consultation Requirements for Applicants 2004* and the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005* (DECC Guidelines) have been applied to this Modification for the construction of the Bengalla Link Road Stage 2 to ensure an appropriate level of stakeholder consultation in relation to Aboriginal archaeology and Cultural Heritage. Further detail is provided in **Section 6.1.6**.

5.6 ONGOING CONSULTATION

BMC has an established stakeholder consultation program, which will continue to be implemented throughout the operation of Bengalla.

This will include periodic consultation with neighbouring landholders, representatives of key local and state regulatory authorities, industry bodies and the Aboriginal community.

BMC will continue to consult with its neighbours throughout the life of Bengalla through (at least):

- The BMCCC;
- External Reporting (e.g. Annual Environmental Management Report (AEMR) and regular Newsletters);
- Open days and general community sponsored events; and
- Ongoing offer of face-to-face discussions with any interested stakeholders.

Table 6
Stakeholder Issue Summary

Ref	Issue Raised	Source	Section
1	Visual		
	Potential for the deferral of the relocation of the ROM hopper to create adverse visual impacts on sensitive receivers in Muswellbrook, as a result of delaying the rehabilitation of the eastern face of the OEA.	Regulator	6.2.3
2	Acoustics		
	Additional noise impacts on sensitive receivers to the east as a result of deferring the relocation of the ROM hopper.	Regulator	6.2.1
3	Bengalla Link Road		
	Type of intersection to be constructed at Wybong Road.	Regulator	3.1.2
	Concern in relation to maintenance on the existing Bengalla Link Road.	Neighbour	3.1.3
	Road safety issues during construction and operation.	Regulator	3.1.3
	Land acquisition on the proposed alignment of the Bengalla Link Road Stage 2.	Neighbour	3.1.3

6.0 IMPACTS, MANAGEMENT & MITIGATION

The potential environmental impacts of this Modification, as identified throughout the planning and consultation process have been assessed as part of this EA. The findings of the relevant environmental assessments that were undertaken for each aspect of this Modification are presented below.

6.1 BENGALLA LINK ROAD STAGE 2

6.1.1 Air Quality

An air quality impact assessment was conducted by Holmes Air Sciences for the construction of the Bengalla Link Road Stage 2 on the alternative alignment and is provided in its entirety in **Appendix D**.

The air quality impact assessment involved the calculation of the predicted air quality emissions during the construction and operation of the proposed road and comparison of these emissions to the relevant NSW Air Quality Goals.

The assessment determined that activities associated with the construction of the road will not significantly affect the air quality at any adjacent non-mine owned receiver. Further, the assessment determined future concentrations of carbon dioxide, nitrogen dioxide and particulate matter resulting from traffic utilising the Bengalla Link Road Stage 2 will all remain well within the relevant DECC air quality guidelines at all non-mine owned receivers.

Additional care will be taken to ensure that dust is controlled during construction using best practice measures.

During the construction period, in addition to the management of all activities in accordance with the CNA EMS and the approved Bengalla Environmental Monitoring Program (EMP), the following air quality controls will be implemented:

- Use of water carts to maintain trafficked surfaces in a damp condition;
- Use of properly maintained equipment to minimise emissions of black diesel smoke;
- Covering of loads when travelling on public roads;
- Implementation of speed limits along the alignment during construction;
- Mark out the trafficable areas along the road alignment to minimise disturbance; and
- The suspension of construction activities under unfavourable weather conditions.

A Construction Management Plan will also be developed to the satisfaction of MSC and will address any air quality controls required during the construction of the Bengalla Link Road Stage 2.

6.1.2 Acoustics

An acoustics impact assessment was conducted by Bridges Acoustics for the Bengalla Link Road Stage 2 and is provided in its entirety in **Appendix E**.

The acoustics impact assessment was carried out in accordance with the relevant noise policy documents, including:

- DECC's *Environmental Noise Control Manual* (ENCM) (EPA, 1989) for the construction noise criteria; and
- DECC's *Environmental Criteria for Road Traffic Noise* (ECRTN) (EPA, 1999) for the noise criteria during the operation of Bengalla Link Road Stage 2.

The acoustics impact assessment concluded that the predicted traffic noise levels expected to be generated by the construction and operation of the Bengalla Link Road Stage 2 would remain well within relevant DECC noise criteria at all non-mine owned receivers. Similarly, future traffic noise levels from the existing Bengalla Link Road to the west of Denman Road would remain within relevant noise criteria for the period modelled.

Noise levels produced during construction of the Bengalla Link Road Stage 2 were predicted to exceed the adopted construction noise criterion on some occasions in the absence of noise control and mitigation measures. It should be noted that exceedances of the construction noise criterion regularly occur for road construction and maintenance projects undertaken by Councils, the RTA and others, despite best practice noise mitigation measures being implemented. For this project, exceedances are predicted to be for a relatively short duration during the construction period.

During the construction period, in addition to the management of all activities in accordance with the CNA EMS and the approved Bengalla EMP, the following noise mitigation measures will be implemented to manage any short-term noise impacts:

- The proposed construction program will be discussed with nearby residential neighbours prior to the commencement of construction;
- Consideration will be given to cut and fill sections of road to balance the material requirements to minimise cut and fill and movement of materials along the road alignment;
- No noise generating activity which would be audible at private residences will occur at the work site outside the normal construction hours of 7:00 am to 6:00 pm Monday to Saturday;
- Appropriate machines will be selected for each task and efficient work practices adopted to minimise the total construction period and the number of noise sources on the site;
- All machines used on the site will be maintained in good condition with excessively noisy machines repaired or removed;
- Machines with excessively noisy reverse alarms will be modified prior to entry to site; and
- Access tracks will be regularly maintained along the route to minimise impact noise from empty truck bodies travelling over rough ground.

A Construction Management Plan will also be developed to the satisfaction of MSC and will address any noise mitigation and management measures required during the construction of the Bengalla Link Road Stage 2.

6.1.3 Traffic Assessment

Parsons Brinckerhoff conducted an assessment of traffic impacts associated with the construction and operation of the Bengalla Link Road Stage 2 on the alternative alignment, including the surrounding road network. This report and its addendum report (for the revised intersection between Bengalla Link Road Stage 2 and Wybong Road) are included in **Appendix F**.

The objective of this assessment was to determine the traffic implications of the construction of the Bengalla Link Road Stage 2 in terms of existing and future traffic volumes on key roads and to determine existing and future traffic performance at key intersections. A summary is provided below.

Existing Traffic

In order to determine the existing traffic pattern on key roads within the area, vehicle classification surveys were conducted for one week during March 2006 at a total of eight locations on the relevant road network. The survey locations on Wybong Road (to the east of Roxburgh Road) and on Bengalla Link Road (to the west of Denman Road) had the maximum daily traffic flows during the week of the survey with 1,100 vehicle movements per day (vpd) and 900 vpd respectively. Daily traffic counts were analysed by the hour to determine when the maximum hourly traffic peaks are experienced. All survey locations had hourly traffic peaks at 8:00 am and 5:00 pm with the exception of the Bengalla Link Road which indicated traffic peaks at 6:00 am and 4:00 pm, which is consistent with the shift changes at Bengalla.

