

BOGGABRI COAL MINE

Project Approval Modification
Environmental Assessment

OCTOBER 2013



Hansen Bailey

ENVIRONMENTAL CONSULTANTS

BOGGABRI COAL MINE

PROJECT APPROVAL MODIFICATION

ENVIRONMENTAL ASSESSMENT

Prepared by:

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November 2013

for:

BOGGABRI COAL PTY LIMITED
386 Leard Forest Road
BOGGABRI NSW 2382

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: Boggabri Coal Mine Project Approval Modification

Applicant Name: Boggabri Coal Pty Limited

Applicant Address: 386 Leard Forest Road
BOGGABRI NSW 2382

Proposed modification sought: Project Approval Modification as described in **Section 3** of this Environmental Assessment.

Environmental Assessment: An Environmental Assessment for this Modification is attached.

Certification: I certify that I have read and am aware of the terms of the Expert Witness Code of the Land & Environment Court of New South Wales.

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

- It is in accordance with Section 75E and 75H of the *Environmental Planning & Assessment Act 1979*;
- Meets the form and content requirements under Clauses 6 and 7 of Schedule 2 of the *Environmental Planning & Assessment Regulation 2000*;
- It contains all available information that is relevant to this Environmental Assessment for the activity to which it relates; and
- The information contained in this Environmental Assessment is neither false nor misleading.

Signature:



Name: James Bailey
Director, Hansen Bailey

Date: November 2013

EXECUTIVE SUMMARY

INTRODUCTION

Boggabri Coal Pty Limited (Boggabri Coal) is a wholly owned subsidiary of Idemitsu Australia Resources Pty Limited, which operates the Boggabri Coal Mine. Boggabri Coal Mine is located 15 kilometres north-east of Boggabri in the north-west region of NSW. Boggabri Coal Mine commenced mining operations in 2006.

Boggabri Coal currently operates under Project Approval 09_0182 which was granted on 18 July 2012 by the NSW Planning Assessment Commission under Section 75J of Part 3A of the *Environmental Planning and Assessment Act 1979* for the Continuation of Boggabri Coal Mine.

Boggabri Coal also operates under EPBC Approval (2009/5256) which was granted on 11 February 2013 by the (then) Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (now termed Department of Environment) under Section 130(1) and 133 of the *Environmental Protection and Biodiversity Conservation Act 1999*.

MODIFICATION

Following the granting of Project Approval 09_0182, Boggabri Coal conducted detailed infrastructure design studies. These studies have identified the need for amendments to the conceptual infrastructure layout for which approval was originally issued. Modification is therefore being sought under Section 75W of the *Environmental Planning and Assessment Act 1979* to facilitate the following:

- Construction of permanent mine access from the Kamilaroi Highway;
- Temporary storage of processed mine overburden material at the existing Rock Quarry and the reuse of this material during the construction of the rail spur embankments;
- Reuse of the existing Daisymede laydown compound; and
- The use of temporary in-pit fuel storage facilities.

REGULATORY FRAMEWORK

Boggabri Coal was granted Project Approval 09_0182 prior to the repeal of Part 3A of the *Environmental Planning and Assessment Act 1979*. As a result, the provisions of the former Part 3A of the *Environmental Planning and Assessment Act 1979*, including Section 75W, will continue to apply. In this regard, Boggabri Coal is seeking approval for the Modification under Section 75W of the *Environmental Planning and Assessment Act 1979*.

STAKEHOLDER ENGAGEMENT

The stakeholder engagement program for the Modification included consultation with Local, State and Federal government agencies, neighbouring land owners and industries.

IMPACTS, MANAGEMENT AND MITIGATION

To determine the potential environmental and social impacts of the Modification, assessments were undertaken in relation to air quality, noise, ecology, Aboriginal archaeology, European heritage, surface water, waste and hazardous materials and socio-economic aspects.

The impact assessments undertaken for the environmental and social issues outlined above conclude that Boggabri Coal, with consideration of the Modification, will generally be consistent with its current operations as approved under Project Approval 09_0182 and those assessed in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010).

Given the scale and nature of the Modification, Boggabri Coal will be capable of conducting the activities proposed under this Modification in accordance with the conditions of Project Approval 09_0182 and the management plans implemented thereafter.

Further to the conditions of Project Approval 09_0182, Boggabri Coal commits to a range of management and mitigation measures, as stated in this Environmental Assessment, to ensure that the Modification's environmental and social impacts are minimised.

JUSTIFICATION

The Modification will enable the more efficient construction and operation of infrastructure required for the continuation of the approved operations of Boggabri Coal Mine, following detailed design.

Boggabri Coal has approval under Part 3A of the *Environmental Planning and Assessment Act 1979* for the Continuation of Boggabri Coal Mine as described in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010). Since the granting of Project Approval 09_0182, Boggabri Coal has undertaken detailed design of the infrastructure required. This detailed design work has determined that operational efficiency can be improved through alterations to the conceptual infrastructure locations and alignments described in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010). The Modification is therefore sought to obtain approval for the construction and operation of this infrastructure at the locations and scale determined during the final design scope.

The Modification will require a minor additional disturbance of 47.6 ha to that approved in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010). Of this, 14.0 ha has been classified as native vegetation, of which 2.8 ha is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*.

In total, 13.3 ha of native vegetation considered to be potential roosting or foraging habitat for species listed in the *Environmental Protection and Biodiversity Conservation Act 1999* will be removed from the Biodiversity Offset Strategy approved under Project Approval 09_0182. The additional disturbance due to the Modification will require the enhancement of the Biodiversity Offset Strategy approved under Project Approval 09_0182.

Each of the noise and air quality impact assessments completed for this Modification indicate that impact levels associated with the activities proposed would have a minor and acceptable effect during construction and operation at all privately owned receivers. No additional air quality or noise mitigation measures are required to those proposed in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010) to facilitate the Modification.

The Modification will not impact on known Aboriginal sites and does not require any additional management to that described and approved in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010) and Cultural Heritage Management Plan (CHMP).

The Modification will not contribute any additional impacts to surface water or groundwater to that described in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010).

The proposed change to the mine site access arrangement will reduce impacts on the local road network by minimising increases in traffic movements on Therribri Road, Manilla Road and Leard Forest Road. It will enable the construction and use of a superior, permanent site access off the Kamilaroi Highway. This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA.

The ability to temporarily store processed overburden at the previously disturbed Rock Quarry will reduce new areas of disturbance required for the Project, whilst the reuse of this material during the construction of the rail spur earthworks will reduce the distance and duration of truck movements and associated environmental and community impacts (when compared to hauling this material from the active mine).

The ability to use the existing Daisymede laydown compound will also provide significant benefits in relation to reduced new disturbances and transport distances.

The availability of four temporary fuel storage facilities at strategic locations along haulage routes will optimise the efficiency and use of the Boggabri Coal equipment fleet.

The environmental impacts of the Boggabri Coal Mine will therefore be minor due to the Modification. Additional environmental mitigation to enable the Modification is required only to facilitate minor, manageable impacts to ecology. This will assist in ensuring that the Modification will continue to be consistent with the principles of Ecologically Sustainable Development under the *Environmental Planning and Assessment Act 1979* and the offsetting principles of the *Environmental Protection and Biodiversity Conservation Act 1999*.

The Boggabri Coal Mine will facilitate the ongoing development of a significant coal resource. The Modification will assist in maximising the economic benefits generated by the development of this resource, without a significant change to the environmental impacts of the development. Therefore, the Modification is consistent with the “objects” of the *Environmental Planning and Assessment Act 1979*.

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1 OVERVIEW

This section provides an overview to the Environmental Assessment (EA) for the Boggabri Coal Mine Project Approval Modification (the Modification). It describes the background, context and need for the Modification and explains the purpose and structure of the EA.

1.1 BACKGROUND

Boggabri Coal Pty Limited (Boggabri Coal) is a wholly owned subsidiary of Idemitsu Australia Resources Pty Limited which operates the Boggabri Coal Mine. Boggabri Coal Mine is located 15 kilometres (km) north-east of Boggabri in the north-west region of New South Wales (NSW) (see **Figure 1**). Boggabri Coal Mine commenced mining operations in 2006.

In 2011, Boggabri Coal Mine produced 2.1 Million tonnes (Mt) of product coal from the Maules Creek Formation down to the Merriown coal seam. Boggabri Coal Mine currently employs 400 full time equivalent employees and achieved coal production of 3.7 Mt product coal in 2012.

Boggabri Coal currently operates under Project Approval (PA) 09_0182 which was granted on 18 July 2012 by the NSW Planning Assessment Commission (PAC) under Section 75J of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). PA 09_0182 facilitates the continuation of mining operations at Boggabri Coal Mine via open cut methods for up to 7 Million tonnes per annum (Mtpa) (see **Section 2** for further details).

Boggabri Coal also operates under EPBC Approval (2009/5256) which was granted on 11 February 2013 by the (then) Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (now termed Department of Environment) under Section 130(1) and 133 of the *Environmental Protection and Biodiversity Conservation Act 1999*.

1.2 DOCUMENT PURPOSE

This EA has been prepared to support an application for Modification to PA 09_0182 under Section 75W of the EP&A Act, which makes provision for amendments to approved elements of the site infrastructure and alternative site access arrangements (the Modification). Elements of the Modification are located outside the area of disturbance described in the Boggabri EA and consequently require assessment to determine potential environmental and socio-economic effects and management requirements.

This Modification (if approved) will not require any changes to the mining activities as approved under PA 09_0182 and described in the Boggabri EA.

1.3 MODIFICATION NEED

PA 09_0182 provides for the extension and continuation of open cut coal mining operations at Boggabri Coal Mine and the development of associated coal preparation, coal transport, support and administrative facilities.

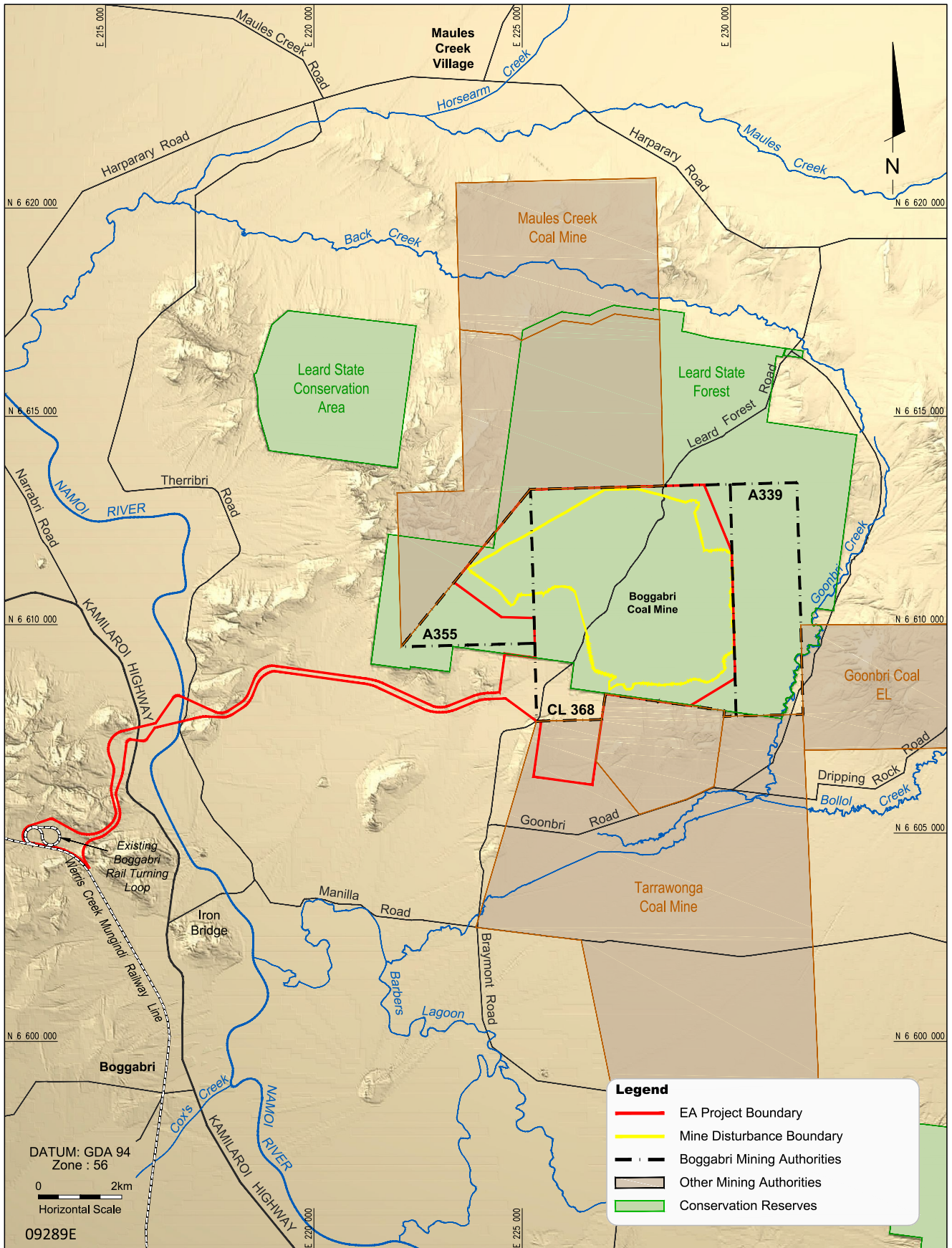
At the time of preparing the Boggabri EA, the detailed design work required for the construction of a number of elements of the infrastructure, subsequently approved under PA 09_0182, had not been completed. The Modification is therefore sought to obtain approval for the construction and operation of this infrastructure at the locations and scale determined during the final design scope.

Further details on the Modification are presented in **Section 3**.

1.4 DOCUMENT STRUCTURE

This EA is structured as follows:

- **Section 2** provides a description of the existing and approved operations at Boggabri Coal Mine;
- **Section 3** provides a description of this Modification for which approval is sought;
- **Section 4** describes the regulatory framework relevant to this Modification;
- **Section 5** describes the stakeholder consultation undertaken for the Modification and the outcomes;
- **Section 6** assesses environmental and socio-economic issues and outlines management and mitigation measures proposed in respect of this Modification;
- **Section 7** presents Boggabri Coal's Statement of Commitments related to this Modification;
- **Section 8** provides justification for the Modification; and
- **Sections 9 to 11** include abbreviations, references and a summary of the study team for this EA.



