Idemitsu Australia

Boggabri Coal Mine - Project Approval Modification Environmental Assessment (MOD 4)

16 December 2014

PARSONS BRINCKERHOFF

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Contents

List of tables

Page number

List of figures

List of appendices

Abbreviations

AEMR	Annual Environmental Management Report
ARI	Average Recurrence Interval
BCPL	Boggabri Coal Pty Limited
BCT	Boggabri Coal Terminal
BMP	Biodiversity Management Plan
Boggabri EA Offset Strategy	Biodiversity Offset Strategy (BOS) for the Boggabri Coal Project
BOS	Biodiversity Offset Strategy
CCC	Community Consultative Committee
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
CHPP	Coal Handling and Preparation Plant
CL	*Coal Lease*
DA	*Development Approval*
DoE	Department of the Environment
DP&E	NSW Department of Planning and Environment
EA	Environmental Assessment
EC	Electrical Conductivity
EEC	Endangered Ecological Community
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environmental Protection Licence
ESD	Ecologically Sustainable Development
FM Act	*Fisheries Management Act 1994*
GDE's	Groundwater Dependent Ecosystems
GES	Groundwater Exploration Services Pty Ltd
GMP	Groundwater Management Plan
ha	Hectares
Heritage Act	*Heritage Act 1977*
HVAS	High Volume Air Sampler
Idemitsu	Idemitsu Australia Resources Pty Limited
KTP	Key Threatening Process
LGA	Local Government Area
MIA	Mine Infrastructure Area

Mining SEPP	Mining, petroleum production and Extractive Industries 2007
Ml	Megalitre
ML	Mining Lease
MNES	Matters of National Environmental Significance
MOD	Modification
MOP	Mining Operations Plan
Mtpa	Million tonnes per annum
MW3	Mine Water Dam 3
Narrabri LEP	Narrabri Local Environment Plan 2012
NOW	NSW Office of Water
NPW Act	*National Parks and Wildlife Act 1974*
NSW EPA	NSW Environmental Protection Authority
NV Act	*Native Vegetation Act 2003*
OEH	NSW Office of Environment and Heritage
PA 09_0182	Boggabri Coal Mine Project Approval
PAD	Potential Archaeological Deposit
PoEO Act	*Protection of Environmental Operations Act 1997*
PVC	Polyvinyl
RAPs	Registered Aboriginal Parties
RMS	NSW Roads and Maritime Services
ROM	Run-of-mine
SD	Sediment Dam
SEPP 33	SEPP 33 - Hazardous and Offensive Development
SEPPs	State Environmental Planning Policies
SRLUP	New England North West Strategic Regional Land Use Plan
SWMP	Surface Water Management Plan
t	Tonne
TCM	Tarrawonga Coal Mine
the 2010 EA	*Continuation of Boggabri Coal Mine Environmental Assessment December 2010* (Hansen Bailey 2010)
TSC Act	*Threatened Species Conservation Act 1995*
WM Act	*Water Management Act 2000*
WMP	Water Management Plan
WSP	Water Sharing Plans

1. Introduction

1.1 Background

Boggabri Coal Pty Limited (BCPL) is a wholly owned subsidiary of Idemitsu Australia Resources Pty Limited (Idemitsu) which operates the Boggabri Coal Mine. The Boggabri Coal Mine (BCM) is located 15 kilometres (km) north-east of the township of Boggabri in the north-west Region of NSW (see Figure 1.1).

Full scale mining commenced at Boggabri Coal Mine in 2006. In 2009, BCPL lodged an application for the continuation of Boggabri Coal Mine, including an increase of production from five to seven Million tonnes of product coal per annum. This was approved under PA 09_0182 (the project approval) on 18 July 2012 and activities have continued at the site since, including:

- construction of a new Coal Handling and Preparation Plant (CHPP)
- construction of a 17 km rail spur line and rail load-out facility
- upgrades of other ancillary infrastructure.

BCPL also operates under an approval granted under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC Approval 2009/5256).

1.2 Purpose of this document

This Environmental Assessment (EA) has been prepared to support an application under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to modify PA 09_0182 to include for additional activities and ancillary infrastructure that is required as part of ongoing operations at the Boggabri Coal Mine. These are detailed in Section 3 and include:

- project boundary adjustments to include infrastructure and borrow pits built prior to the project approval
- alterations to existing infrastructure within the mine, including the extension of two dirty water dams, realignment of a haul road, extension of the run-of-mine (ROM) coal stockpile and construction of new hardstand areas within the Mine Infrastructure Area (MIA)
- construction of a security fence and firebreak along the approved disturbance boundary
- use of additional portable fuel storages within operational areas.

This EA has been prepared to consider the implications of the proposed modification in accordance with the requirements of the EP&A Act and Environmental Planning and Assessment Regulation 2000.