The survey results also indicated that approximately 15% of vehicles travelling on the Bengalla Link Road were heavy vehicles. These vehicles were predominantly delivering plant and equipment to Bengalla.

Construction Impacts

The construction of the Bengalla Link Road Stage 2 will have minimal traffic impacts on the existing Bengalla Link Road and Wybong Road. Interaction with these roads will predominantly be limited to the shoulder of these roads. While the alignment of Bengalla Link Road Stage 2 intersects with Roxburgh Road, minimal impacts to existing traffic is expected as a result of the low number of daily traffic flows recorded on this road.

Traffic impacts associated with the construction of the Bengalla Link Road will be managed in accordance with the Traffic Management Plan and Traffic Control Plan which will be prepared to the satisfaction of MSC.

Future Traffic

In order to effectively predict the future traffic impacts of the changes to the road network, a number of scenarios were developed. Further detail on these scenarios is provided in **Appendix F**. The traffic impact assessment forecasted impacts over three time periods (2009, 2013 and 2028) which included traffic generation from both existing and three proposed mines in the area (i.e. MTP, Anvil Hill and Castlerock mines) and future modifications to the road network.

The traffic impact assessment determined that as the proposed mines commence, traffic flows along the proposed Bengalla Link Road Stage 2 and the existing Bengalla Link Road will increase. The maximum modelled daily traffic flows of 2,895 vpd are expected on Bengalla Link Road (to the west of Denman Road) in the year 2028, when the proposed three additional mines are assumed to be operating at full capacity.

Intersection Performance

An intersection performance study conducted as part of the traffic assessment identified that the Bengalla Link Road / Denman Road intersection was the most saturated intersection in 2028 with a saturation level of 0.25 and a 13-second delay during the morning peak. This represents an intersection operating with ample spare capacity available for future traffic growth and/or changes in traffic pattern.

At the request of MSC, the intersection between Bengalla Link Road Stage 2 and Wybong Road was modified from the originally proposed and required round-about to a T-intersection with the priority given to traffic travelling along the completed Bengalla Link Road. The addendum report to the traffic impact assessment (see **Appendix F**) provides an intersection analysis of the two intersections and concludes that the T-intersection would obtain less overall delays and saturation period. Further, compared to the round-about, the intersection delays at the T-intersection were predicted to occur at the minor approach (i.e. turning vehicle from Wybong Road onto Bengalla Link Road Stage 2), whilst at a round-about, delays would be experienced at all approaches.

Conclusion

The traffic impact assessment concluded that, with the construction of the Bengalla Link Road Stage 2, traffic would redistribute throughout the modified traffic network and that even with the increased future predicted traffic and the resultant redistribution within the road network, all intersections would continue to operate to a satisfactory level and overall traffic flow would be enhanced.

6.1.4 Flora and Fauna

A Flora and Fauna Impact Assessment of the Survey Area for the Bengalla Link Road Stage 2 alignment was conducted by Hansen Bailey. This assessment is provided in **Appendix G**.

A desktop review was undertaken for this Modification and included a review of previous flora and fauna studies conducted in the vicinity of the Survey Area, searches of the relevant State and Commonwealth flora and fauna databases and a review of aerial photography. Following the desktop review, field surveys were undertaken within the Survey Area to identify the presence of any significant flora and fauna that may be impacted as a result of this Modification.

No threatened flora, ecological communities, or critical habitat listed under the *Threatened Species Conservation Act 1995* (TSC Act) or the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded in the Survey Area. The native flora and fauna recorded in the Survey Area was determined to be of limited conservation significance as it is highly modified being predominantly cleared and currently grazed.

The development of the Bengalla Link Road Stage 2 will clear small areas of disturbed native remnant bushland, but it is unlikely that the biodiversity values of the area will be greatly affected.

The use of best practice management throughout the construction of the road in accordance with the CNA EMS, will ensure that impacts will be minimised and managed appropriately. Additionally, a Construction Management Plan will be developed to the satisfaction of MSC which will address any management measures to protect native flora and fauna not proposed to be impacted during the construction of the Bengalla Link Road Stage 2.

6.1.5 Aboriginal Archaeology

An Aboriginal archaeology impact assessment was carried out by Environmental Resource Management Australia Pty Ltd (ERM) for the Bengalla Link Road Stage 2. An assessment methodology and key findings are presented below with a full report provided in **Appendix H**.

Prior to the commencement of field work, an archival search of DECC's Aboriginal Heritage Information Management System (AHIMS) site database was performed, reviewing available information within the surrounding area of the Bengalla Link Road Stage 2. This search revealed 46 AHIMS registered sites have been recorded within a 3.5 km radius surrounding the Bengalla Link Road Stage 2 between the MGA94 coordinates 289106E – 296106E and 6423190N – 6432190N. However, no existing sites were located within the Survey Area.

Two field surveys were undertaken in the Survey Area for the purposes of this Modification. The initial archaeological field survey was undertaken on 25 May 2006 by ERM and representatives from:

- Upper Hunter Heritage Consultants (UHC);
- Upper Hunter Wonnarua Council (UHC);
- Aboriginal Native Title Elders Consultants (ANTEC);
- Giwiirr Consultants (GC);
- Ungooroo Aboriginal Corporation (UAC); and
- Wanaruah Local Aboriginal Lands Council (WLALC).

The archaeological field survey was conducted on foot by 10 individuals who inspected the entire length of the Survey Area. The Survey Area was pegged in the field prior to the field survey and was divided into five transects to ensure 100% survey coverage.

For all artefacts identified during the field survey, the following variables were recorded: coordinates (in MGA94); landform element; site size; exposure type; visibility within and outside the exposure; and the likelihood of sub-surface deposits. Each artefact scatter was numbered sequentially. The methodology used during this field assessment was discussed with the Aboriginal stakeholders prior to the field survey in accordance with the DECC Guidelines.

Further to the field survey undertaken on 25 May 2006, a survey of an additional area to the north-west of the Survey Area occurred on 29 November 2007 as a result of the revised intersection proposed with Wybong Road as requested by MSC. The methodology utilised during this survey was consistent with the initial field survey.

A total of nine sites were identified within the Survey Area, consisting of five artefact scatters and four isolated finds. The location of these sites and the identified artefacts are shown on **Figure 4**. The sites identified within the Survey Area were assessed as low for all aspects of significance investigated. As described in **Section 4.2.4**, a permit under Section 90 of the NPW Act does not apply to this Modification.