BOGGABRI COAL MINE

Regional Locality



FIGURE 1

2 APPROVED OPERATIONS

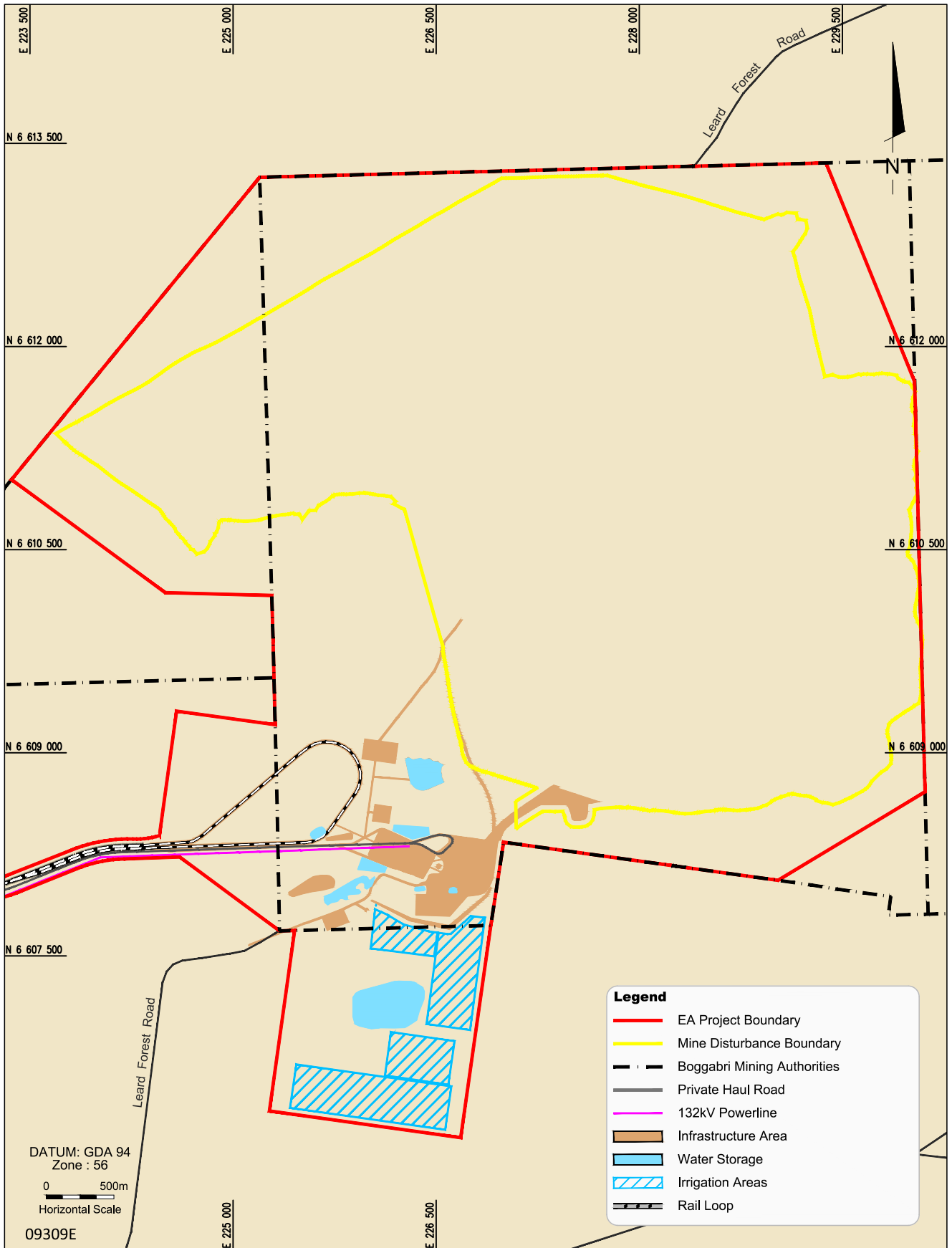
This section describes the approved operations at Boggabri Coal Mine, including current mining activities, coal handling and transport, power supply and the existing Environmental Management System (EMS).

2.1 EXISTING PROJECT APPROVAL

Boggabri Coal Mine operates under PA 09_0182 for the continuation of mining to provide high quality thermal coal and pulverised coal injection (PCI) for export markets, as supported by the Boggabri EA. The activities approved under PA 09_0182 include:

- Continuation of mining operations via open cut methods for up to 7 Mtpa product coal down to the Merriown coal seam, 24 hours per day, 7 days a week;
- An open cut mining fleet including excavators and fleet of haul trucks, dozers, graders, water carts and other equipment with the flexibility to introduce a dragline (as required);
- Up to 500 employees;
- Modifications to existing and continuation of approved (but not yet constructed) infrastructure including the:
 - Coal Handling and Preparation Plant (CHPP);
 - Existing site infrastructure capacities including: Run of Mine (ROM) coal hopper, second crusher, stockpile area, coal loading facilities, water management and irrigation system;
 - Rail loop and 17 km rail line across the Namoi River and floodplain including overpasses across the Kamilaroi Highway, Therribri Road and Namoi River; and
 - Upgrading and relocating site facilities including offices, car parking and maintenance sheds as and when required.
- Closing a section of Leard Forest Road;
- Upgrading the power supply capacity to 132 kV high voltage lines suitable for dragline operations; and
- Transportation of coal from the Boggabri Coal Mine to the Boggabri Coal Terminal via a 17 km private sealed haul road. Coal production is limited to 5.5 Mtpa of ROM coal during the period when coal is being transported to the existing coal loader by trucks. The transportation of coal by road is only required up until the commissioning of the Boggabri Rail Spur.

Figure 2 illustrates the approved layout of operations and infrastructure at Boggabri Coal Mine.



BOGGABRI COAL MINE

Approved Mining Operations



FIGURE 2

2.2 MINING OPERATIONS

The mining process at Boggabri Coal Mine involves the salvage of any potentially commercial firewood, removal and mulching of any remnant vegetation, stripping and stockpiling of the topsoil resource, drilling and blasting of overburden, excavation of overburden to expose coal resources, extraction of ROM coal, overburden emplacement and ultimately progressive rehabilitation.

Clearing and topsoil stripping is undertaken on an annual basis in preparation for overburden removal and coal extraction. Before clearing, vegetation pre-clearance surveys are undertaken, followed by harvesting commercial timber for firewood, seed collection, mulching and removal of large debris. Topsoil and mulched vegetation are removed using dozers and excavators and then placed directly onto reshaped overburden (where possible) or stockpiled for future use in progressive rehabilitation efforts.

Overburden and interburden are removed using hydraulic excavators and a fleet of rear dump trucks. Open cut operations at Boggabri Coal Mine extract coal from eight seams within the Maules Creek Formation, namely the Herndale, Onavale, Teston, Thornfield, Braymont, Bollol Creek, Jeralong and Merriown seams. The blended product is a relatively low ash, high volatile, low sulphur thermal coal and PCI product.

PA 09_0182 permits blasting between the hours of 9:00 am and 5:00 pm, Monday to Saturday inclusive. The approval of the Director-General is required for any blasting outside these time periods. The consent of Narrabri Shire Council (NSC) is required for any blasting within 500 m of a public road.

During 2012, 3.7 Mt of product coal was recovered and railed from Boggabri Coal Terminal to the Port of Newcastle for export.

2.3 COAL HANDLING AND TRANSPORT

2.3.1 Handling and Transport

Once extracted, ROM coal is loaded via excavator into rear dump trucks and transported to the ROM coal stockpile. Coal is recovered from the ROM stockpile and fed by front end loader into the crushing system and trammed to a crusher for sizing to approximately 50 millimetres. Crushed coal is conveyed to a 380 tonne (t) truck loading bin where it is batch loaded into B-double trucks for transport to the Boggabri Coal Terminal via a 17 km private haul road.

The private haul road crosses Leard Forest Road and Therribri Road at grade and extends over the Namoi River and an intersection of the Kamilaroi Highway, via a bridge and overpass, respectively. The existing Boggabri Coal Terminal includes a product coal stockpile area, a dozer assisted stacking and reclaim system, conveyors, train loading bin with a loading capacity up to 5,000 tonnes per hour (tph) and a rail loop. Product coal is transported via the Werris Creek - Mungindi Railway Line to the Port of Newcastle for export.

At peak production, coal will be transported from Boggabri Coal Mine via a 17 km rail spur line which includes a rail loop and bridge crossings over Therribri Road, the Kamilaroi Highway and the Namoi River. The approved volume of coal that can be transported from Boggabri Coal Mine via the Boggabri Rail Spur is limited to 7 Mtpa of product coal.

2.3.2 Coal Handling and Infrastructure

Approved coal handling and processing infrastructure includes:

- Coal crushing plant (modified under PA 09_0182 to feed the CHPP);
- Bypass crushing plant;
- CHPP with a capacity to receive approximately 500 tph; and
- ROM and product coal stockpiles.

2.4 POWER

Boggabri Coal Mine is currently supplied electricity via two 66 kV powerlines that originate from 132/66 kV substations located at Gunnedah and Narrabri. Several 66/11 kV substations are located in the Boggabri area supplying local distribution feeders, including the 11 kV feeder that supplies the existing mine.

Boggabri Coal Mine is supplied by a single circuit 11 kV three phase overhead radial feeder, with two 11 kV/415 volt substations on site supplying mine facilities.

2.5 OPERATIONAL HOURS

Mining operations are generally conducted 24 hours per day on two 12 hour shifts, seven days per week with maintenance activities occurring 24 hours per day, seven days a week.

2.6 ENVIRONMENTAL MANAGEMENT POLICY

Boggabri Coal has created and implemented an Environmental Management Policy that provides the framework to facilitate compliance with legal and other requirements (including statutory approval and stakeholder expectations). A component of the Environmental Management Policy includes the development and implementation of a number of Environmental Management Plans (EMP) in relation to the following aspects:

- Construction;
- Water Management;
- Air Quality;
- Biodiversity;
- Aboriginal Cultural Heritage;
- Hydrocarbon Management;
- Noise and Vibration;
- Waste;
- Rehabilitation and Land Management;
- Traffic;
- Workforce Accommodation;
- Public Safety; and
- Irrigation Area.

All EMPs are regularly reviewed and communicated to the workforce to ensure a high level of environmental performance is maintained.

2.7 ENVIRONMENTAL MONITORING PROGRAM

Boggabri Coal has implemented an Environmental Monitoring Program which ensures the effective quantitative measurement and management of its environmental performance. The existing Boggabri Coal monitoring network comprises:

- A meteorological monitoring component;
- 12 depositional dust gauges;
- A High Volume Air Sampler (HVAS) measuring particulate matter less than 10 microns (PM₁₀);
- Nine attended noise monitoring sites;
- 12 groundwater monitoring bores; and
- Nine surface water sampling locations.

Results from the Environmental Monitoring Program measuring Boggabri Coal's environmental performance are published in the Annual Review (formerly Annual Environmental Management Report), and distributed to government agencies, employees, the Boggabri Community Consultative Committee (CCC) and other interested stakeholders, and made public on the Boggabri Coal website. Given the minor extent of the proposed Modification, the existing Environmental Monitoring Program will be adequate to monitor any potential impacts due to the Modification.

2.8 LAND OWNERSHIP AND USE

Boggabri Coal Mine has been operating since 2005 with the commencement of construction activities, and the first coal from the operation produced in 2006. Boggabri Coal Mine is well established within the fabric of the local community and surrounding landscape.

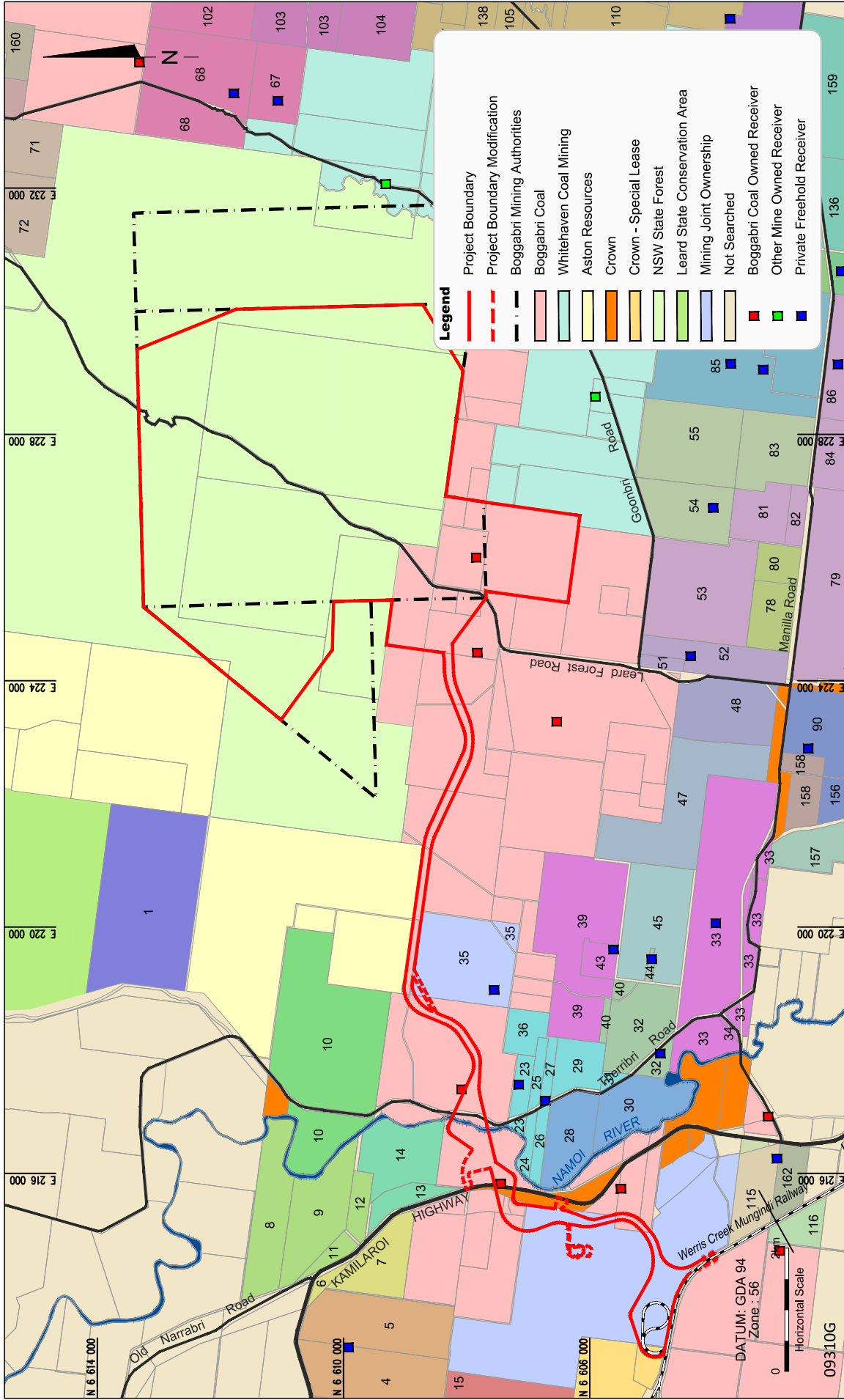
Boggabri Coal either owns the land to which this Modification applies or relies upon relevant access agreements with Forests NSW. A revised Schedule of Land for the Modification is attached to the application to modify the Project Approval. The private landholders located nearest to the Modification are approximately 1 km from the Daisymede laydown compound. The land ownership surrounding the Modification is shown on **Figure 3**.