1.3 The proponent

The proponent for the proposed modification is Boggabri Coal Pty Limited, for which the contact details are:

Boggabri Coal Pty Limited
PO Box 12
Boggabri NSW 2382

Phone: (02) 6743 4775
Fax: (02) 6743 4496
boggabricoal@idemitsu.com.au

1.4 Need for the modification

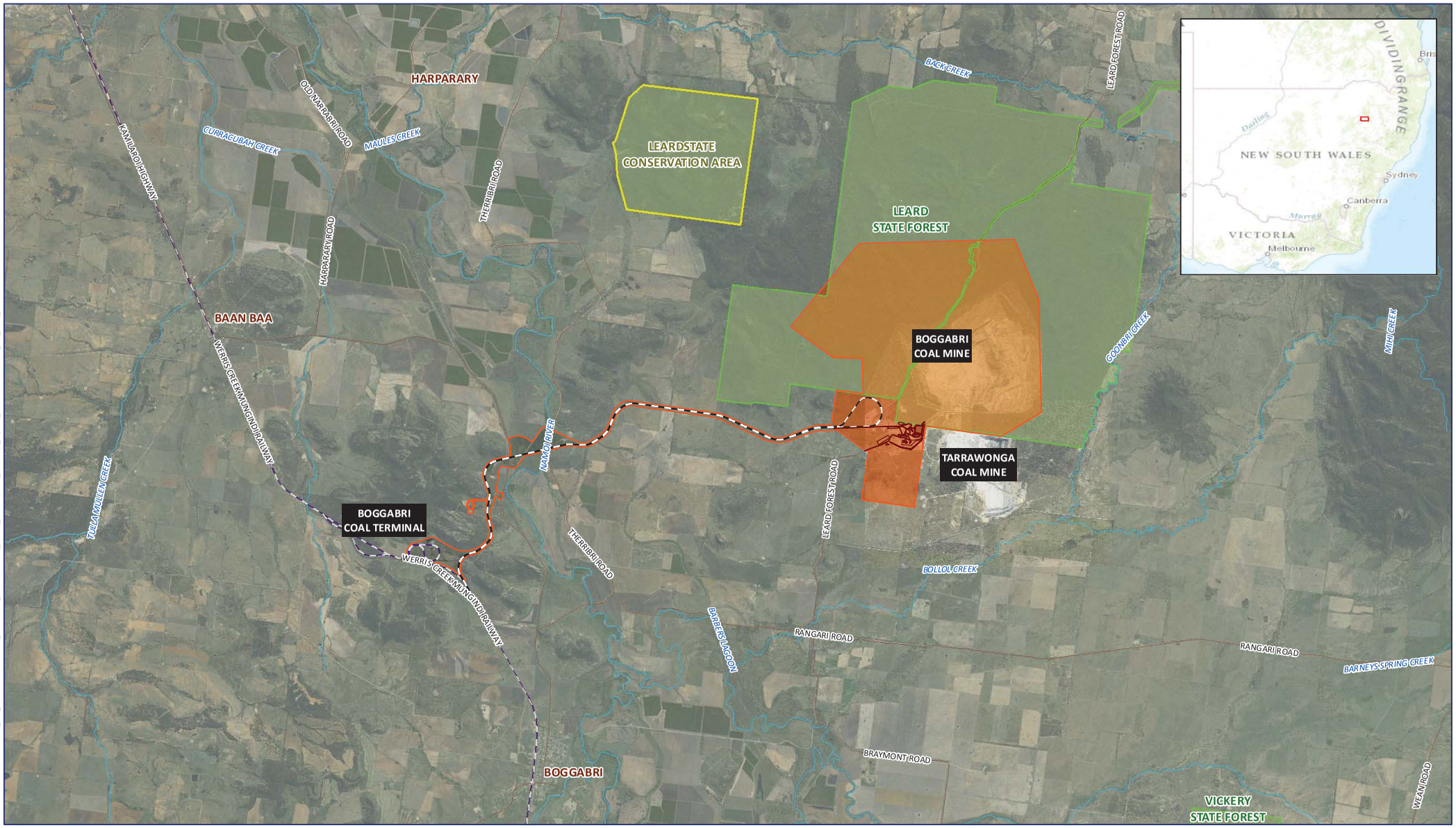
The project approval allowed for the continuation of the Boggabri Coal Mine and associated infrastructure for a further 21 years and increased production. Detailed designs of a number of components of the Boggabri Coal Project have progressed since the project approval was awarded, and ongoing development and design activities have identified a number of adjustments and additions to previously approved operations that are required to ensure its efficient continuous operation.

The proposed modification is therefore sought to obtain approval for the construction and operation of additional or altered project components required for the efficient operation of the Boggabri Coal Mine, as described in Section 3.