As such, the existing Bengalla Aboriginal Cultural Heritage Management Plan will be revised in consultation with the local Aboriginal community and DECC and to the satisfaction of DoP to include a relevant salvage program for the artefacts identified within the Survey Area.

Aboriginal archaeology along the Bengalla Link Road Stage 2 will continue to be managed in accordance with the CNA EMS and the revised Bengalla Aboriginal Cultural Heritage Management Plan. The Construction Management Plan being developed to the satisfaction of MSC will also address controls required during the construction of the Bengalla Link Road Stage 2 to protect Aboriginal archaeology not proposed to be disturbed by the Modification.

Further details in relation to the consultation undertaken with the Aboriginal community is provided in **Section 6.1.6**.

6.1.6 Aboriginal Cultural Heritage

An Aboriginal cultural heritage impact assessment was undertaken by Hansen Bailey in consultation with the Aboriginal community and is presented in full in **Appendix I**. As described in **Section 5.5** of this EA, stakeholder consultation with the Aboriginal community was undertaken in accordance with the DECC Guidelines to ensure adequate consultation.

No cultural heritage issues were identified specific to the Bengalla Link Road Stage 2. The Aboriginal community groups involved throughout the cultural heritage consultation process were satisfied with the assessment methodology utilised.

6.1.7 Non-Aboriginal Heritage

An investigation was undertaken to determine whether any sites of known Non-Aboriginal Cultural Heritage significance were present within the DA Boundary. No such sites were identified and therefore no direct impacts to Non-Aboriginal Heritage shall occur as a result of this Modification.

6.1.8 Visual & Lighting

An assessment of the potential visual impacts of the Bengalla Link Road Stage 2 was conducted during the preparation of this EA.

Due to the remote locality of the road and the topography of the area surrounding the road, no adverse visual impacts are anticipated from any surrounding non-mine owned receivers.

The vegetation along the proposed alignment has previously been predominantly cleared and is currently grazed with cattle. The construction of the road is expected to have little to no visual impact on the neighbouring non-mine owned receivers and the road itself is not expected to produce adverse visual impacts.

Lighting was identified as a potential issue by receivers to the north of Bengalla for the currently approved alignment of the Bengalla Link Road in the *Bengalla Mine Commission of Inquiry Report* (COI) (Environment & Planning, 1994).

An assessment has been undertaken for non-mine owned receivers surrounding the proposed alignment. Non-mine owned receiver 183 (see **Figure 2**) is located immediately to the west of the proposed intersection between Bengalla Link Road Stage 2 and Wybong Road. Traffic utilising this intersection will have lights directed away from this non-mine owned receiver and as such low lighting impacts are anticipated.

Non-mine owned receivers 34 and 35 (see **Figure 2**) to the north of the Bengalla Link Road Stage 2 are expected to experience low lighting impacts due to the low topographical location of their residences in relation to the proximity of the Bengalla Link Road Stage 2 and the proposed Wybong Road intersection.

Non-mine owned receivers 33, 39, 40, 41, 42, 43 and 44 (see **Figure 2**) will experience insignificant lighting impacts due to the high topography between the receiver and the road alignment (see **Figure 4**). Headlights may be intermittently visible at non-mine owned receiver 38 (see **Figure 2**) to the west of the road alignment, although the orientation and topography of the receiver to the road will limit any direct lighting impacts.

Roadside tree screening along appropriate sections of the eastern side of the road alignment will occur to reduce the visual impacts of the mining operations at Bengalla on the road users, consistent with the approved Bengalla Landscape Management Plan.

6.1.9 Soil Capability

A soil and landscape capability impact assessment was carried out for the Bengalla Link Road Stage 2 by Global Soil Systems Environmental (GSSE). This assessment was based on a review of a number of soil assessments previously conducted in the area with a brief report provided in **Appendix J**.

Within the Survey Area, Red Duplex soil units were identified as being the most common, with some Yellow Duplex soil units also situated inside the southern margins. Soils within the Survey Area are quite shallow, with subsoil levels being less than 90 centimetres (cm) in depth.

In addition to the management of construction activities in accordance with the CNA EMS, the following management techniques will be employed to mitigate potential impacts to soils during transport and stockpiling operations:

- Soil will not be stripped below 150 millimetres (mm). Topsoil will be maintained in a slightly moist condition during stripping with material not stripped in either an excessively dry or wet condition;
- Soil will be graded or pushed into windrows for later collection or for loading into rear dump trucks or scrapers to minimise compression effects of the heavy equipment that is often necessary for economical transport of soil material;
- Soil to be transported by dump trucks will be placed directly into storage stockpiles. Soil transported by scrapers will be pushed into stockpiles by other equipment such as dozers to avoid tracking over soil previously laid by the scraper; and

- The surface of soil stockpiles will be left in a rough condition to promote infiltration and minimisation of erosion until vegetation is established to prevent anaerobic zones forming.

The Construction Management Plan being developed to the satisfaction of MSC will also address any controls required to adequately protect the soil resource during the construction of the Bengalla Link Road Stage 2.

6.1.10 Surface Water

The Bengalla Link Road Stage 2 lies in the upper reaches of the Dry Creek catchment, which is an ephemeral watercourse that feeds south towards the Hunter River. A number of minor ephemeral drainage lines and small farm dams are also located within the Survey Area. The construction of Bengalla Link Road Stage 2 has the potential to adversely impact these surface water resources, if appropriate controls are not in place.

BMC will ensure all water runoff from the disturbed areas within the Survey Area during construction is treated for sediment with temporary sediment structures designed for this purpose.

A single ephemeral creek line (see **Figure 1**) has been identified as being directly impacted by the construction of Bengalla Link Road Stage 2 (i.e. disturbance will occur within 40 m of the creek line).

As described in **Section 4.2.5**, Part 3A of the RFI Act does not apply to this Modification and as such a Part 3A permit is not required.

As described in **Section 3.1.3**, the preliminary road design considers the drainage lines in the area and incorporates the installation of adequately sized culverts at suitable location along the alignment to manage runoff from a 50 year ARI rainfall event. This will ensure that minimal impact occurs on the runoff patterns and drainage lines in the area.

An assessment of cumulative impacts has determined that there will be no cumulative surface water impacts experienced as a result of the construction of the Bengalla Link Road Stage 2 as there are no other existing mines within the vicinity of this road.

A potable quality water supply will be required during the construction of the Bengalla Link Road Stage 2, largely for dust suppression purposes. This will be sourced from either local farm dams on BMC owned land, the Bengalla Hunter River raw water dam at Bengalla or from the Muswellbrook potable water supply.

The development of the Construction Management Plan will address any required surface water and erosion controls required during the construction of the Bengalla Link Road Stage 2. The management of construction activities in accordance with the CNA EMS and the additional mitigation and management measures described above will ensure minimal adverse impacts occur to the surrounding natural water resources.