The majority of infrastructure constructed for Boggabri Coal Mine is located on land owned by Boggabri Coal. The private haul road passes over the Kamilaroi Highway approximately 8 km north of the township of Boggabri, before crossing a small section of declared Crown land.

The Boggabri Coal Terminal is located on land jointly owned by Boggabri Coal and Maules Creek Coal Pty Ltd (Maules Creek). The western portion of the rail loop at the Boggabri Coal Terminal is located on Crown land. Boggabri Coal has a special lease over two Crown blocks in this area (see **Figure 3**). The remaining land associated with the Boggabri Coal Terminal is owned by Boggabri Coal.

Several other mining companies own land in the vicinity of the Modification. Maules Creek owns the land to the north-west and Whitehaven Coal Mining Pty Ltd (Whitehaven) owns the land to the south of Boggabri Coal Mine.

Existing land use within Boggabri Coal's mining authorities and its landholdings include mining and limited agriculture, forestry and recreational activities.



BOGGABRI COAL MINE

Land Ownership

FIGURE 3

3 THE MODIFICATION

This section provides a description of the Modification, which entails amendments to PA 09_0182 for the construction and operation of infrastructure developed during the final detailed design phase.

Following the granting of PA 09_0182, Boggabri Coal has conducted detailed design studies for the infrastructure required to facilitate the Project. These studies have identified the need for amendments to the conceptual layout for which approval was originally issued. The Modification is being sought under Section 75W of the EP&A Act to facilitate the following changes:

- Construction of permanent mine access from the Kamilaroi Highway;
- Temporary storage of processed mine overburden material at the existing Rock Quarry and the reuse of this material during the construction of the rail spur embankments;
- Reuse of the existing Daisymede laydown compound; and
- The use of temporary in-pit fuel storage facilities.

Each of the elements of the Modification is shown on **Figure 4** and described further in the sections below.

3.1 KAMILAROI HIGHWAY MINE ACCESS

The Modification involves a change to the method of access to Boggabri Coal Mine for both the construction and operational workforce. Under PA 09_0182, construction personnel are approved to access the site via Therribri Road, Manilla Road and Leard Forest Road.

During the pre-construction design phase of the Modification, it was apparent that an alternate access would be required to facilitate construction, particularly for the section of the approved Boggabri Rail Spur to the west of the Kamilaroi Highway.

Given the existing 42.5t load limit restriction placed on the 'Iron Bridge' over the Namoi River on Manilla Road and concerns associated with future access arrangements for mine traffic (in particular, oversize and over mass vehicles and their associated issues with the use of Hoads Lane, Braymont Road and Barbers Lagoon Road), mine access via the Kamilaroi Highway is proposed as an alternative site access route. Although some oversize vehicles may have enough clearance to use the existing bridge, the road geometry of the approaches and associated load limit render it unsuitable.

To facilitate the alternative mine access arrangements, Boggabri Coal proposes the construction of two access roads linking the private haul road to the Kamilaroi Highway (see **Figure 4**). These proposed access roads will provide safe left-turn access and egress from the Kamilaroi Highway onto the private haul road while preventing right turn movements across the existing through lanes.

During construction of the Boggabri Rail Spur, it is anticipated that a significant proportion of construction traffic (including heavy vehicles) will use the proposed left in / left out intersections to access the site, including:

- Pre-approved construction related heavy vehicles associated with oversize and over mass vehicles;
- Pre-approved construction related light vehicles suitable for use on construction sites (i.e. vehicles that are certified for use on the respective construction sites);
- Operational heavy vehicles that either exceed 42.5 t or are oversize;

- Deliveries associated with the Boggabri Rail Spur; and
- Major deliveries associated with the CHPP.

Once coal haulage to the existing rail loadout facility via the private haul road has ceased (following commissioning of the Boggabri Rail Spur approved under PA 09_0182), the Kamilaroi Highway access roads will be used on a permanent basis as the primary site access for the operational workforce and preferred heavy vehicle route to the mine site.

This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA, in particular the Maules Creek Community Council which requested:

"At the completion of the proposed rail loop Boggabri Coal's existing private haul road will become the only heavy vehicle access route to the mine and controls at the intersections of the Leard Forest Road and Therribri Road will be changed to give priority to the public roads, with mining traffic not having right of way. Access to the Private Haul Road will be provided by Boggabri Coal at the Kamilaroi Highway to the satisfaction of the Roads and Traffic Authority."

The construction of the Kamilaroi Highway access routes will require a total of 25.4 ha of disturbance outside the approved Project Boundary (including exotic grassland). Of this, 24.3 ha are located within the Namoi River Offset Area as described in the Boggabri EA.

3.2 ROCK QUARRY CONSTRUCTION STOCKPILE

Of the total volume of overburden material to be processed at the crushing and screening area in the Mine Infrastructure Area (MIA) for use as fill during rail spur embankment construction activities, approximately 180,000 t will be stockpiled at the highly disturbed Rock Quarry located to the west of the Kamilaroi Highway (see **Figure 4**). Some fill materials have already been processed and stockpiled at the Rock Quarry in this regard. The additional processed material will be transported via the existing private haul road and stockpiled at the Rock Quarry for use during the construction of the Boggabri Rail Spur. The Rock Quarry will be rehabilitated following extraction of the fill material.

The Rock Quarry will require a total of 4.3 ha of disturbance outside the approved Project Boundary. This area has previously been disturbed and does not support any native vegetation. This entire disturbance is located within the Namoi River Offset Area described in the Boggabri EA.

3.3 DAISYMEDE LAYDOWN COMPOUND

The reuse of the existing Daisymede laydown compound located to the south of the private haul road (see **Figure 4**) is proposed to support the mining operations approved in the Boggabri EA. The existing Daisymede laydown compound has previously been cleared. The existing hardstand area of the compound is proposed as a laydown area for vehicle storage, and the stockpiling and use of materials and/or equipment during both the construction and operational phases of the Project.

The reuse of the existing Daisymede laydown compound will require 17.9 ha of disturbance inside of the approved Project Boundary. However, this area has previously been disturbed and does not support any native vegetation. This entire disturbance is located within the Namoi River Offset Area described in the Boggabri EA.

As noted above, no vegetation clearing is required to enable the reuse of the existing Daisymede laydown compound as the area has been previously cleared.

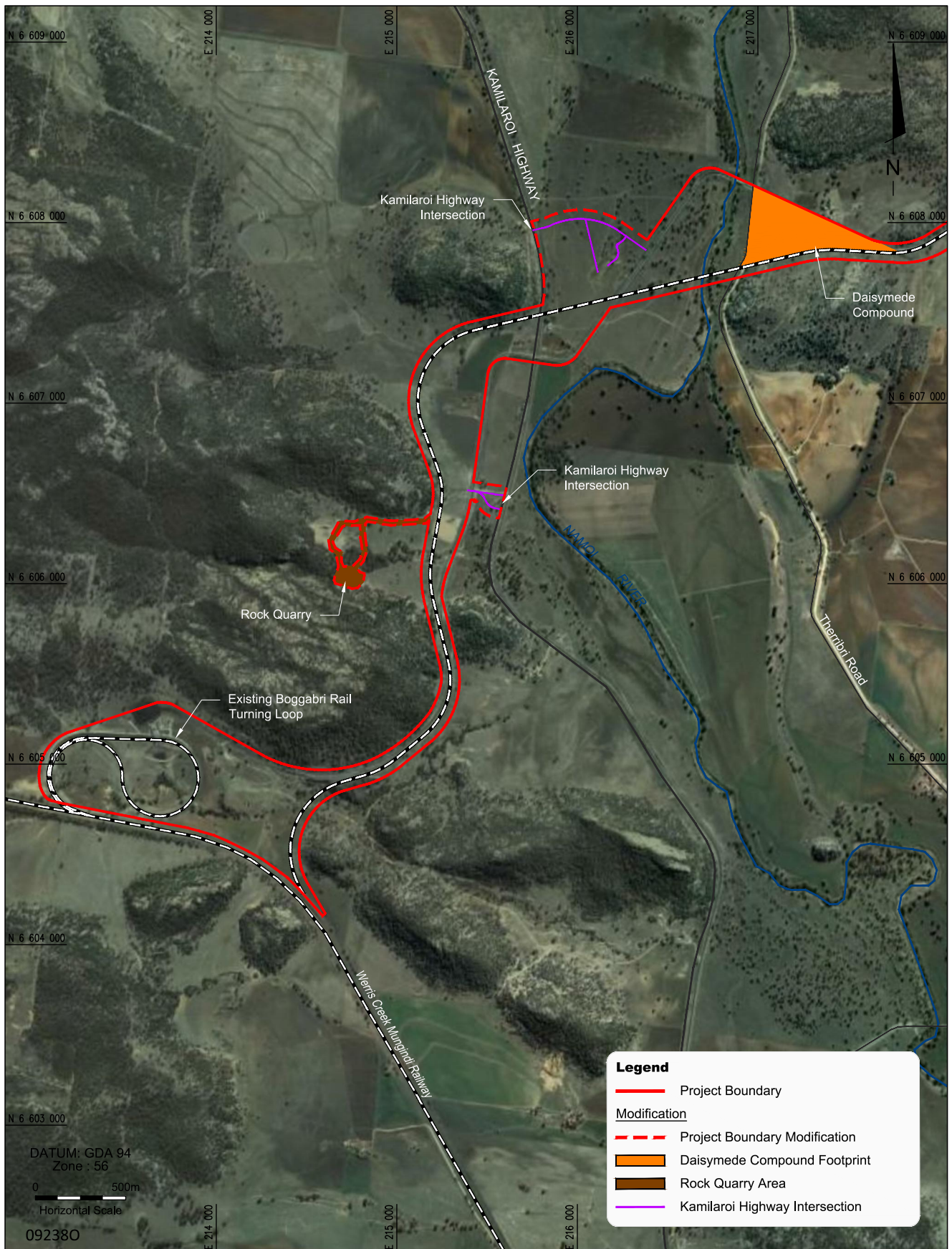
3.4 TEMPORARY FUEL STORAGE FACILITIES

The Boggabri EA outlined the requirement for additional transport and storage of diesel for the continued operations of Boggabri Mine.

Subsequent to this, Boggabri Coal has identified the need to use temporary in-pit fuel storage facilities to house and dispense diesel, oils and lubricants which are required for day to day operations. Four temporary fuel storage facilities with 67,000L capacity each are proposed to be used throughout Boggabri Mine at strategic locations along haulage runs to optimise the efficiency and utilisation of the existing fleet. The temporary in-pit fuel storage facilities will be designed and constructed in accordance with the relevant Australian Standards, including, but not limited to *AS 1940 – The Storage and Handling of Flammable and Combustible Liquids* (AS 1940). The facilities will be portable (using a side lifting truck), self-contained and banded (double wall) to contain any spills within the unit (see example below in Plate 1).



Plate 1
Indicative In-Pit Fuel Storage Facility



BOGGABRI COAL MINE

Indicative Modification Layout



FIGURE 4

4 REGULATORY FRAMEWORK

This section provides a description of the regulatory framework applicable to the Modification. It discusses the ability of the Minister for Planning and Infrastructure to modify PA 09_0182 under Section 75W of the EP&A Act, describes the approvals process, the consistency of the Modification with the objects of the EP&A Act and requirements for other licences and approvals.

4.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

4.1.1 Development Consent

The Boggabri Coal Mine was originally granted development consent DA 36/88 on 22 August 1989 under Part 4 of the EP&A Act. DA 36/88 authorised the extraction of coal for a period of 21 years following the granting of a coal lease in respect of the development. Coal Lease 368 was granted by the Minister for Mineral Resources on 15 November 1990.

A modification to DA 36/88 was granted by the (then) Minister for Planning on 22 July 2009 under Section 96(2) of the EP&A Act. This modification authorised alterations to water management infrastructure and the final landform.

Boggabri Coal sought a second modification to DA 36/88 to enable mining to continue for an additional two years. On 19 October 2011, a second modification to DA 36/88 was granted under Section 75W of the EP&A.

Boggabri Coal sought a third modification to DA 36/88 to increase the height of the overburden emplacement area. The modification was approved under Section 75W of the EP&A Act on 29 June 2012.

4.1.2 Project Approval

A new Project Approval under Part 3A of the EP&A Act was granted by the PAC for the Continuation of Boggabri Coal Mine on 18 July 2012. This approval (PA 09_0182) superseded DA 36/88 as the planning approval for Boggabri Coal Mine. Pursuant to Condition 14 of PA 09_0182, Boggabri Coal surrendered DA 36/88 on 17 July 2013.

PA 09_0182 allows mining operations to be conducted in accordance with the Boggabri EA until the end of December 2033.

4.1.3 Applicability of Part 3A

Part 3A of the EP&A Act was repealed on 1 October 2011. However, the savings and transitional provisions enacted under Schedule 6A of the EP&A Act declare certain projects to be "*transitional Part 3A projects*". Pursuant to clause 2 of Schedule 6A, a project that has been approved under Part 3A is deemed to be a transitional Part 3A project.

Since PA 09_0182 was granted under Part 3A of the EP&A Act, Boggabri Coal Mine is deemed to be a transitional Part 3A project. As a result, the provisions of the former Part 3A, including Section 75W, continue to apply to the Boggabri Coal Mine PA 09_0182.

4.1.4 Section 75W Power to Modify

Section 75W of the EP&A Act enables the proponent to request a modification to a Project Approval issued under Part 3A. Section 75W relevantly states:

"(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 this Modification."*

Section 75W(2) states that the Minister's approval is not required where the modified project would be consistent with the approved project. The proponent (Boggabri Coal) does not consider the Modification to be entirely consistent with the Project as approved. Accordingly, Boggabri Coal is seeking a Modification to PA 09_0182 under Section 75W of the EP&A Act.

The case of *Barrick Australia Limited v Williams* (2009 NSWCA 275) established that there are limitations on the scope of Section 75W. Justice Basten held that the Minister is obliged to form a view as to whether the proposed changes amount to "*a radical transformation of the terms of the existing development consent*". This is a question of jurisdictional fact, which determines whether the Minister can exercise the powers provided by Section 75W. Therefore, Section 75W cannot be relied on where the proposed alterations are so "*radical*" that they cannot be considered a "*modification*" of the approval.

The following essential elements of the Boggabri Coal Mine, in consideration of the Modification, will remain consistent with PA 09_0182:

- Total coal production will remain within the approved limit of 7 Mtpa of product coal;
- The footprint of mining operations will remain unchanged;
- Mining methods and coal extraction rates will remain unchanged and will use the existing equipment fleet;
- Coal processing and transportation activities will remain the same;
- The duration of mining will remain the same;
- No change will be made to the operational workforce; and
- Minor additional disturbance of approximately 47.6 ha of native vegetation beyond that approved under PA 09_0182, of which only 14.0 ha is native vegetation.

As the Modification does not represent a radical departure from the existing Project Approval, the Minister is able to modify the approval under Section 75W of the EP&A Act.

4.1.5 Environmental Assessment Requirements

Section 75W(3) of the EP&A Act states that the Director-General may notify the proponent of Environmental Assessment Requirements for the proposed Modification. No Environmental Assessment Requirements have been received.

4.1.6 Exemptions from Other Approval Requirements

As a transitional Part 3A project, Section 75U of the EP&A Act (now repealed) continues to apply to the Boggabri Coal Mine. Section 75U specifies a number of authorisations and approvals that are not required for projects approved under Part 3A of the EP&A Act. Pursuant to Section 75U, the following authorisations are not required for the Modification:

- A permit under Section 201, 205 or 219 of the *Fisheries Management Act 1994* (FM Act);
- An approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977* (Heritage Act);

- An Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974* (NPW Act);
- An authorisation referred to in Section 12 of the *Native Vegetation Act 2003* (NV Act) (or under any Act to be repealed by that Act) to clear native vegetation or State protected land;
- A bushfire safety authority under Section 100B of the *Rural Fires Act 1997*; and
- A water use approval under Section 89, a water management work approval under Section 90 or an activity approval under Section 91 of the *Water Management Act 2000* (WM Act).

The matters that would ordinarily be considered in applications for these authorisations have been addressed in this EA and the Boggabri EA.

4.1.7 Approvals that Must Be Granted

Section 75V of the EP&A Act (now repealed) continues to apply to Boggabri Coal Mine due its status as a transitional Part 3A project. Section 75V specifies the approvals and authorisations that must be granted to a project approved under Part 3A of the EP&A Act. In accordance with Section 75V, the following authorisations must be granted in terms that are consistent with the Project Approval:

- A mining lease under the *Mining Act 1992* (Mining Act);
- An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act) (for any of the purposes referred to in Section 43 of that Act); and
- Consent under Section 138 of the *Roads Act 1993* (Roads Act).

The need for these authorisations is discussed further in **Section 4.4**.

4.2 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

An approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required for any action that is likely to have a significant impact on Matters of National Environmental Significance (MNES). There are nine MNES listed under Part 3 of the EPBC Act:

- World heritage properties;
- National heritage places;
- Wetlands of international importance;
- Listed threatened species and ecological communities;
- Migratory species;
- Nuclear actions;
- Commonwealth marine areas;
- Protection of water resources from coal seam gas development and large coal mining development; and
- The Great Barrier Reef Marine Park.

If a proposed action is likely to have a significant impact on MNES, the action is deemed to be a "*controlled action*". A controlled action can only be carried out with the approval of the Minister under Section 133 of the EPBC Act.

On 22 December 2009, Boggabri Coal submitted a referral under Section 68 of the EPBC Act to determine whether the Continuation of Boggabri Coal Mine was a controlled action. On 5 February 2010, the Commonwealth Department of Environment (DoE) (formerly termed the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC)) declared the Project to be a controlled action due to its impacts on listed threatened species and communities, and listed migratory species. DoE elected to assess the Project through accreditation of the assessment process under the EPBC Act. On 11 February 2013, the Project was granted approval under Section 133 of the EPBC Act.

This Modification sought will involve activities which will result in the disturbance of 14.0 ha of native vegetation. Of this, 13.3 ha in the existing Offset Areas is considered to provide potential habitat for EPBC listed threatened species but is not subject to the 20:1 offset ratio outlined in Condition 11 of the Boggabri EA EPBC Approval (EPBC 2009/5256) as Boggabri's Biodiversity Offsets have not been secured (see **Section 6.3** for further details). Discussions with DoE have confirmed this (see **Section 5**).

4.3 ENVIRONMENTAL PLANNING INSTRUMENTS

Environmental Planning Instruments (EPIs) are enacted under the EP&A Act, and include Local Environment Plans (LEPs) and State Environmental Planning Policies (SEPPs).

The permissibility of mining developments is governed by the relevant LEPs and *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (SEPP Mining). SEPPs also prescribe additional assessment requirements for proponents and public authorities.

4.3.1 Narrabri Local Environment Plan 2012

Boggabri Coal Mine is located entirely within the Narrabri Local Government Area (LGA). The *Narrabri Local Environment Plan 2012* (Narrabri LEP) applies to all land within the Narrabri LGA.

The Boggabri Coal Mine is located on land zoned as RU1 (Primary Production) and RU3 (Forestry) under the Narrabri LEP. All infrastructure associated with Boggabri Coal Mine is located on land zoned RU1. Open cut mining will be undertaken entirely on land within zone RU3.

All construction activities associated with the Modification will be carried out on land zoned as RU1. The objectives of zone RU1 are:

- *"To encourage sustainable primary industry production by maintaining and enhancing the natural resource base;*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area;*
- *To minimise the fragmentation and alienation of resource lands;*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones; and*
- *To allow for non-agricultural land uses that will not restrict the use of other land for agricultural purposes."*

The land use table in the Narrabri LEP provides that open cut mining is permissible with development consent within zone RU1. Therefore, the Modification is permissible.

4.3.2 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

The aims of SEPP Mining, as stated in clause 2, 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;*
- 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."*

Clause 7 of SEPP Mining provides that open cut mining is permissible on land where development for the purposes of agriculture or industry may be carried out (with or without development consent). The Modification will be carried out on zone RU1 land, where agriculture is permissible without development consent. The Modification is therefore permissible under SEPP Mining. This outcome is consistent with the land use table under the Narrabri LEP.

Part 3 of SEPP Mining specifies the matters that need to be considered by the consent authority. In particular, clause 12 of SEPP Mining provides:

"Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- (a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*
 - (ii) *whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
 - (iii) *any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses; and*
- (b) *evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii), and*
- (c) *evaluate any measures proposed by the Proponent to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii)."*

The matters specified in Part 3 of SEPP Mining have been addressed in this Modification EA.

4.3.3 State Environmental Planning Policy 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 – Hazardous & Offensive Development (SEPP 33) governs the assessment of developments for the purposes of a "*potentially hazardous industry*" or "*potentially offensive industry*".

Under clause 3 of SEPP 33, a "potentially hazardous industry" is defined as a development that would pose a significant risk to human health or the biophysical environment if mitigation measures are not implemented. Clause 12 states that a preliminary hazard analysis must be prepared for a potentially hazardous industry.

The Boggabri EA concluded that the Project did not constitute a potentially hazardous industry. While the Modification is seeking approval to use four temporary in-pit fuelling facilities (in accordance with AS 1940), this is not considered to be potentially hazardous or offensive. Therefore, the Modification does not give rise to the requirement for a preliminary hazard analysis or the consequences of SEPP 33.

4.3.4 State Environmental Planning Policy 44 – Koala Habitat Protection

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) encourages the conservation and management of natural vegetation areas to ensure that there is ongoing protection of koalas and their habitat. Narrabri LGA is listed under Schedule 1 as an area to which SEPP 44 applies.

Part 2 of SEPP 44 provides that a plan of management must be prepared for developments located on “core koala habitat”. However, clause 6 provides that Part 2 only applies to “land in relation to which a development application has been made”. The term “*development application*” is defined under clause 4 of the EP&A Act as “an application for consent under Part 4 [of the EP&A Act] to carry out development”.

Given that approval for the Boggabri Coal Mine was sought under Part 3A of the EP&A Act, the requirement for a plan of management was not applicable. Significance assessments have been completed in accordance with the TSC Act and EPBC Act guidelines and have concluded that the Modification will not significantly impact the koala.

Further, the Modification will not result in any additional impacts to core koala habitat.

4.3.5 State Environmental Planning Policy 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) was enacted to provide a state-wide approach to the remediation of contaminated land for the purpose of minimising the risk of harm to the health of humans and the environment.

Potentially contaminated sites within the approved Project Boundary, as assessed in the Boggabri EA, include sheep dips, workshops / machinery sheds used for fuel, chemical and fertiliser storage and landfills. No contaminated land has been identified within the Modification area.

4.4 OTHER REGULATORY REQUIREMENTS

4.4.1 Protection of the Environment Operations Act 1997

The POEO Act establishes a framework for the licensing of polluting activities. The NSW Office of Environment and Heritage (OEH) is responsible for administering the licensing regime under the POEO Act.

Section 48 of the POEO Act provides that an Environmental Protection Licence (EPL) is required for scheduled activities under the Act. Under clause 28 of Schedule 1 of the POEO Act, “*mining for coal*” is deemed to be a scheduled activity if the daily production exceeds 500 t, or if the disturbance area exceeds 4 ha.

In accordance with Section 48 of the POEO Act, Boggabri Coal holds EPL 12407 for its currently approved mining operations. Boggabri Coal will seek an amendment to EPL 12407 to include the Modification. Pursuant to Section 75V of the EP&A Act, an EPL must be granted in terms that are consistent with the approval under Part 3A of the EP&A Act.

4.4.2 Mining Act 1992

The mining of coal in NSW is regulated by the Mining Act. Section 5 of the Mining Act states that mining of a mineral can only be undertaken in accordance with an authorisation for that mineral. All open cut mining occurs within the Coal Lease (CL) held by Boggabri Coal (CL 368).

Section 6 of the Mining Act states that an authorisation is also required for certain mining purposes, including:

- The construction, maintenance or use of any reservoir, dam (including a tailings dam), drain or water race; and
- The removal, stockpiling or depositing of overburden and tailings.

All water storage structures associated with mining will be located within CL 368. Overburden and tailings emplacement areas will also be located within CL 368, with the exception of 180,000 t of processed overburden material that is proposed to be stockpiled in the Rock Quarry prior to use in the construction of the Boggabri Rail Spur.

CL 368 expired on 14 November 2011. Accordingly, Boggabri Coal has made an application for its renewal. Under Section 117 of the Mining Act, an authorisation that is the subject of a pending renewal application will continue to have effect until the application is finally determined. Pursuant to Section 75V of the EP&A Act, the CL must be granted in terms that are consistent with the approval under Part 3A of the EP&A Act.

An appropriate amendment to Boggabri Coal's Mining Operations Plan (MOP) will be made to incorporate the Modification once approved.

4.4.3 Water Management Act 2000

The licensing and approvals provisions of the *Water Management Act 2000* (WM Act) apply to water sources that are the subject of a water sharing plan (WSP). Water sources that are not the subject of a WSP are regulated by the *Water Act 1912* (Water Act).

Water Access Licences

The following WSPs apply to the water sources in the vicinity of the Boggabri Coal Mine:

- *Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources 2012;*
- *Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2003;*
- *Water Sharing Plan for the Upper and Lower Namoi Groundwater Sources 2003;* and
- *Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Source 2011* (Murray Darling Porous Rock WSP).

To account for the volumes of water taken from these sources, Boggabri Coal will require Water Access Licences (WALs) under Part 2 of the WM Act. The water licensing requirements were discussed in the Boggabri EA. The Modification will not alter the amount of water taken from any water sources.

Other Water Related Approvals

Water taken from a water source can only be used in accordance with a water use approval issued under Section 89 of the WM Act.

Water management works approvals, issued under Section 90 of the WM Act, are required for the construction and operation of any water supply works, drainage works or flood works.

Section 91 of the WM Act provides that an activity approval is required for any "*controlled activities*" or "*aquifer interference activities*".

Pursuant to Section 75U of the EP&A Act, projects approved under Part 3A are exempt from the approvals requirements under Sections 89, 90 and 91 of the WM Act.

4.4.4 Water Act 1912

The licensing regime under the Water Act continues to apply to water sources that have not been made the subject of a WSP. Prior to the introduction of the Murray Darling Porous Rock WSP, the bedrock groundwater sources were not the subject of any WSPs.

Accordingly, Boggabri Coal held bore licences under Part 5 of the Water Act to authorise the taking of water from the bedrock strata.

Due to the enactment of the Murray Darling Porous Rock WSP, the licensing regime under the WM Act now applies to water taken from bedrock groundwater systems. Bore licences 90BL253854 and 90BL255090 will be converted to WALs.

Since all water sources to be affected by the mine are now the subject of a WSP, there is no longer any need for licences under the Water Act.

Boggabri Coal has obtained a Controlled Work approval under Part 8 of the Water Act to authorise viaduct construction works on the Namoi River floodplain. The Modification does not impact on the status of the Controlled Work approval being sought separately. A separate Part 8 Controlled Work approval will be sought by Boggabri Coal for the Kamilaroi Highway Intersection.

4.4.5 National Parks and Wildlife Act 1974

Under Section 86 of the NPW Act, it is an offence to harm or desecrate an Aboriginal place or object except where authorised by an Aboriginal Heritage Impact Permit (AHIP) issued under Section 90. However, Section 75U of the EP&A Act provides that an AHIP is not required for projects approved under Part 3A of the EP&A Act.

The Modification will not impact on known Aboriginal sites. The salvage procedures outlined in Boggabri Coal's approved Cultural Heritage Management Plan (CHMP) will be used to for the assessment and management of any previously unidentified sites or items that are located during construction of the Modification, should it be approved.

4.4.6 Heritage Act 1977

The Heritage Act provides protections for items of European heritage significance (referred to as "relics"). Section 139 of the Heritage Act states that an excavation permit is required for any land disturbance or excavation activities that may have an impact on relics. Pursuant to Section 75U of the EP&A Act, a Section 139 permit is not required for projects approved under Part 3A of the EP&A Act.

The Modification will not impact on known items of European heritage. The salvage procedures outlined in Boggabri Coal's approved CHMP will be used for the assessment and management of any previously unidentified sites or items that are located during construction of the Modification, should it be approved.

4.4.7 Roads Act 1993

Under Section 138 of the Roads Act, work cannot be carried out in, on or over a public road except with the consent of the appropriate roads authority.

Leard Forest Road and Therribri Road are neither a Crown road nor a freeway and as such, the consent of NSC is required for any works on these roads.

Consent under Section 138 of the Roads Act is also required for the connection of any road to a classified road. The Modification will involve the construction of two access roads connecting the Kamilaroi Highway to the private haul road for the mine. The construction of the access roads will be undertaken with the consent of RMS and in consultation with NSC.

Pursuant to Section 75V of the EP&A Act, consent under Section 138 of the Roads Act must be granted for a project approved under Part 3A of the EP&A Act. Extensive consultation has occurred with both NSC and RMS over the proposed Modification (see Section 5).

4.5 PLANS AND POLICIES

4.5.1 Strategic Regional Land Use Plan – New England North West

On 11 September 2012, the NSW government released the *Strategic Regional Land Use Plan – New England North West* (SRLUP) (DP&I, 2012) as part of a package which sets out a range of initiatives to better balance growth in the mining and coal seam gas industries with the need to protect important agricultural land and water resources.

The SRLUP establishes the 'Gateway' process that needs to be enacted for all proposals for new mines, as well as expansions of existing mines beyond the boundaries of existing mining leases.

The Gateway process does not apply to this Modification as there is no expansion proposed to the physical mining footprint that is currently approved under PA 09_0182.

5 STAKEHOLDER CONSULTATION

This section provides a summary of the stakeholder consultation undertaken for the Modification by Boggabri Coal.

Table 1 outlines the consultation activities undertaken with key stakeholders for the Modification.