6.1.11 Groundwater

An assessment on the potential groundwater impacts resulting from the construction of the Bengalla Link Road Stage 2 has determined there will be no impacts upon any groundwater aquifers that have previously been identified at Bengalla.

A Groundwater Dependent Ecosystem (GDE) has its species composition and ecological processes determined by groundwater systems, of which there are five general types in NSW, each with a dependent ecosystem. The groundwater assessment determined that no GDEs are present within the Bengalla DA Boundary and as such, this Modification will not impact on any GDE.

6.2 ROM HOPPER RELOCATION

6.2.1 Acoustics

An acoustics impact assessment for this Modification was conducted by Bridges Acoustics to determine the potential noise impacts on non-mine owned receivers surrounding Bengalla during the deferral period (see **Appendix K**).

Background

The acoustics impact assessment adopted similar assumptions and modelling strategies to those in the noise and vibration assessment undertaken for the Bengalla SEE (Bridges Acoustics, 2006). Some minor amendments to assumptions included differences in terrain and equipment locations as a result of modelling a 2008 mine plan with the ROM hopper remaining in its existing location.

The lowest of the intrusive noise criteria, set as 5 decibels (dBA) above background levels (intrusive criteria) are normally adopted as the limiting criteria for each receiver and time period. Intrusive criteria have been developed based on the background levels as calculated in the Bengalla SEE. The intrusive criteria should be considered as being levels above which some acoustics impact may be noticed by receivers. Louder noise levels experienced by a receiver do not necessarily imply that the noise is unacceptable.

Schedule 3, Condition 2, Table 2 of DA 211/93 (M2) also provides noise impact assessment criteria (consent criteria) relevant to Bengalla and have also been considered in this assessment. Noise modelling included in the Bengalla SEE assessment did not model noise levels with the ROM hopper in its existing location under prevailing weather conditions. As such, the notes below Table 2 of DA 211/93 (M2) reflected this assumption in that DoP provided an exemption of the consent criteria until 31 March 2008 or until the ROM hopper is relocated (whichever is sooner). As the relocation of the ROM hopper has been deferred (for reasons described in **Section 3.2.1**), this aspect of this Modification seeks an extension of this exemption for a further 12 months, until 31 March 2009.

Impact Assessment

The expected noise levels produced by Bengalla during 2008 have been modelled utilising RTA Technology's *Environmental Noise Model*. Consistent with the Bengalla SEE assessment and the Environmental Protection Authority's *Industrial Noise Policy* (INP) (EPA, 2000), noise levels were modelled under neutral and prevailing (worst-case) weather conditions which are discussed further below as relevant.

Under neutral and noise-reducing weather conditions which occur for a significant portion of the time, it was predicted that noise levels resulting from Bengalla's activities during 2008 will generally remain below both the consent criteria and the intrusive criteria at all non-mine owned receivers (see **Appendix K** for predicted noise levels under neutral weather conditions).

Consistent with the Bengalla SEE, the modelling represents the worst-case operation of Bengalla during 2008, with all equipment operating under noise enhancing weather conditions.

While this situation is likely to occur occasionally, noise levels will generally be lower than the predicted levels for much of the time.

Figure 5 and **Figure 6** illustrate the relevant predicted noise levels under prevailing weather conditions for 2008 as contours during the day/evening and night time periods, respectively. It should be noted that the Development Consent land acquisition criteria to the north-east of Bengalla (as indicated by the red noise background zone lines) is 41 dBA for the night time period. The consent acquisition criterion for other areas surrounding Bengalla is 40 dBA during all time periods.

Table 7 provides a summary of the predicted exceedances of both the consent criteria and intrusive criteria that may occur during 2008 at non-mine owned receivers and properties under prevailing weather conditions. Receivers and properties excluded from **Table 7** are not predicted to exceed their relevant intrusive or consent criteria during 2008 as a result of Bengalla's activities.

Predicted noise levels under prevailing weather conditions during the day and evening periods in 2008 generally remain below the consent criteria, with the exception of some properties located to the north-east and east of Bengalla which are predicted to receive noise levels generally up to 1 dBA above the consent criteria. Property 91, located to the north-east of Bengalla is predicted to receive noise levels up to 2 dBA above the consent criteria during the day and evening periods in 2008.

All predicted noise levels remain within the intrusive criteria for the day and evening periods with the exception of receivers 40 and 44 which are located to the west of Bengalla, where it is predicted noise levels would be received up to 1 dBA above the intrusive criteria during these periods. Noise levels at these receivers are predicted to remain within the consent criteria.

Receiver 9 which is located to the east of Bengalla is predicted to experience night time noise levels up to 5 dBA above the intrusive criteria during the one year period. The noise levels predicted for this receiver are predicted to be 2 dBA above the consent criteria during 2008.

Receiver 9 is within the zone of affectation of another mining company and hence is subject to acquisition by this mining company upon request from the landholder.

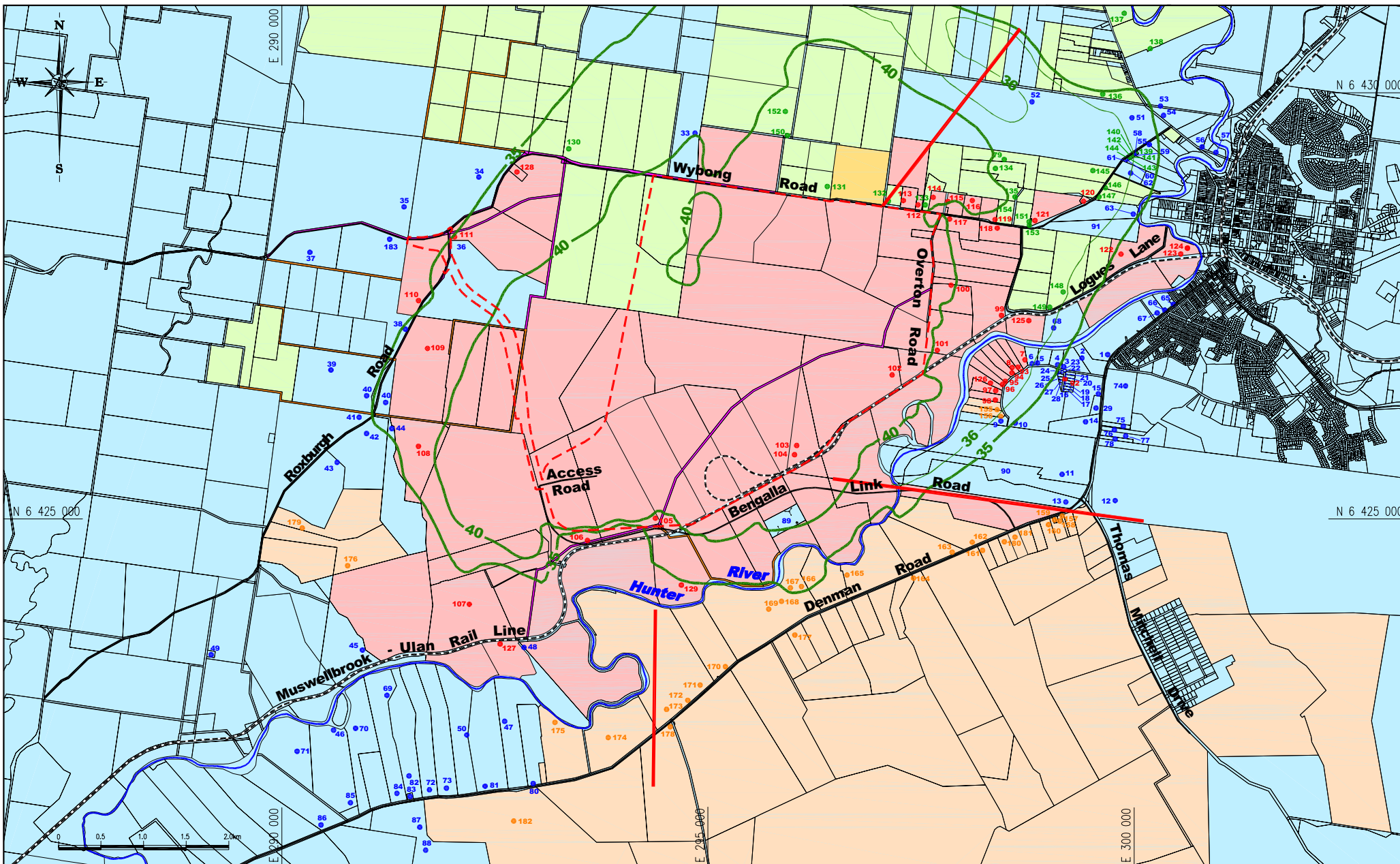
Other non-mine owned receivers located to the east of Bengalla are predicted to receive noise levels generally up to 2 dBA greater than the consent criteria and up to 3 dBA higher than the intrusive criteria during the night time period.