Table 1
Regulatory Stakeholders and Consultation

Stakeholder	Consultation	Outcome
DP&I	<ul style="list-style-type: none"> EA Modification briefing and site visit (June 2013). Draft Namoi River Floodplain Study provided for review. Traffic Management Plan approved on 18 September 2013. Namoi River Floodplain Study approved October 2013. 	<ul style="list-style-type: none"> DP&I understand the requirement for the Modification, each component of the Modification and the EA scope for the Modification. DP&I have reviewed and approved the Namoi River Floodplain Study, which includes the Kamilaroi Highway mine access routes and have confirmed they have no issues with the report. DP&I have approved the Traffic Management Plan.
DoE	<ul style="list-style-type: none"> EA Modification briefing (3 October 2013). 	<ul style="list-style-type: none"> DoE understand the requirement for the Modification. After a briefing and discussion, DoE approve the requirement for the Modification and agree that the clearing under the Modification does not trigger Condition 11 of the EPBC Approval.
NSW Office of Water (NOW)	<ul style="list-style-type: none"> Regular consultation in regard to the draft Namoi River Floodplain Study and Part 8 approval of the Water Act. Draft Namoi River Floodplain Study provided for review. Namoi River Floodplain Study approved October 2013. 	<ul style="list-style-type: none"> NOW have reviewed and approved the Namoi River Floodplain Study, including the Kamilaroi Highway mine access routes and have confirmed they have no issues with the report.
RMS	<ul style="list-style-type: none"> Three meetings held since July 2011 to discuss the Modification and other road/ rail matters. Draft Traffic Management Plan provided for review on 6 June 2013. RMS edits incorporated into final version. Traffic Management Plan approved on 18 September 2013. 	<ul style="list-style-type: none"> RMS feedback has been incorporated into the Kamilaroi Highway mine access routes design. A Works Authorisation Deed was originally granted for the Kamilaroi Highway access routes, however it was not enacted. It is expected that a Works Authorisation Deed will be reissued by RMS should the Modification be approved.

Stakeholder	Consultation	Outcome
NSC	<ul style="list-style-type: none"> • Eight meetings held since July 2011 to discuss the Modification and other road/ rail matters. • Draft Traffic Management Plan provided for review on 6 June 2013. • Continuing consultation in regard to Road Occupancy Approvals. 	<ul style="list-style-type: none"> • NSC feedback has been incorporated into the Kamilaroi Highway mine access routes design. • Senior management at NSC have confirmed they have no outstanding issues with the Modification. • Discussions are continuing between Boggabri Coal and NSC in regard to the Daisymede laydown compound potentially being be utilised for collection of fill material as per the existing Voluntary Planning Agreement.
Neighbouring Industry	<ul style="list-style-type: none"> • Continuous interaction during the detailed design and subsidiary approval process. 	<ul style="list-style-type: none"> • Tarrawonga Coal is aware of the Modification and has confirmed they have no issues with the Modification. • Maules Creek Coal is aware of the Modification and has confirmed they have no issues with the Modification.

5.1 ONGOING STAKEHOLDER ENGAGEMENT

Various mechanisms will be implemented to ensure the effective ongoing engagement with stakeholders during the life of the Modification, including:

- Rest stop project information signage located on the Kamilaroi Highway;
- Regular consultation with neighbouring land owners and industry;
- Updates to the Boggabri CCC;
- Updates to the Boggabri Coal website;
- Distribution of regular community newsletters; and
- Preparation and distribution of Annual Review for Boggabri Coal Mine, including activities undertaken for the Modification.

6 IMPACTS, MANAGEMENT AND MITIGATION

This section discusses the potential environmental and socio-economic impacts of the Modification. A description of the measures that will be implemented to manage and mitigate potential impacts are also presented below.

6.1 AIR QUALITY AND GREENHOUSE GAS

6.1.1 Introduction

An air quality and greenhouse gas impact assessment was undertaken by Pacific Environment for the Modification, which is presented in full in **Appendix A**.

6.1.2 Methodology

The air quality and greenhouse gas impact assessment for the Modification relies on the modelling and assessment results from the Boggabri EA undertaken by PAEHolmes (2010) and provides a qualitative assessment in the context of the activities proposed. Of the activities proposed for the Modification, the key element that will result in additional emissions was considered to be the temporary storage of processed mine overburden material at the existing Rock Quarry and the reuse of this material during the construction of the Boggabri Rail Spur. The Year 5 mine plan scenarios modelled for the Boggabri EA were used as a basis for the assessment of additional air quality emissions that will occur due to the Modification.

6.1.3 Impact Assessment

The total additional emissions that may be associated with the activities proposed for the Modification were assessed as 93,630 kilograms per/year. In comparison to the air quality modelling scenarios adopted for the Year 5 mine plan as per the Boggabri EA, the predicted addition equates to an approximate 1.4% increase in total emissions to the 'rail spur' scenario, and a 1.3% increase when compared with the 'road haulage' scenario. In light of the short term nature of the Modification, the predicted addition in total emissions will have a negligible difference to the predicted impacts, being less than 5% of the levels assessed in the Boggabri EA for Year 5.

6.1.4 Mitigation and Management

The following management measures will be implemented for the Modification to ensure that dust emissions from the proposed activities are appropriately managed to meet the regulatory criteria at neighbouring private receivers:

- Establishment of vegetation on all disturbed areas as each stage is completed;
- All roadways, entrances and main traffic areas will be compacted, sealed or coated with a dust suppressant or mist spray regularly;
- Establishment of wind breaks composed of earth banks and other screens to protect areas by reducing capacity of the wind to raise dust;
- Trucks entering and leaving the site being well maintained in accordance with the manufacturer's specification to comply with all relevant regulations;
- Truck movements controlled on site and restricted to designated roadways;
- Truck wheel grids or other dust removal procedures being installed to minimise transport of dust generating materials offsite; and
- Modifying construction activities during periods of high wind.

6.2 NOISE

6.2.1 Introduction

A noise impact assessment was undertaken by Bridges Acoustics for the Modification, which is presented in full in Appendix B.

6.2.2 Methodology

The noise impact assessment relies on the modelling and assessment results from the Boggabri EA undertaken by Bridges Acoustics (2010) in the context of the activities proposed for the Modification to determine the construction and operational phase noise impacts. Of the activities proposed for the Modification, only the development of the Kamilaroi Highway access intersections, reuse of the Daisymede laydown compound and the temporary stockpiling of construction material at the Rock Quarry are considered to have the potential to result in additional noise impacts to private receivers to those described in the Boggabri EA and approved under PA 09_0182.

6.2.3 Impact Assessment

Kamilaroi Highway Mine Access

Worst case construction noise levels generated during the development of the proposed mine access intersections are primarily associated with bulk earthworks. In assessing the construction noise from the Modification, a total sound power level of 114 LA_{eq,15min} was used, which assumes that the typical construction equipment is operating simultaneously within the areas proposed for the intersections. While the total fleet may be spread over both road construction sites, this assessment assumes a worst case situation with the entire fleet concentrated within each site with no topographical or other shielding.

The closest privately owned residential receivers to each intersection construction site are listed in Table 2 with predicted construction noise levels at each receiver nearby.

Table 2
Kamilaroi Highway Mine Access Construction Noise

Receiver ID*	Mine Access Road Construction		Rail Spur Construction Noise Level (LA _{eq,15min})	Cumulative Noise Level (LA _{eq,15min})	Construction Noise Criteria Day (LA _{eq,15min}) (PA 09_0182)
	Receiver Distance (m)	Predicted Noise Level (LA _{eq,15min})			
23	1300 – 2100	44 – 39	36	45 - 41	45
27	1450 – 1960	43 – 40	38	44 - 42	50
32	2800 – 3850	37 – 34	<35	38 - 37	40
4	3150 – 4250	36 – 33	<35	37 - 36	40

* Receiver IDs consistent with the Boggabri EA (Hansen Bailey 2010)

Table 2 indicates that predicted noise levels from the mine access road construction activities, and the mine access road and Boggabri Rail Spur construction activities combined, will not exceed the construction noise criteria specified in PA 09_0182 at the closest assessed private receivers. Construction noise levels would typically be lower than the worst case predicted levels as the fleet is distributed over the mine access road rather than concentrated at the closest point.

The predicted construction noise levels associated with the Modification will occur during normal daylight hours of 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturday (excluding public holidays). Construction work required outside these standard hours would be subject to an Out of Hours Work protocol as specified in Schedule 3, Condition 2 of PA 09_0182.

Construction related traffic will primarily access the construction sites via the Kamilaroi Highway and therefore construction traffic noise issues are unlikely to occur at any receiver.

Operational noise from coal trucks travelling along the private haul road was considered in the Boggabri EA, assuming up to seven trucks operated along the road simultaneously to produce a combined truck sound power level of up to 120 decibels (A-weighted) (dBA). As light vehicles will not use the private haul road until the rail spur is constructed (with the exception of construction vehicles pre-approved to do so), the worst case noise levels associated with the haulage of product coal on the private haul road will not coincide with worst case traffic noise generated by the revised access arrangements. This will result in operational traffic noise levels which are:

- Similar to the coal truck noise levels calculated in the Boggabri EA during the shift change periods, totalling approximately 2 hours (hr) in each 24 hrs. The noise impacts predicted in the Boggabri EA, which include noise from coal haulage trucks, therefore represent these maximum noise level periods; and
- Substantially lower than the coal truck noise levels predicted in the Boggabri EA during the remaining period of the day.

Noise levels from the proposed mine access intersections will therefore remain within the currently approved operational noise levels from the private haul road as assessed in the Boggabri EA.

Cumulative noise levels, from the combined operation of the Kamilaroi Highway mine access intersections and rail spur, will occur intermittently during the 15 minute periods with significant traffic only expected to occur during shift change periods. While train noise may occur simultaneously with peak traffic noise, such an occurrence will not occur regularly.

In addition, Appendix 3 of the recently released *Rail Infrastructure Noise Guideline* (EPA, 2013) recommends the *Industrial Noise Policy* (EPA, 2000) (INP) amenity criteria apply to train noise from private rail spurs. For rural receivers, the INP amenity criteria are:

- 50 LA_{eq,11hr} day;
- 45 LA_{eq,4hr} evening; and
- 40 LA_{eq,9hr} night.

A train passby noise level of less than 40 LA_{eq,15min} at all private receivers, as shown in the Boggabri EA, is equivalent to a noise level below 28 LA_{eq,4hr} evening and below 25 LA_{eq,9hr} night. No cumulative noise impacts from simultaneous operation of the Kamilaroi Highway mine access intersections and the rail spur are therefore expected to occur.

Rock Quarry Construction Stockpile

The temporary stockpiling of processed overburden at the Rock Quarry is located approximately 2,500 m from the nearest privately owned residence (Receiver 27). This material will be reused during construction of the Boggabri Rail Spur.

As the material will be transported from the Rock Quarry by truck and dog / excavators or scrapers, no increase in noise above that generated by approved coal haulage activities will occur at any receiver.

A dozer operating within the Rock Quarry, if required for consolidation of the stockpile, will operate only during the day and will therefore produce a maximum noise level of 35 LA_{eq,15min} at any privately owned receiver, which is below the construction noise criteria specified in PA 09_0182.

Reuse of the processed overburden material will require a loader operating within the Rock Quarry to load the material into truck and dog / excavators or scrapers, which will then transport the material along the Boggabri Rail Spur alignment to form the required embankments. Given that the Boggabri EA considered rail spur construction noise levels from a bulk earthworks fleet, including trucks and scrapers, vehicle movements to transport the stockpiled material from the Rock Quarry for use in construction of the rail spur have been adequately assessed and no additional construction noise is expected to occur at any receiver.

Reuse of the Daisymede Laydown Compound

The Daisymede laydown compound is located adjacent to the private haul road approximately 450 m east of the Namoi River and will be used to store vehicles and materials during the construction and operational phases of the Modification. Nearest receivers to the compound are Receiver 23 (which is derelict and not occupied) and Receiver 27 located approximately 1,000 m and 1,400 m, respectively, to the south.

Intermittent vehicle movements within the laydown compound will produce a similar noise level at each of the closest receivers as a coal haul truck travelling along the private haul road. Occasional use of a mobile crane to transfer materials or a front end loader to load bulk materials into trucks, during daytime construction hours, will produce a noise level up to 37 LA_{eq,15min} at closest receivers which is well within the construction noise criteria at all receivers. Noise levels associated with the Daisymede laydown compound are therefore expected to be acceptable at all receivers.

Limited traffic will access the Daisymede laydown compound via either the private haul road or Therribri Road. Traffic noise levels associated with these limited vehicle movements, which are unlikely to exceed four vehicle movements per day or two vehicle movements per hour, will not contribute significant traffic noise or exceed relevant traffic noise criteria at any receiver.

Temporary Fuel Storage Facilities

These temporary facilities will be located in-pit and will not result in any additional noise impacts.

6.2.4 Mitigation and Management

The noise impact assessment indicates that noise levels associated with the activities proposed for the Modification will have a minor and acceptable effect on construction and operating noise levels at all privately owned receivers. No additional noise mitigation measures, beyond the Boggabri EA and approved Construction Environmental Management Plan (CEMP), are required.

6.3 ECOLOGY

6.3.1 Introduction

A biodiversity impact assessment was undertaken by Parsons Brinkerhoff (2010a) for the Boggabri EA. The assessment included detailed vegetation mapping and surveys of fauna species within the approved Project Boundary and on neighbouring lands. An outcome of this assessment was the development of a Biodiversity Offset Strategy to mitigate and offset the ecological impacts arising from the Boggabri Coal Project.

Parsons Brinkerhoff has undertaken an ecological impact assessment in the context of the activities proposed for the Modification and is summarised in the following sections and presented in full in **Appendix C**.

6.3.2 Methodology

The ecological impact assessment for the Modification included:

- Database and literature searches and review of the biodiversity impact assessment completed for the Boggabri EA;
- Characterisation of the general ecology within the Modification Areas;
- Field surveys to identify and assess the characteristics and condition of vegetation communities;
- Field surveys to identify the presence of fauna species and habitat features;
- Determination of the occurrence, or likelihood of occurrence of threatened species, populations and communities listed under the *Threatened Species Conservation Act 1997* (TSC Act), FM Act and EPBC Act;
- Significance assessments for threatened species or communities that occur or have the potential to occur within the Modification Areas; and
- The recommendation of management and mitigation measures to avoid and/or compensate for unavoidable ecological impacts.