Three non-mine owned receivers (33, 36, and 48) are listed in Schedule 3, Table 1 of DA 211/93 (M2) where BMC must acquire these properties upon written request from the landholder. Non-mine owned receiver 33 is also within the immediately adjacent MTP zone of affection and as such, is subject to acquisition by CNA upon request from the landholder.

The assessment concludes that deferring the relocation of the ROM hopper will result in receivers to the east of Bengalla experiencing predicted noise levels up to 2 dBA above those approved in DA 211/93 (M2) until the ROM hopper has been relocated. The predicted noise levels under neutral weather conditions are expected to remain within the noise criteria originally approved in DA 211/93.

Mitigation & Management

Due to its locality adjacent to the township of Muswellbrook, Bengalla employs world's best practice noise mitigation techniques and has one of the quietest mobile mining equipment fleets in the world.



Legend

- DA Boundary
- Crown Land
- Crown Roads (NSW)
- Crown Roads (MSA)
- MAC Property (Residence)
- Non-Mine Owned Property (Residence)
- BMC Property (Residence)
- MTP Property (Residence)
- 40— Noise Contours $L_{Aeq}(15min)$
- Noise Background Zones

Hansen Bailey



Co-ordinate System: MGA Zone 56
Source: LPI (2006)

BENGALLA MINE

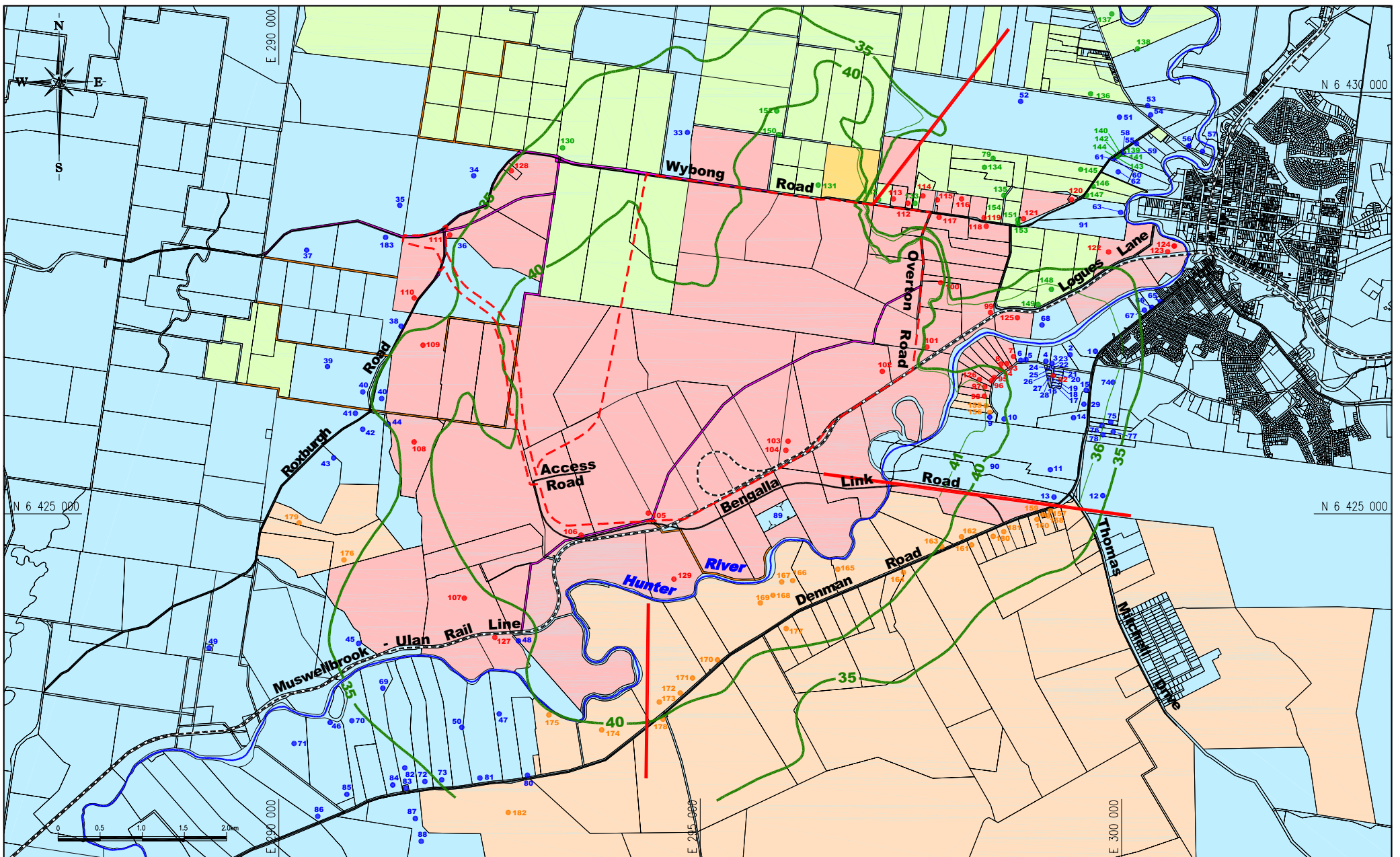
Noise Contours 2008 (Day/Evening)
Prevailing Weather Conditions