6.3.3 Impact Assessment

Ecological Communities

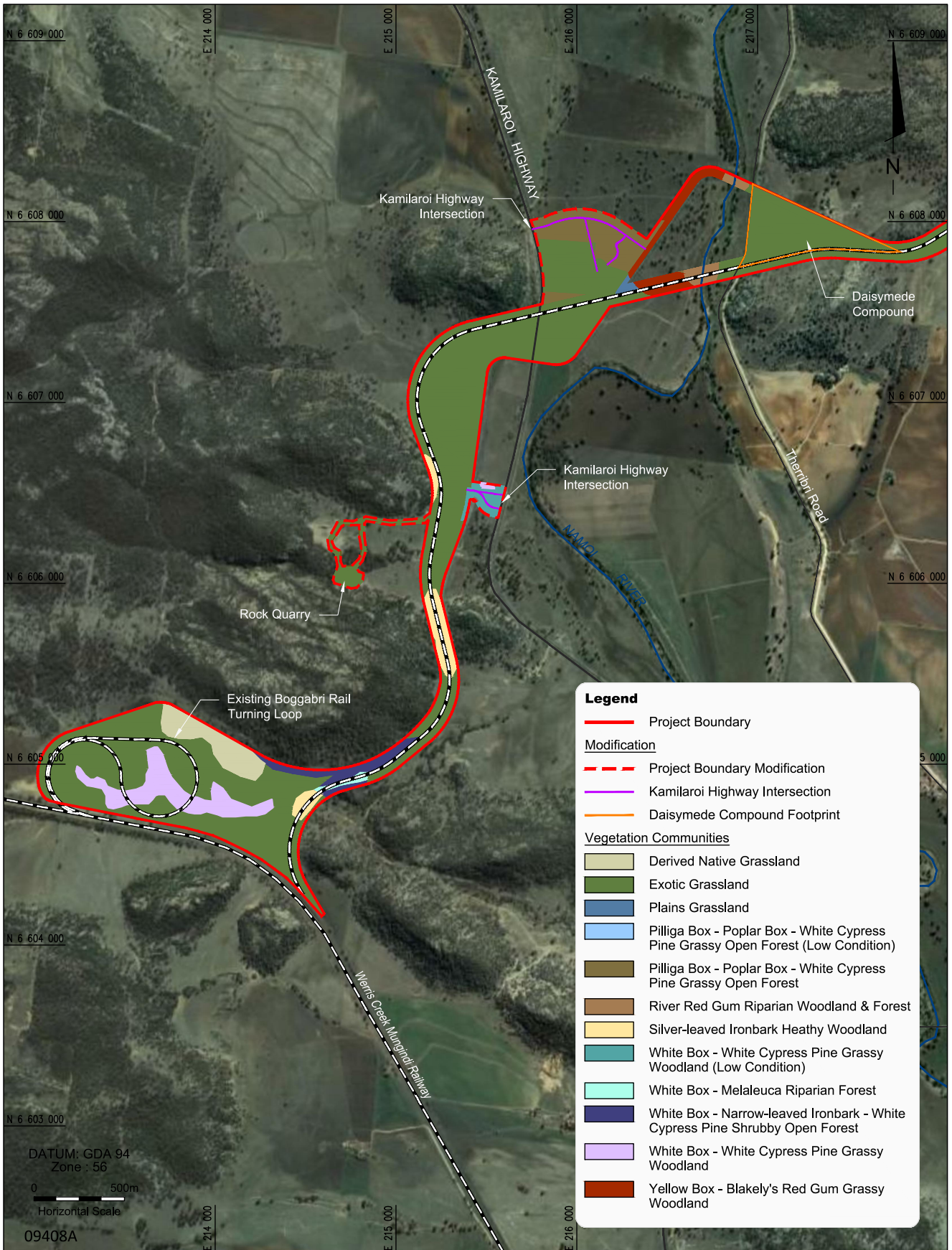
Three vegetation communities were recorded in the Modification Areas, including two native communities and one exotic or disturbed community (see **Table 3**).

The Modification will require the removal of 14.0 ha of native vegetation, of which 2.8 ha is listed as an Endangered Ecological Community (EEC) under the TSC Act. This equates to 0.4% additional disturbance outside of the approved Project Boundary. Of the EEC proposed to be disturbed for the Modification, an area of 2.6 ha is located within lands under the Boggabri Coal Biodiversity Offset Strategy.

In total, 13.3 ha of native vegetation considered to be potential roosting or foraging habitat for species listed in the EPBC Act will be removed from the existing Offset Areas described in the Boggabri EA. The additional offset requirement for this disturbance is discussed in **Section 6.3**.

A summary of predicted impacts to identified ecological communities as a result of the Modification is provided below in **Table 3** and shown on **Figure 5**.

The area of Box Gum Woodland recorded within the Modification Areas is commensurate with the definition of Box Gum Woodland under the TSC Act. However, as the understorey is not predominantly native, the size of the patch is less than 0.1 ha and there are fewer than 12 native species, the community does not meet the relevant listing criteria under the EPBC Act.



BOGGABRI COAL MINE

Vegetation Communities

Table 3
Potential Impacts to Native Vegetation Due to the Modification

Vegetation community	TSC Act Listing*	Total Disturbance due to the Modification (ha)	Disturbance in existing Offset Areas (ha)
Daisymede Laydown Compound			
Exotic Grassland	N/A	17.9	8.8
Sub-Total		17.9	8.8
Sub-Total EEC Impacts		0.00	0.00
Kamilaroi Highway Mine Access Routes			
Exotic grassland	N/A	11.4	11.0
Pilliga Box – Poplar Box White Cypress Pine grassy open forest	N/A	11.2	10.7
White Box - White Cypress Pine grassy woodland ¹	E	2.8	2.6
Sub-Total		25.4	24.3
Sub-Total EEC Impacts		2.8	2.6
Rock Quarry			
Exotic Grassland	N/A	4.30	4.30
Sub-Total		4.30	4.30
Sub-Total EEC Impacts		0.00	0.00
Total Disturbance Due to Modification		47.6	37.4
Total Native Vegetation Disturbance Due to Modification		14.0	13.3
Total EEC Disturbance Due to Modification		2.8	2.6

* None of the vegetation communities within the Modification Study Area are listed under the EPBC Act.

¹ White Box – White Cypress Pine grassy woodland meets the criteria for Box Gum Woodland as described under the TSC Act but not the EPBC Act.

E – Endangered Ecological Community under the TSC Act

The Modification will have an impact on fauna habitats with the removal or modification of approximately 14.0 ha of native vegetation and habitat (including 13.3 ha of native vegetation outside the previously approved Project Boundary), including up to six hollow-bearing trees, which will be removed for the construction of the Kamilaroi Highway mine access routes. Some of these hollow-bearing trees may be retained, however, they have been included in the impact assessments as a precautionary measure.

Significance assessments have been completed in accordance with the TSC Act and EPBC Act guidelines for the threatened communities that occur or have with the potential to occur within the Modification Areas. The significance assessments concluded that the incremental increase in habitat loss associated with the proposed activities is unlikely to result in a significant increase to the ecological impacts predicted in the Boggabri EA.

Threatened Flora and Fauna Species

No threatened flora or fauna species were recorded within the Modification Areas. However, a number was considered to have the potential to occur in these impacted areas. These species and their respective listings under the relevant conservation legislation are summarised below in **Table 4**.

Significance assessments were completed for all threatened species with the potential to occur in areas proposed to be impacted for the Modification. These assessments found that the impacts of the Modification were unlikely to result in additional impacts to those assessed in the Boggabri EA.

**Table 4
Threatened Species with Potential to Occur**

Scientific Name	Common Name	TSC Act Status ¹	EPBC Act Status ²
Flora Species			
<i>Digitaria porrecta</i>	Finger Panic Grass	E	E
<i>Diuris tricolor</i>	Pine Donkey Orchid	V	V
<i>Tylophora linearis</i>	Tylophora linearis	E	E
Birds			
<i>Circus assimilis</i>	Spotted Harrier	V	-
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-
<i>Climacteris picumnus</i>	Brown Treecreeper	V	-
<i>Melanodryas cucullata</i>	Hooded Robin	V	-
<i>Melithreptus gularis</i>	Black-chinned Honeyeater	V	-
<i>Grantiella picta</i>	Painted Honeyeater	V	-
<i>Pomastomus temporalis temporalis</i>	Grey-crowned Babbler	V	-
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	V	-
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-
<i>Neophema pulchella</i>	Turquoise Parrot	V	-
<i>Lathamus discolor</i>	Swift Parrot	E	E
<i>Polytelis swainsonii</i>	Superb Parrot	V	V
<i>Tyto novaehollandiae</i>	Masked Owl	V	-
<i>Ninox connivens</i>	Barking Owl	V	-
<i>Xanthomyza phrygia</i>	Regent Honeyeater	CE	E, M
Mammals			
<i>Nyctophilus timoriensis</i>	Greater Long-eared Bat	V	V
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat	V	-
<i>Phascolarctos cinereus</i>	Koala	V	V
<i>Petaurus norfolcensis</i>	Squirrel glider	V	-
Reptiles			
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	-

1. TSC Act Listings: V – Vulnerable, E – Endangered, CE – Critically Endangered

2. EPBC Act Listings: E – Endangered, M – Migratory

6.3.4 Mitigation and Management

Mitigation and management measures proposed for the Modification are consistent with those presented in the Boggabri EA, relevant management plans and the general principles of avoidance, minimisation and mitigation of ecological impacts. These measures include:

- Limiting disturbance of native vegetation to the minimum area necessary for each stage of the clearing, in accordance with the relevant ecological, erosion control and soil management procedures;
- Implementation of a two stage clearing protocol for the clearance of the six identified hollow-bearing trees; and
- Progressive rehabilitation of disturbed areas following construction activities.

While the majority of the impacts associated with the Modification can be mitigated through the implementation of appropriate management measures, the proposed disturbance of vegetation for the Modification will require revision of the Boggabri Coal Biodiversity Offset Strategy.

Table 5 summarises the offset requirements for the Modification, relative to each vegetation community.

Table 5
Biodiversity Offset Requirements for the Modification

Vegetation Community	TSC Act Listing*	Disturbance in existing Offset Areas (ha)
Kamilaroi Highway Mine Access Routes		
Exotic Grassland	N/A	11.0
Pilliga Box – Poplar Box White Cypress Pie grassy open forest	N/A	10.7
White Box – White Cypress Pine Grassy Woodland	E	2.6
Rock Quarry		
Exotic Grassland	N/A	4.3
Daisymede Compound		
Exotic Grassland	N/A	8.8
Total Offsets Required		13.3
Total EEC Offsets Required		2.6

* None of the vegetation communities within the Modification Study Area are listed under the EPBC Act.

Condition 43 of Project Approval 09_0182 requires Boggabri Coal to 'prepare and implement a revised Biodiversity Offset Strategy..... to the satisfaction of the Director General' by 18 January 2015. The preparation of this strategy is well underway. Any additionally required offsets will be sourced and incorporated into this plan.

6.4 TRAFFIC AND TRANSPORT

6.4.1 Introduction

A traffic impact assessment was undertaken by Constructive Solutions for the Modification, which is presented in full in **Appendix D**.

During the pre-construction design phase of the Boggabri Coal Project, it was noted that an alternate access to the site would be required to facilitate construction, particularly for the section of the approved Boggabri Rail Spur to the west of the Kamilaroi Highway. To facilitate access throughout the construction phase, RMS were consulted regarding the potential for the development of a new intersection with the Kamilaroi Highway to the south of the existing private haul road bridge. In-principle support was obtained from RMS for the development of two intersections that allow for left-in / left-out only access from the highway whilst preventing right-turn movements across the existing through lanes.

During construction of the Boggabri Rail Spur, it is anticipated that a significant proportion of all construction traffic (including heavy vehicles) will use the proposed left in / left out intersections to access the site (see **Section 3.1** for further details).

Once the Boggabri Rail Spur approved under PA 09_0182 is operational, haulage of coal from the MIA to the existing rail loader via the private haul road will not be required. The Kamilaroi Highway access intersections will therefore be used for operational traffic.

This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA, in particular the Maules Creek Community Council which requested:

“At the completion of the proposed rail loop Boggabri Coal’s existing private haul road will become the only heavy vehicle access route to the mine and controls at the intersections of the Leard Forest Road and Therribri Road will be changed to give priority to the public roads, with mining traffic not having right of way. Access to the Private Haul Road will be provided by Boggabri Coal at the Kamilaroi Highway to the satisfaction of the Roads and Traffic Authority.”

The proposed intersections will require the construction of new pavement adjacent to the highway, development of new surfacing treatments and the installation of wire rope along the new centreline to prevent right-turn manoeuvres into and out of the intersections. The location of the proposed intersections is presented in **Figure 4** with indicative configurations for each presented in **Figure 6** and **Figure 7**.

6.4.2 Methodology

The traffic impact assessment considers the potential direct traffic-related impacts of the Modification on the public road network, being those related to the construction of the proposed mine access arrangements from the Kamilaroi Highway.

The cumulative impacts of the Boggabri Coal Project and other major developments in the area (Maules Creek Coal Mine and Tarrawonga Coal Mine) that will impact on the local traffic network were therefore assessed in the context of the changes proposed for the Modification.

6.4.3 Impact Assessment

Construction of the Kamilaroi Highway Access Intersections

The proposed intersections with the Kamilaroi Highway have been designed to facilitate widening of the highway, the inclusion of safety wire rope barriers and the development of auxiliary left lanes and acceleration lanes on each side of the highway (see **Figure 6** and **Figure 7**). The construction duration for these intersections will be approximately eight to ten weeks, weather permitting. Short term construction activities for the proposed access intersections, which will require a reduction to one lane traffic on the Kamilaroi Highway include:

- Placement of an asphalt overlay;
- Bituminous sealing (as required); and
- Installation of the wire rope barriers.

Construction and Operational Traffic on the Kamilaroi Highway Access Intersections

The use of the private haul road following construction of the proposed intersections with the Kamilaroi Highway during the construction phase is generally considered to be a positive approach to traffic management in comparison to the approved mine access arrangements under PA 09_0182.

As noted above, during construction of the Boggabri Rail Spur, it is anticipated that a significant proportion of all construction traffic (including heavy vehicles) will use the proposed left-in / left-out intersections to access the site. Any other light or heavy vehicles utilising the private haul road will need to be pre-approved by Boggabri Coal.

The effective capacity of the Kamilaroi Highway and the proposed intersections are considered to exceed the approved capacity required during the construction and operational phases of the Boggabri Coal Project, even during shift changes, which will result in significant increases in vehicle numbers over a short peak period.

In addition, both merging and diverging traffic from the proposed access roads will be able to enter and exit the travel lanes of the Kamilaroi Highway at speeds commensurate with that as determined in Austroads (2010). Restricting vehicles from undertaking right turn movements from the Kamilaroi Highway (with the provision of wire rope barriers) when entering and exiting the mine will also ensure that no slow moving vehicles cross the existing travel lanes of the Highway. Boggabri Coal will install signage at appropriate locations to reinforce the appropriate access routes and discourage any use of restricted roads. Boggabri Coal will work closely with NSC and RMS in this regard.

To ensure that the new access intersections are used safely and efficiently, specific procedures will be established so that drivers are familiar with the traffic arrangements on the private haul road, particularly the associated intersections with the Kamilaroi Highway and Therribri Road.

Operational Traffic on the Private Haul Road

The private haul road (currently used for the haulage of product coal to the existing Boggabri Coal Mine train load out) operates under strict provisions governed by a Mine Vehicle Permit issued by RMS, which include arrangements for the control and management of traffic flows at the intersection of the private haul road and Therribri Road.

Background traffic volumes for non-Project traffic is 79 vehicles per day on Therribri Road and traffic using Therribri Road following construction of the Kamilaroi Highway access intersections and approved rail spur will continue to give way to traffic on the private haul road.

Once the Boggabri Rail Spur is operational, coal haulage vehicles will not need to operate on the private haul road. Given the change in traffic types from the current coal haulage trucks to the 'road registered' vehicles proposed for the construction and operational phases of the Boggabri Coal Project, an increased travel speed through the intersection for vehicles accessing the mine may also be appropriate.

Coal haulage vehicles are currently required to reduce speed to 20 km/hr while travelling through the intersection. This requirement is primarily due to the significant braking distance of the coal haulage vehicles even at low speeds. Once the rail spur is operational coal haulage vehicles will not need to operate on the private haul road. Furthermore, all vehicles using the private haul road to access the mine from the Kamilaroi Highway will be road registered vehicles.

Given the change in traffic types, an increased travel speed of 40 km/hr for vehicles travelling through the intersection is appropriate, along with a maximum speed of 80 km/hr elsewhere along the private haul road. Following construction of the Boggabri Rail Spur, there will be two at-grade rail crossing with the private haul road. This is likely to require some localised roadworks to improve the respective road approaches. Controls at the rail crossing shall be determined in accordance with *AS1742.7 – 2007 Manual of Uniform Traffic Control Devices* and the *Australian Level Crossing Assessment Model (ALCAM)* where applicable.

Reduction in Traffic Impacts to other Public Roads

The construction of the proposed Kamilaroi Highway mine access intersections and the use of these sections by the Boggabri Coal Mine workforce may result in a significant reduction of up to 500 one way movements per day on key surrounding public roads and intersections during full operations.

Use of the alternate access proposed for the Modification will reduce impacts on the following intersections:

- Manilla Road and the Kamilaroi Highway;
- Manilla Road, including the 'Iron Bridge' and its intersection with Therribri Road; and
- Leard Forest Road and the associated intersections along its length.

6.4.4 Mitigation and Management

The proposed use of the existing private haul road as the primary mine access is considered an improvement to the existing access provisions approved under PA 09_0182. A number of mitigation and management measures will be implemented for the Modification, as outlined below:

1. Construction of both intersections with the Kamilaroi Highway will be undertaken in accordance with the approved geometric designs;
2. Boggabri Coal will continue to liaise with and meet the requirements of the Works Authorisation Deed issued by RMS (WAD No. 12-2601-2985);
3. Traffic delays for the Kamilaroi Highway through traffic will be kept to an absolute minimum during the short term construction phase of the proposed mine access intersections;
4. Works will be undertaken by a suitably qualified contractor to ensure compliance with RMS requirements;
5. All light and heavy vehicles associated with the Boggabri Coal Mine (that are pre-approved to do so) will access the site via the private haul road once the proposed site access intersections with the Kamilaroi Highway are available;
6. Boggabri Coal will establish suitable procedures to ensure that drivers using the private haul road are aware of the local traffic arrangements, particularly at the intersections with Therribri Road and Leard Forest Road;
7. No construction employee vehicles or any other vehicles (not pre-approved to do so) will access the site via the private haul road (during rail construction);
8. Suitable arrangements will be put in place by Boggabri Coal to identify the changed traffic conditions to all road users travelling on the Kamilaroi Highway;
9. The intersections with the Kamilaroi Highway will be reviewed once they are in use by Boggabri Coal Mine operational traffic. This review is to be undertaken in consultation with RMS to determine any required changes that may be required given the change in traffic types and traffic volumes;
10. Suitable inductions and training, with reference to a formal driver Code of Conduct, will be provided by Boggabri Coal for all employees and contractors of the mine in relation to the changed traffic conditions and associated traffic arrangements for mine access;
11. Suitable signage will be installed on approaches to both intersections with the Kamilaroi Highway and Therribri Road, advising road users that these roads are for the private use of mine traffic only;

12. Existing Closed Circuit Television (CCTV) at Therribri and Leard Forest Roads will be maintained during the construction period. During operations, the Therribri Road CCTV will be maintained, as Leard Forest Road will be closed; and
13. Road registered vehicles travelling on the private haul road will be restricted to 80 km/hr and will be required to reduce speed to a maximum of 40 km/hr when travelling through any public intersections (post rail construction).

The approved Traffic Management Plan (as per Schedule 3, Condition 60 of PA 09_0182) has been reviewed and revised as necessary to incorporate the Modification.

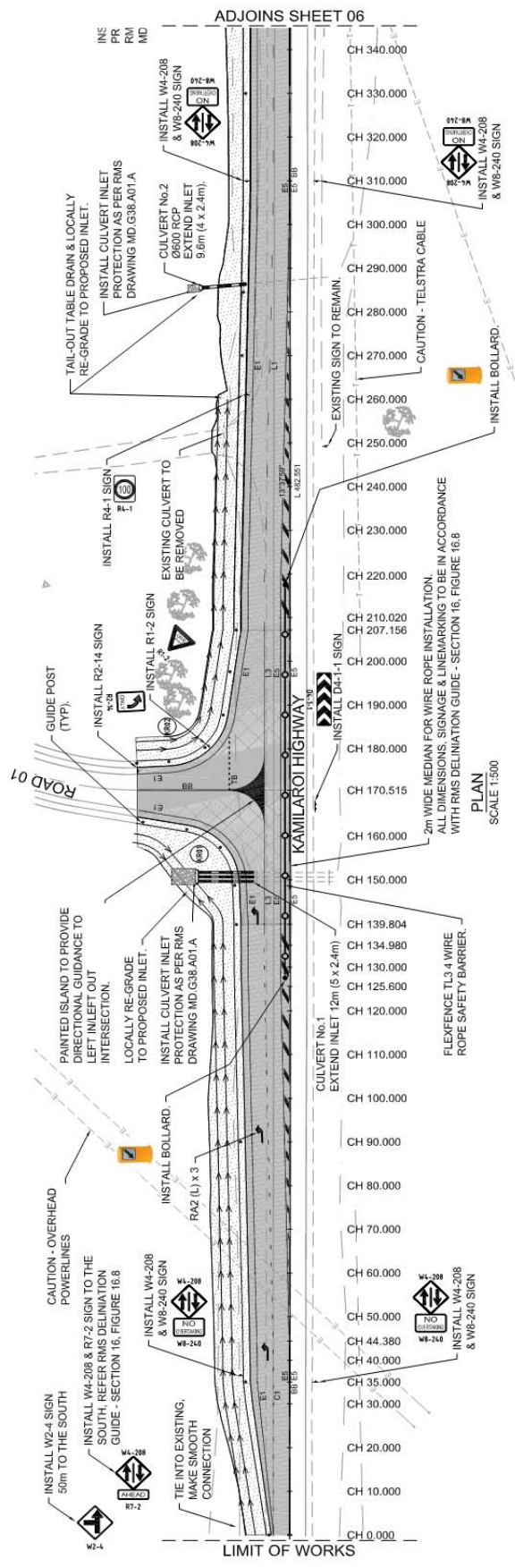


Figure 6
Proposed Kamilaroi Highway Intersection (North)
Source: Constructive Solutions (2013)

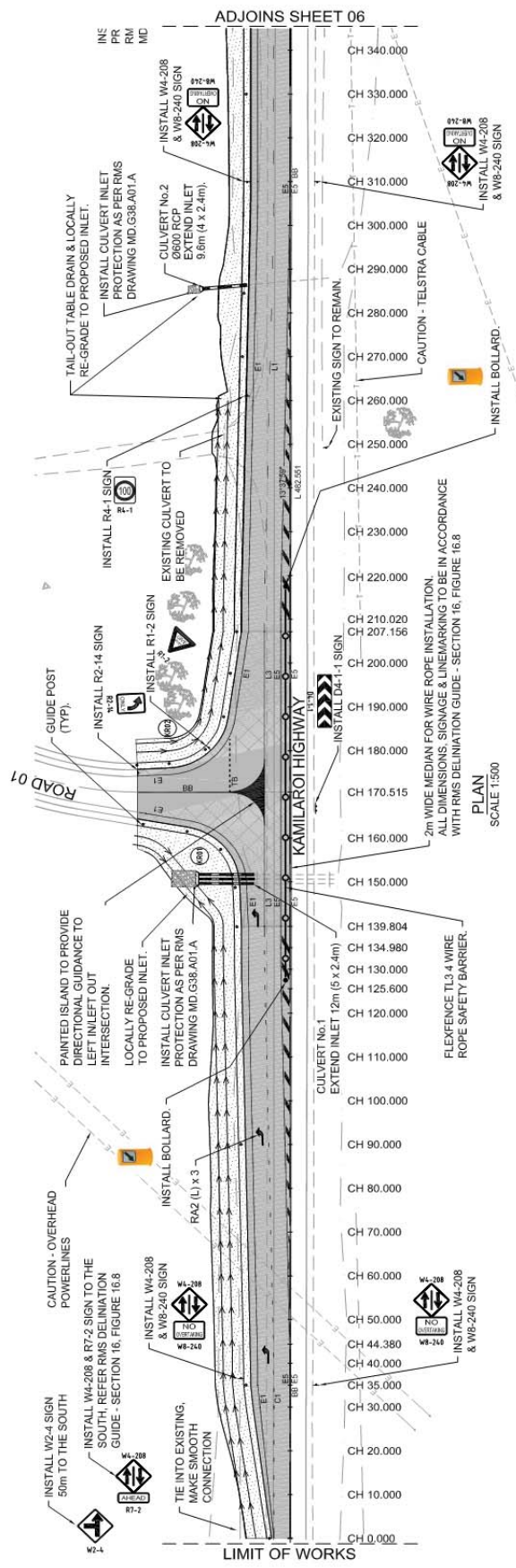


Figure 7
 Proposed Kamilaroi Highway Intersection (South)
 Source: Constructive Solutions (2013)

6.5 ABORIGINAL ARCHAEOLOGY AND NON-ABORIGINAL HERITAGE

6.5.1 Introduction

A heritage impact assessment was undertaken by Insite Heritage for the Modification and is presented in full in **Appendix E**.

6.5.2 Methodology

The heritage impact assessment relies on the assessment results from the Boggabri EA undertaken by Archaeology Australia (2009) and Insite Heritage (2010) in the context of the activities proposed for the Modification. The assessment of potential heritage impacts of the Modification included:

- A review of the Aboriginal and non-Aboriginal heritage studies completed for the Boggabri EA (Archaeology Australia 2009, Insite Heritage 2010) and approved Boggabri Coal CHMP to identify known items of heritage significance that may be impacted;
- A search of the NSW Aboriginal Heritage Information Management System database, to identify known Aboriginal sites within the areas proposed to be impacted by Modification;
- Field investigations of each component of the Modification that will result in additional impacts, in order to identify any additional items of Aboriginal archaeology and cultural heritage, in consultation with Registered Aboriginal Parties (RAPs); and
- Development of management recommendations for Aboriginal archaeological and cultural heritage items in consultation with Project RAPs.

The draft heritage impact assessment was provided to all RAPs for comment in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents* 2010. The consultation period on the draft report closed on 30 October 2013. No comments were received during this period. However, Boggabri Coal is actively continuing consultation with RAPs in order to obtain feedback on the draft report, including follow up phone calls and a planned workshop. Any comments received as a consequence of these additional initiatives will be incorporated in the Response to Submissions document for the Modification.

6.5.3 Impact Assessment

No Aboriginal or non-Aboriginal archaeological or cultural heritage sites were identified within the areas proposed to be impacted by the Modification.

6.5.4 Mitigation and Management

The salvage procedures outlined in Boggabri Coal's existing approved CHMP will be used for the assessment and management of any previously unidentified sites or items that are located during construction of the Modification.

6.6 SURFACE WATER AND FLOODING

6.6.1 Introduction

A surface water impact assessment was undertaken by Parsons Brinkerhoff (2010b) for the Boggabri EA. Hansen Bailey has undertaken a review of the potential surface water impacts in the context of the activities proposed for the Modification and is summarised in the following sections.

6.6.2 Impact Assessment

The Modification has the potential to impact on surface water resources via contaminated and dirty water runoff from construction areas, changes to the water balance and increased flooding afflux along the Namoi River.

All construction activities associated with the Modification will be conducted in accordance with the procedures and mitigation measures outlined in Boggabri Coal's approved CEMP. This includes ensuring that dirty, clean and contaminated water is separated and treated accordingly and all dams are sized in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

The northern Kamilaroi Highway mine access route has been designed to ensure that all drainage is diverted to an existing dam with sufficient capacity, to ensure no standing water on the road formation. Culverts will also be installed, where relevant, along the mine access routes to ensure that existing small surface flows are maintained.

A detailed assessment and modelling of flood impacts of the Kamilaroi Highway access routes was undertaken by Aurecon (2013) as part of an assessment of the *Boggabri Maules Creek Rail Project*. This study found that the 100 year Annual Recurrence Interval event afflux levels were less than the afflux levels predicted in the Boggabri EA. This is a result of detailed design work undertaken on the viaduct and support column spacing. Therefore, the Modification will not create any additional flooding impacts and represents an improved outcome. As noted in **Table 1**, this study has been reviewed and approved by DP&I and NOW.

In consideration of the aforementioned, the Modification will not have any material impacts on surface water resources and are consistent with the impacts presented and approved in the Boggabri EA.

6.6.3 Mitigation and Management

Boggabri Coal's approved Water Management Plan and CEMP includes details of the mine site water management system, a sediment and erosion control plan, and surface water and groundwater monitoring programs to ensure that impacts are managed appropriately. The potential minor impacts to surface water during the construction and operation of the various components of the Modification will be managed according to the approved CEMP and Water Management Plan.

As noted in **Section 4.4.4**, Boggabri Coal has obtained a Controlled Work approval under Part 8 of the Water Act to authorise viaduct construction works on the Namoi River floodplain. The Modification does not impact on the status of the Controlled Work approval being sought separately. A separate Part 8 Controlled Work approval will be sought by Boggabri Coal for the Kamilaroi Highway Intersection.

6.7 WASTE AND HAZARDOUS MATERIALS

Boggabri Coal currently conducts its activities in accordance with the approved Waste Management Plan, existing waste and hazardous materials management system and Material Safety Data Sheet (MSDS) database.

Construction and operational waste generated by the Modification, including general and hazardous materials will be handled in accordance with the approved Waste Management Plan and CEMP, relevant Australian Standards (including AS 1940) and will be disposed of appropriately.

All hazardous materials associated with the Project will continue to be transported offsite by a licensed contractor in accordance with the relevant Australian Standards and legislation.

Boggabri Coal will continue to use its EMPs and OH&S procedures to manage the hazards and risks associated with the Project. These procedures and management plans are regularly reviewed and updated to include any changes that have the potential to result in hazards.

Boggabri Coal will continue to ensure all carriers of dangerous goods are licensed and that relevant procedures are followed when travelling to and from the site.