Cad File: 02597B.dwg

Date: 16.11.07

Drawn: JD

Figure
5



Legend

- | | |
|--|---|
| --- DA Boundary | 50 Non-Mine Owned Property (Residence) |
| Crown Land | 100 BMC Property (Residence) |
| Crown Roads (NSW) | 150 MTP Property (Residence) |
| Crown Roads (MSC) | —40— Noise Contours L _{Aeq} (15min) |
| 180 MAC Property (Residence) | --- Noise Background Zones |

Hansen Bailey



Co-ordinate System: MGA Zone 56
Source: LPI (2006)

BENGALLA MINE

Noise Contours 2008 (Night)
Prevailing Weather Conditions

Cad File: 02598B.dwg

Date: 16.11.07

Drawn: JD

Figure

6

Table 7
Predicted Exceedances of Consent & Intrusive Noise Criteria (Prevailing Weather Conditions)

Receiver ID *	DA 211/93 (M2) Impact Assessment Criteria		EA Intrusive Criteria	
	Day / Evening	Night	Day / Evening	Night
1	-	+ 1	-	+ 1
2	-	+ 2	-	+ 2
3	-	+ 2	-	+ 3
4	-	+ 2	-	+ 3
5	+ 1	+ 1	-	+ 3
6	+ 1	+ 1	-	+ 3
9	+ 1	+ 2	-	+ 5
11 (residence)	-	+ 1	-	+ 2
11 (25% of property)	-	+ 4	-	+ 5
13 (residence)	-	-	-	+ 1
13 (25% of property)	-	+ 5	-	+ 6
14	-	+ 2	-	+ 2
15	-	+ 2	-	+ 1
16	-	+ 2	-	+ 3
17	-	+ 2	-	+ 3
18	-	+ 2	-	+ 3
19	-	+ 2	-	+ 3
20	-	+ 2	-	+ 3
21	-	+ 2	-	+ 3
22	-	+ 2	-	+ 3
23	-	+ 2	-	+ 3
24	-	+ 2	-	+ 3
25	-	+ 2	-	+ 3
26	-	+ 2	-	+ 3
27	-	+ 2	-	+ 3
28	-	+ 2	-	+ 3
29	-	+ 2	-	+ 1
51	+ 1	-	-	-
52	+ 1	-	-	-
58	+ 1	-	-	-
59	+ 1	-	-	-
60	+ 1	-	-	-
61	+ 1	-	-	-
62	+ 1	-	-	-
68	+ 1	+ 1	-	+ 2
74	-	+ 1	-	-
75	-	+ 1	-	-
76	-	+ 1	-	-
77	-	+ 1	-	-
78	-	+ 1	-	-
90 (25% of property)	+ 1	+ 7	-	+ 6
91 (25% of property)	+ 2	-	-	-
40	-	-	+ 1	+ 1
44	-	-	+ 1	-
45	-	-	-	+ 1
47	-	-	-	+ 3
50	-	-	-	+ 2
69	-	-	-	+ 1
80	-	-	-	+ 2
81	-	-	-	+ 1

* See **Table 2**

- indicates no predicted exceedance of criteria

Acoustics at Bengalla will continue to be managed in accordance with the CNA EMS and the approved Bengalla EMP. In order to minimise the potential adverse acoustics impacts on the sensitive receivers to the east of Bengalla during the deferral period, BMC will limit its maximum production rate to 8.7 Mtpa as originally approved in DA 211/93.

Additionally as committed to in the Bengalla SEE, no active dumping and other operations in exposed locations will be undertaken during adverse weather conditions, where noise may be exacerbated towards receivers.

6.2.2 Air Quality

A relevant air quality impact assessment was undertaken by Holmes Air Sciences to assess the impacts resulting from deferring the relocation of the ROM hopper (see **Appendix L**).

This assessment included a comparison of; predicted dust emissions from Bengalla during 2008 with the ROM hopper in its existing location; against predicted dust emissions for 2008 with the relocated ROM hopper. It also involved estimating the net effect of moving the “centre of gravity” of dust emissions, while maintaining dust emissions lower than would have occurred if the ROM hopper had been relocated and production increased (consistent with the Bengalla SEE).

The air quality impact assessment predicted that the air quality emissions from Bengalla during 2008 with the existing ROM hopper in its existing location when combined with production levels up to 8.7 Mtpa, would be less than if the relocated ROM hopper was in use and production levels increased. Additionally, the assessment predicted that the air quality emissions for 2008 would remain consistent with the predictions as modelled in the Bengalla SEE air quality impact assessment for 2004 to the east and 2012 to the west.

Air quality at Bengalla will continue to be managed in accordance with the CNA EMS and the approved Bengalla EMP.

As the air quality emissions from Bengalla during 2008 will be less than those currently approved no other mitigation and management measures to that described in the Bengalla SEE are required.

6.2.3 Visual & Lighting

A review of the visual impact assessment undertaken for the Bengalla SEE (JVP Visual Planning & Design, 2006) was conducted to assess the potential visual impacts that may be experienced by non-mine owned receivers surrounding Bengalla during 2008.

As described in the Bengalla SEE, the approved modifications were predicted to result in moderate visual impacts to highly sensitive receivers to the east of Bengalla as a result of the low visual effects. Those receivers that were not strongly orientated towards the modifications were in turn predicted to experience low visual impacts. The assessment concluded that once the eastern face of the OEA was fully rehabilitated, the visual impacts at highly sensitive receivers would reduce to low as the rehabilitated slopes of the OEA becomes more visually pleasing, hence reducing the visual effects to very low.

This Modification does not propose changes to the shape and form of the OEA to that currently approved under DA 211/93 (M1). The deferral required for the relocation of the ROM hopper will delay the rehabilitation of the OEA by approximately 12 months to that described in the Bengalla SEE.

As such, this Modification will continue to result in moderate visual impacts to be experienced by the highly sensitive receivers to the east of Bengalla until the eastern face of the OEA is fully rehabilitated, in which case the visual impacts will be reduced to low. The entire eastern face of the OEA was not proposed to be rehabilitated in the Bengalla EIS and was modified in DA 211/93 (M1) to create a more favourable visual feature. Therefore, this Modification will result in similar visual impacts to be experienced as the Bengalla EIS until the relocated ROM hopper is completed.

Visual impacts will continue to be managed in accordance with the CNA EMS and the approved Landscape Management Plan.

BMC will continue visual screening works during 2008 for those non-mine owned receivers that were predicted to receive high visual impacts as described in the Bengalla SEE.

This includes the proposed works to mitigate the visual impacts on the heritage listed Edinglassie and Rous Lench Homesteads, consistent with the approved Landscape Management Plan. Additionally, the expeditious completion of rehabilitation of the OEA will continue to occur as areas become available.

6.2.4 Surface Water

A review of Bengalla's mine water balance to incorporate this Modification was undertaken to determine if there will be any significant changes or if any issues may arise. It is expected that deferring the relocation of the ROM hopper will not result in any significant change to the mine water balance during 2008 to that in the Bengalla SEE and the approved Bengalla Water Management Plan.

Surface water will continue to be managed in accordance with the CNA EMS and the approved Water Management Plan. As such, no additional mitigation or management measures are proposed during the deferral period.

7.0 STATEMENT OF COMMITMENTS

In addition to the conditions of DA 211/93, BMC commits to the operational controls as outlined in **Table 8** for all activities associated with this Modification.

This Statement of Commitments (SoC) summarises the key aspects of this Modification as described throughout this EA and commits to required management and mitigation measures.

The aim of this SoC is to ensure that any potential environmental impacts resulting from this Modification are minimised and managed by implementing relevant environmental management and monitoring strategies.

Table 8
Statement of Commitments

Ref	Description	Section
Construction & Operation		
1	Bengalla Link Road Stage 2 will be constructed to similar or higher design standards and specifications to those originally approved in the Bengalla EIS on the alignment as agreed with MSC.	3.1.2
2	Bengalla Link Road Stage 2 will be constructed to MSC's satisfaction and will take approximately 8 months to complete from commencement of construction.	3.1.3
3	Construction activities which are audible at nearby private residences will be conducted during day time hours (7:00 am to 6:00 pm) from Monday to Saturday only.	3.1.3
4	Bengalla Link Road Stage 2 will be dedicated to MSC as a public road.	3.1
5	Mining of coal and associated activities will be carried out in a manner generally consistent with methods currently utilised at Bengalla as described in the Bengalla EIS, Bengalla SEE and Wantana Extension SEE.	3.0
6	ROM coal will continue to be transported via the southern internal haul road to the existing ROM hopper until its relocation is completed.	3.2.3
7	Infilling of the southern internal haul road and rehabilitation of the eastern face OEA as described in the Bengalla SEE will continue as areas become available.	3.2.3
8	The coal production rate for 2008 will remain at up to 8.7 Mtpa ROM coal as originally approved in DA 211/93 and generally in accordance with Figure 3 .	3.2.3
9	Coal mining will not extend into the Wantana Extension, as described in the Wantana Extension SEE until the relocated ROM hopper has been commissioned. The construction of minor infrastructure modifications will occur.	3.2.3
Environmental Management & Monitoring		
10	The CNA EMS will continue to be relied upon for environmental management, mitigation and monitoring at Bengalla, including for the construction of the Bengalla Link Road Stage 2.	2.0
11	BMC will develop a Construction Management Plan prior to the commencement of construction works for Bengalla Link Road Stage 2, for the approval of MSC to ensure that environmental issues are managed appropriately during the construction and prior to its dedication to MSC as a public road.	3.1.3
12	BMC will develop a Traffic Management and Control Plan prior to the commencement of construction works for Bengalla Link Road Stage 2, for the approval of MSC to ensure that traffic issues on the proposed and intersecting roads are managed appropriately.	3.1.3
13	During construction works for the Bengalla Link Road Stage 2, BMC will implement the air quality controls as described in Section 6.1.1 to ensure minimal impacts on surrounding neighbours.	6.1.1
14	BMC will implement the noise mitigation measures as listed in Section 6.1.2 , to manage any short-term impacts associated with the Bengalla Link Road Stage 2 Construction.	6.1.2
15	BMC will continue to implement the necessary noise management measures throughout 2008 to ensure that the modelled noise levels as provided in Appendix K are not exceeded at any privately owned residence.	6.2.1
16	The Bengalla Aboriginal Cultural Heritage Management Plan will be revised in consultation with the local Aboriginal community and DECC and to the satisfaction of DoP to include a salvage program for the archaeology sites identified within the Survey Area.	6.1.5
17	Tree planting along appropriate sections of the eastern side of Bengalla Link Road Stage 2 will be undertaken following the completion of the road consistent with the approved Landscape Management Plan.	6.1.8

8.0 CONCLUSION

8.1 BENGALLA LINK ROAD STAGE 2

In recognition of the potential for substantial mine development to the west of Muswellbrook and the impact that this may have on the local road network, in 1997 MSC commissioned the *Western Roads Strategic Traffic Study* and commenced the implementation of its findings. The need for and location of the Bengalla Link Road, joining Denman and Wybong Roads was identified as a key component of this Study.

Since the construction of the existing section of Bengalla Link Road in 1997 during the development of Bengalla, considerable consultation and planning has been undertaken with MSC, RTA, the community and neighbouring industry to determine the preferred alignment of the Bengalla Link Road Stage 2. An alignment considering the suitability of the site while also satisfying the future requirements of neighbouring industry, the local community and ensuring minimum impacts on the surrounding natural environment has been identified and agreed upon.

BMC is seeking this Modification to DA 211/93 to allow the construction of the Bengalla Link Road Stage 2 on the preferred alignment. The construction of this road will complete an essential element of the MSC *Western Roads Strategic Traffic Study* at no monetary cost to neighbouring industry and the community but with substantial benefit to all key stakeholder groups. These benefits will be forthcoming in the absence of any additional environmental effects to those which would have resulted from the road being constructed on its currently approved alignment.

8.2 ROM HOPPER RELOCATION

Since the granting of DA 211/93 (M1) in November 2006, BMC has experienced externalities beyond its control which have resulted in the construction of the ROM hopper and associated facilities not being commenced as proposed in the Bengalla SEE.

Construction activities of the ROM hopper are now anticipated to commence in 2008 and are expected to take approximately 12 months to complete.

BMC is seeking a Modification to defer the relocation of the ROM hopper to now be completed by 31 March 2009. In order to reduce the potential acoustic and air quality impacts on non-mine owned receivers to the east of Bengalla during this deferral period, BMC proposes to maintain the production rate during this period at a maximum of 8.7 Mtpa ROM coal. The production rate may increase as required to the maximum of 10.7 Mtpa ROM coal as approved in DA 211/93 (M1) once the ROM hopper has been relocated.

This Modification will involve deferral of a component of a previously approved modification to DA 211/93. Mining activities during this deferral period will continue to occur utilising the originally approved open-cut coal mining methods as described in the Bengalla SEE.

Environmental impact assessments undertaken to predict the impacts from the proposed deferral period for acoustics, air quality, visual and surface water have not identified any additional environmental impacts to those previously identified and approved in the Bengalla EIS, the Bengalla SEE and/or the Wantana Extension SEE.

The key principals of ESD have also been considered throughout the environmental assessment process and this Modification is consistent with these principles.