6.8 OTHER SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACTS

All other socio-economic and environmental impacts considered in the Boggabri EA (i.e. groundwater, visual and lighting, soils and land capability, economics etc.) were reviewed in light of the Modification. The review found that the Modification will not result in any additional impacts in this regard. Therefore, the impact assessments and mitigation measures presented in the Boggabri EA remain unchanged and are relevant to the Modification.

7 STATEMENT OF COMMITMENTS

This section provides a Statement of Commitments to be implemented by Boggabri Coal for the Modification.

Boggabri Coal commits to the controls as outlined in **Table 6** for all activities associated with the Modification. The aim of this Statement of Commitments is to ensure that any potential environmental and socio-economic impacts resulting from the Modification are minimised and managed by implementing relevant management, mitigation and monitoring strategies.

Table 6
Statement of Commitments

Ref	Description	Section
1.	Boggabri Coal will implement the air quality mitigation measures for the Modification as outlined in Section 6.1.4 of this EA.	6.1.4
2.	Boggabri Coal will revise the Boggabri Coal Biodiversity Offset Strategy to source and incorporate additionally required biodiversity offsets for the Modification (see Table 5) in accordance with PA 09_0182.	6.3.4
3.	Boggabri Coal will implement the traffic mitigation measures for the Modification as outlined in Section 6.4.4 of this EA.	6.4.4
4.	Boggabri Coal will install project information signage at the rest stop on the Kamilaroi Highway.	6.4.4
5.	The salvage procedures outlined in Boggabri Coal's existing approved CHMP will be used for the assessment and management of any previously unidentified Aboriginal heritage or European heritage sites and/or items that are located during construction of the Modification.	6.5.4
6.	Boggabri Coal will conduct construction surface water management activities in accordance with the approved CEMP and EMPs.	6.6.3
7.	Boggabri Coal will ensure the regular distribution of community newsletters to provide updates on the Modification.	5
8.	Boggabri Coal will ensure regular updates of the Boggabri Coal website are undertaken to provide information pertaining to the Modification.	5

8 CONCLUSION

This section demonstrates how the Modification is consistent with the objects of the EP&A Act and considered justifiable when compared to the limited environmental impacts.

8.1 REASON FOR THE APPLICATION

This Modification to PA 09_0182 is sought to enable the more efficient construction and operation of infrastructure for the continuation of the approved operations of Boggabri Coal Mine, following outcomes of the detailed design scope.

8.2 THE APPLICATION

The Modification as described and assessed in this EA is sought to enable mining and related activities to continue generally in accordance with the Boggabri EA and PA 09_0812.

The operation of Boggabri Coal Mine (following any approval of this Modification) would generally remain as follows:

- Continuation of mining operations via open cut methods for up to 7 Mtpa product coal down to the Merriown seam;
- An open cut mining fleet including excavators and fleet of haul trucks, dozers, graders, water carts and other equipment with the flexibility to introduce a dragline (as required);
- Up to 500 employees;
- Modifications to existing and continuation of approved (but not yet constructed) infrastructure including the:
 - CHPP;
 - Site infrastructure capacities including: ROM coal hopper, second crusher, stockpile area, coal loading facilities, water management and irrigation system;
 - Rail loop and 17 km rail line across the Namoi River and floodplain including overpasses across the Kamilaroi Highway, Therribri Road and Namoi River; and
 - Upgrading and relocating site facilities including offices, car parking and maintenance sheds as and when required.
- Closing a section of Leard Forest Road;
- Upgrading the power supply capacity to 132 kV high voltage lines suitable for dragline operations; and
- Transportation of coal from the Boggabri Coal Mine to the Boggabri Coal Terminal via a 17 km private sealed haul road. Coal production is limited to 5.5 Mtpa of ROM coal during the period when coal is being transported to the existing coal loader by trucks. The transportation of coal by road is only required up until the commissioning of the Boggabri Rail Spur.

8.3 POWER TO MODIFY

This Modification proposes revisions to the location and extent of a range of transport, power, coal processing and mine support infrastructure for the Boggabri Coal Mine in which the design details were not fully realised for inclusion within the Boggabri EA.

The operation of the Boggabri Coal Mine will continue to be undertaken as described within the Boggabri EA and as approved under PA 09_0182, including utilising the same mining methods, schedules, plant and equipment.

The development sought to be approved by this Modification falls within the term 'modify' in Section 75W of the EP&A Act and there is the power and it is appropriate for the Minister as the approval body to approve this Modification application.

8.4 ENVIRONMENTAL ASSESSMENT

The Modification will require a minor additional disturbance of 47.6 ha to that approved in the Boggabri EA. Of this, 14.0 ha has been classified as native vegetation, of which 2.8 ha is listed as an EEC under the TSC Act.

In total, 13.3 ha of native vegetation considered to be potential roosting or foraging habitat for species listed in the EPBC Act will be removed from land within the Biodiversity Offset Strategy approved under Project Approval 09_0182. The additional disturbance due to the Modification will require the enhancement of the Biodiversity Offset Strategy approved under Project Approval 09_0182.

The need for redesign and development of the mine site access for the continued operation of Boggabri Coal Mine was described in the Boggabri EA, however due to the completion of detailed design work since that time; a revised layout is sought for these facilities. The revised layout of this infrastructure as proposed for the Modification will result in additional minor impacts to that approved under PA 09_0182. Once the Boggabri Rail Spur approved under PA 09_0182 is operational, there will be no requirement for the haulage of coal from the MIA to the existing rail loader via the private haul road. The Kamilaroi Highway access intersections will therefore be used for operational traffic. This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA.

The proposed change to the site access arrangement will reduce impacts on the local road network by minimising increases in traffic movements on Therribri Road, Manilla Road and Leard Forest Road. This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA.

Following completion of detailed design work for the approved rail spur, additional volumes of fill material (proposed to be sourced from processed overburden material extracted during existing Boggabri Coal Mine operations) were identified as being required during the construction phase. The proposed storage of this additional material at the already highly disturbed Rock Quarry and reuse during the construction phase is proposed to minimise additional disturbance that would otherwise be required in stockpiling this material along the alignment of the approved rail spur outside of the approved Project Boundary.

The reuse of the existing Daisymede laydown compound during the life of the Project is proposed to provide an additional laydown area for vehicle storage and the stockpiling and use of materials and/or equipment. The proposed development of this compound is predominantly located in an area that has been previously highly disturbed.

The use of the temporary fuel storage facilities at strategic locations along haulage runs is proposed in order to optimise the efficiency and utilisation of the existing fleet in approved mining areas.

8.5 ENVIRONMENTAL PLANNING AND SOCIAL CONTEXT

The Boggabri Coal Mine is a material employer and contributor to the social and economic fabric of the locality, the region, as well as the State of NSW, assisting with the stability of the respective economies. The shareholders of Boggabri Coal also have a considerable financial and economic interest in the stable continued operation of mining at Boggabri Coal Mine as approved under PA 09_0182.

The approval of the application for this Modification will enable Boggabri Coal to continue to operate in a more efficient manner under the conditions of PA 09_0182.

This Modification provides a balanced consideration of all potential environmental, social and economic impacts, consistent with the principles of Ecologically Sustainable Development. Detailed construction design, engineering investigations and implementation studies have identified the need for the revision of the infrastructure layout to ensure the advancement of the interests of all the interested communities in accordance with the objects of the EP&A Act.

8.6 JUSTIFICATION

Boggabri Coal has approval under Part 3A of the EP&A Act to undertake the Boggabri Coal Project as described in the Boggabri EA. Since the granting of PA 09_0182, Boggabri Coal has undertaken detailed design of the infrastructure required for the Project. This detailed design work has determined that operational efficiency can be improved through alterations to the conceptual infrastructure locations and alignments described in the Boggabri EA. The Modification will ensure that the approval is consistent with the final design scope.

The social and economic benefits provided by the Boggabri Coal Project were described in the Boggabri EA. The Boggabri EA demonstrated that the Project is consistent with the objects of the EP&A Act and the principles of Ecologically Sustainable Development. This Modification will not alter these conclusions.

The Modification will improve operational efficiency, maximising the economic benefits derived from the development of the land. The Modification will enable Boggabri Coal Mine to continue to satisfy the following objects of the EP&A Act:

- The proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment; and
- The promotion and co-ordination of the orderly and economic use and development of land.

Each of the noise and air quality impact assessments completed for this Modification indicate that impact levels associated with the activities proposed will have a minor and acceptable effect during construction and operation at all privately owned receivers. No additional air quality or noise mitigation measures are required to those proposed in the Boggabri EA to facilitate the Modification.

The Modification will require a minor additional disturbance of 47.6 ha to that approved in the Boggabri EA. Of this, 14.0 ha has been classified as native vegetation, of which 2.8 ha is listed as an EEC under the TSC Act.

In total, 13.3 ha of native vegetation considered to be potential roosting or foraging habitat for species listed in the EPBC Act will be removed from land within the Biodiversity Offset Strategy approved under Project Approval 09_0182. The additional disturbance due to the Modification will require the enhancement of the Biodiversity Offset Strategy approved under Project Approval 09_0182. Areas have been selected to minimise additional disturbance of native vegetation, with priority afforded to previously disturbed areas.

The proposed change to the mine site access arrangement will reduce impacts on the local road network by minimising increases in traffic movements on Therribri Road, Manilla Road and Leard Forest Road. It will enable the construction and use of a superior, permanent site access off the Kamilaroi Highway. This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA. The Modification will not impact on known Aboriginal sites and not require any additional management to that described in the Boggabri EA.

The Modification will not contribute any additional impacts to surface water or groundwater to that described in the Boggabri EA.

8.7 SUMMARY

The proposed change to the mine site access arrangement will reduce impacts on the local road network by minimising increases in traffic movements on Therribri Road, Manilla Road and Leard Forest Road. It will enable the construction and use of a superior, permanent site access off the Kamilaroi Highway. This strategy is consistent with requests outlined by stakeholders in their submissions on the Boggabri EA.

The ability to temporarily store processed overburden at the previously disturbed Rock Quarry will reduce new areas of disturbance required for the Project, whilst the reuse of this material during the construction of the rail spur earthworks will reduce the distance and duration of truck movements and associated environmental and community impacts (when compared to hauling this material from the active mine). The ability to use the existing Daisymede laydown compound will also provide significant benefits in relation to reduced new disturbances and transport distances. The ability to use the temporary fuel storage facilities will increase the operational efficiency of the existing equipment fleet.

The environmental impacts relating to the Modification of the Boggabri Coal Mine will therefore be minor. Additional environmental mitigation to enable the Modification is required only to facilitate minor, manageable impacts to ecology. This will assist in ensuring that the Modification will continue to be consistent with the principles of Ecologically Sustainable Development under the EP&A Act and the EPBC Act.

The Boggabri Coal Mine will facilitate the ongoing development of a significant coal resource. The Modification will assist in maximising the economic benefits generated by the development of this resource, without a significant change to the environmental impacts of the development.

Therefore, the Modification is justifiable on the following grounds:

- Improved efficiency in the construction and operation of the mine;
- Reduced impacts on the local road network;
- No material increase in environmental impacts;
- Minimise additional disturbance areas; and
- Consistency with the objects of the EP&A Act.

9 ABBREVIATIONS

Abbreviation	Description
AHIP	Aboriginal Heritage Impact Permit
Boggabri CCC	Boggabri Community Consultative Committee
Boggabri Coal	Boggabri Coal Pty Limited
Boggabri EA	Boggabri Continuation of Mining Environmental Assessment
CCTV	Closed Circuit Television
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
CHPP	Coal Handling and Preparation Plant
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
DoE	Commonwealth Department of Environment
DP&I	NSW Department of Planning and Infrastructure
EA	Environmental Assessment
EEC	Endangered Ecological Community (TSC Act)
EMP	Environmental Management Plan
EMS	Environmental Management System
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EPI	Environmental Planning Instrument
EPL	Environmental Protection Licence
FM Act	Fisheries Management Act 1994
ha	Hectare
Heritage Act	Heritage Act 1977
Hr	Hour
HVAS	High Volume Air Sampler
Km	Kilometre
kV	Kilovolt
LEP	Local Environmental Plan
LGA	Local Government Area
Maules Creek	Maules Creek Coal Pty Ltd
MIA	Mine Infrastructure Area
Mining Act	Mining Act 1992
MNES	Matter of National Environmental Significance
The Modification	Boggabri Coal Mine Project Approval Modification
MOP	Mining Operations Plan
Mt	Million tonnes
Mtpa	Million tonnes per annum

Abbreviation	Description
Murray Darling Porous Rock WSP	Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Source 2011
Narrabri LEP	Narrabri Local Environment Plan 2012
NPW Act	National Parks and Wildlife Act 1974
NSC	Narrabri Shire Council
NSW	New South Wales
NV Act	Native Vegetation Act 2003
OEH	NSW Office of Environment and Heritage
PA	Project Approval
PAC	Planning Assessment Commission
PCI	Pulverised Coal Injection
PM10	Particulate Matter <10 microns
POEO Act	Protection of the Environment Operations Act 1997
RAP	Registered Aboriginal Party
Roads Act	Roads Act 1993
ROM	Run of Mine
RMS	NSW Roads and Maritime Services
SEPP	State Environmental Planning Policy
SEPP 33	State Environmental Planning Policy No. 33 – Hazardous & Offensive Development
SEPP 44	State Environmental Planning Policy No. 44 – Koala Habitat Protection
SEPP 55	State Environmental Planning Policy No. 55 – Remediation of Land
SEPP Mining	State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
SRLUP	Strategic Regional Land Use Plan – New England North West
t	Tonne
tph	Tonnes per hour
TSC Act	Threatened Species Conservation Act 1995
WAL	Water Access Licence
Water Act	Water Act 1912
Whitehaven	Whitehaven Coal Mining Pty Ltd
WM Act	Water Management Act 2000
WSP	Water Sharing Plan

10 REFERENCES

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11 EA STUDY TEAM

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	Environmental Representative	Wayne Jones	Boggabri Coal Expansion Project
<i>EA Management</i>			
	Project Director	James Bailey	Hansen Bailey
	Project Manager	Melissa Walker	
<i>EA Sections</i>			
1	Overview	Dorian Walsh	Hansen Bailey
2	Approved Operations	Dorian Walsh	
3	The Modification	Melissa Walker	
4	Regulatory Framework	Andrew Wu	
5	Stakeholder Consultation	Melissa Walker	
6	Impacts, Management and Mitigation	Melissa Walker	
7	Statement of Commitments	James Bailey, Melissa Walker	
8	Conclusion	James Bailey, Melissa Walker	
9	Abbreviations		
10	References		
11	EA Study Team		
<i>Appendices</i>			
Appendix A	Air Quality Impact Assessment	Judith Cox	Pacific Environment
Appendix B	Noise Impact Assessment	Mark Bridges	Bridges Acoustics
Appendix C	Ecological Impact Assessment	Alex Cockerill	Parsons Brinckerhoff
Appendix D	Traffic Impact Assessment	Ben Rossiter	Constructive Solutions
Appendix E	Heritage Impact Assessment	Angela Besant	Insite Heritage
Figures provided by Pegasus Survey & Drafting			