8.3 APPROVAL OF THIS MODIFICATION

This application to modify DA 211/93 is made pursuant to Section 75W of the EP&A Act and clause 8J(8) of the EP&A Regulation. This EA has been prepared in accordance with the EARs which were issued by DoP on 6 December 2007.

The Minister for Planning has the power to grant this Modification application under Section 75W(4) of the EP&A Act.

9.0 ABBREVIATIONS

Abbreviation	Description
Bengalla EIS	<i>Environmental Impact Statement for Bengalla Coal Mine</i> (Envirosciences, 1993)
Bengalla SEE	<i>Statement of Environmental Effects Modification to Mining Operations</i> (Hansen Consulting, 2006)
BJV	Bengalla Joint Venture
BMC	Bengalla Mining Company Pty Limited
BMCCC	Bengalla Mine Community Consultative Committee
CHPP	Coal Handling and Preparation Plant
CNA	Coal & Allied Industries Limited
Consent Criteria	Bengalla's noise impact assessment criteria listed in Schedule 3, Table 2 of DA 211/93 (M2)
DA	Development Application
DA Boundary	Development Application Boundary (as illustrated in the Bengalla SEE)
dBA	The peak sound pressure level, expressed as decibels (dB) and scales on the 'A-weighted' scale, which attempts to closely approximate the frequency response of the human ear
DECC	NSW Department of Environment and Climate Change
DoL	NSW Department of Lands
DoP	NSW Department of Planning
EA	Environmental Assessment
EARS	Environmental Assessment Requirements issued by DoP for this Modification
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
GDEs	Groundwater Dependent Ecosystems
km	Kilometres
m	Metres
MAC	Mount Arthur Coal (mining operation adjacent to Bengalla)
MSC	Muswellbrook Shire Council
MTP	Mount Pleasant Mine (approved mining area adjacent to Bengalla)
Mt	Million tonnes
Mtpa	Million tonnes per annum
NSW	New South Wales
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)
OEA	Overburden Emplacement Area
RL	Reduced Level
ROM	Run of Mine
ROM hopper	Large bin, which ROM coal is dumped into from trucks and transfers coal on to the conveyor to the CHPP
SEE	Statement of Environmental Effects
SoC	Statement of Commitments
Survey Area	Survey Area for the Bengalla Link Road Stage 2 in which the field based assessments were undertaken
t	Tonnes
This Modification	The construction of the Bengalla Link Road Stage 2 on an alternative alignment to that originally approved and to defer the relocation of the ROM hopper to that required by DA 211/93 (M1) which is now planned to be completed by 31 March 2009
Wantana Extension	Proposed Southern Extension of current mining operations at Bengalla approved in DA 211/93 (M2)

10.0 REFERENCES

- Bridges Acoustics (2006), *Noise and Vibration Assessment – Section 96(2) Modification to Development Consent Statement of Environmental Effects*, prepared for Hansen Consulting.
- Department of Environment and Conservation NSW (2004), *Interim Community Consultation Guidelines for Applicants*.
- Department of Environment and Conservation NSW (2005), *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*.
- Environment and Planning (1994), *Commission of Inquiry – Establishment and Operation Bengalla Open Cut Coal Mine Muswellbrook*.
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- Environmental Protection Authority NSW (2000), *NSW Industrial Noise Policy*.
- Envirosciences Pty Limited (1993), *Environmental Impact Statement for Bengalla Coal Mine*, prepared for Peabody Resources Pty Limited.
- ERM Mitchell McCotter (1997a), *Muswellbrook Western Roads Strategic Traffic Study*, prepared for Muswellbrook Shire Council.
- ERM Mitchell McCotter (1997b), *Mount Pleasant Mine Environmental Impact Statement*, prepared for Coal and Allied Pty Limited.
- Hansen Consulting (2006), *Statement of Environmental Effects Modification to Mining Operations*, prepared for Bengalla Mining Company Pty Limited.
- Hansen Bailey (2007), *Wantana Extension Statement of Environmental Effects*, prepared for Bengalla Mining Company Pty Limited.
- Holmes Air Sciences (2006), *Air Quality Impact Assessment: Bengalla Mine: Mine Plan Modifications*, prepared for Hansen Consulting Pty Limited.
- John van Pelt Visual Planning & Design (2006), *Visual Impact Assessment, Bengalla Mine Section 96(2) Modification to Development Consent Statement of Environmental Effects*.
- Roads and Traffic Authority (1999), *Road Design Guide*.

11.0 EA STUDY TEAM

Section	EA Component	Team Member & Company	
Project Management			
	Project Development Manager	Jeff Torkington	BMC
	Environmental Specialist	Sharon Green	
EA Management			
	Project Director	James Bailey	Hansen Bailey
	Project Manager	Dianne Munro	
	Project Coordinator	Nathan Cooper	
EA Sections			
1.0	Background	Nathan Cooper	Hansen Bailey
2.0	Existing Operations	Nathan Cooper	
3.0	Modification Description	Nathan Cooper	
4.0	Regulatory Framework	James Bailey	
5.0	Stakeholder Consultation	Nathan Cooper	
6.0	Impacts, Management & Mitigation	Nathan Cooper	
7.0	Statement of Commitments	Nathan Cooper	
8.0	Conclusion	James Bailey	
9.0	Abbreviations	Nathan Cooper	
10.0	References	Nathan Cooper	
11.0	EA Study Team	Nathan Cooper	
Appendices			
Appendix A	Regulatory Correspondence	N/A	
Appendix B	Schedule of Land to which this EA Applies	Nathan Cooper	Hansen Bailey
Appendix C	Stakeholder Consultation	Nathan Cooper	Hansen Bailey
Appendix D	Air Quality Impact Assessment Bengalla Link Road Stage 2	Nigel Holmes	Holmes Air Sciences
Appendix E	Acoustics Impact Assessment Bengalla Link Road Stage 2	Mark Bridges	Bridges Acoustics
Appendix F	Traffic Impact Assessment Bengalla Link Road Stage 2	Blake Xu	Parsons Brinkerhoff
Appendix G	Flora & Fauna Impact Assessment Bengalla Link Road Stage 2	James Bailey	Hansen Bailey
Appendix H	Aboriginal Archaeology Impact Assessment Bengalla Link Road Stage 2	Nicola Roche & Diana Neuweger	Environmental Resources Management Australia
Appendix I	Aboriginal Cultural Heritage Impact Assessment Bengalla Link Road Stage 2	Daniel Sullivan	Hansen Bailey
Appendix J	Soil & Landscape Assessment Bengalla Link Road Stage 2	Rod Masters	GSS Environmental
Appendix K	Acoustics Impact Assessment Development Consent Modification EA	Mark Bridges	Bridges Acoustics
Appendix L	Air Quality Impact Assessment Development Consent Modification EA	Shane Lakmaker	Holmes Air Sciences