1.5 Document structure

This document is structured as follows:

- **Section 1** – discusses the background to the proposed modification, describes the proponent and outlines the need for the modification.
- **Section 2** – describes current and approved operations at Boggabri Coal Mine.
- **Section 3** – describes the individual components of the proposed modification.
- **Section 4** – considers the legislative framework for the proposed modification, considers the applicability of Commonwealth and State legislation and relevant planning instruments.
- **Section 5** – identifies and assesses the potential environmental impacts of the proposed modification and describes the measures that will be implemented to mitigate these.
- **Section 6** – lists the draft Statement of Commitments proposed to be adopted throughout the life of the project.
- **Section 7** – provides a conclusion to the findings of this EA, including a justification for the proposed modification.



Existing mine infrastructure
Existing/operational rail
Proposed rail
Road
River/creek
Boggabri Project Approval Area
Boggabri Coal Mine
State Forest
Leard State Conservation Area

0 2 4 6 km

Figure 1.1
Project location

2. Existing operations

2.1 Background

Exploration and development studies commenced in the vicinity of the Boggabri Coal Mine in 1976. Approval for mining operations was initially granted on 22 August 1989 under Part 4 of the EP&A Act. Major development of the site began in the mid 2000's, with coal mining commencing in 2006 using truck and shovel methods. Infrastructure constructed for the mine before production of coal included:

- 17 km bitumen sealed private coal haul road from the mine to the Boggabri Coal Terminal (BCT) rail loading facility, including bridges over the Namoi River and Kamilaroi Highway
- ROM and product coal stockpiles
- coal crushing plant
- conveyor and truck load out facility
- three km rail loop and turnout
- mine infrastructure area (MIA) including workshop and offices.

In 2009, BCPL lodged a major project application under the now-repealed Part 3A of EP&A Act. This continuation is known as the Boggabri Coal Project and it includes:

- production of up to seven Million tonnes per annum (Mtpa) product coal
- construction of an additional CHPP
- a 17 km rail spur line and rail load-out facility running from the main line to the CHPP
- upgraded mining fleet, including use of a dragline
- upgrades of other ancillary infrastructure.

The Boggabri Coal Project was approved under project approval 09_0182 (the project approval), which was awarded on 18 July 2012. Impacts associated with the Boggabri Coal Project were assessed through the *Continuation of Boggabri Coal Mine Environmental Assessment December 2010* (Hansen Bailey 2010a) (the 2010 EA). BCPL subsequently applied for three modifications (MODs) of the project approval, as follows:

- **MOD 1** – to allow for emergency trucking operations and was subsequently withdrawn by BCPL.
- **MOD 2** – to allow for the processing and associated transport of up to three Mtpa of ROM coal from the adjacent Tarrawonga Coal Mine (TCM). This application is currently under assessment by the Department of Planning and Environment.
- **MOD 3** – to allow for construction of a permanent mine access road, use of overburden as a base material for the rail spur embankment, use of an off-site lay-down area and use of in-pit fuel storage facilities.

2.2 Summary of mine operations

Key features of the Boggabri Coal Mine as approved under the project approval are outlined in Table 2.1 and shown on Figure 2.1.

Table 2.1 Overview of the Boggabri Coal Mine

Major Project Components/Aspects	Proposed Operations
Limits on Extraction	▪ Up to 7 Mtpa product coal.
ROM coal to be mined	▪ Approximately 145Mt.
Mine Life	▪ 21 Years (exp. 2033).
Operating Hours	▪ 24 hours per day, 7 days per week.
Number of Employees	▪ At least 500 Full Time Equivalents.
Mining Methods	▪ Open cut mining using dragline and truck and shovel.
Site Footprint	▪ Approximately 1,954 ha.
Coal Processing	▪ ROM crushing plant located adjacent to ROM stockpile (current). ▪ CHPP with 500 tonnes per hour capacity and associated ultra-fines plant (under construction).
Infrastructure	▪ Mine Infrastructure Area (MIA) located to south-west of mine. ▪ Power/water/communications systems. ▪ Service roads.
Product coal transport	▪ Road haulage along a private haul road to BCT, located on Werris Creek-Mungindi Railway Line (current). ▪ Rail spur from Werris Creek-Mungindi Railway Line to new loading facilities adjacent to the MIA (under construction).
Water Management	▪ Clean water diversions to divert run-off from surrounding areas around disturbance areas. ▪ Dirty water management system to capture and treat water from disturbed (non-mining) areas. ▪ Contaminated water management system to capture water from coal mining and storage areas.
Road Diversions	▪ Closure of a section of Leard Forest Road and widening of the existing private coal haulage road.
Waste Management	▪ Coarse rejects and tailings co-disposed with overburden or within in-pit tailings emplacement areas.

The following sections describe the mining and coal production methods employed at Boggabri Coal Mine.

2.2.1 Pre-mining operations

An annual vegetation clearing and topsoil program is undertaken in areas to be mined in the following year. This involves pre-clearance surveys of vegetation, then harvesting of commercial timber for firewood, seed collection and removal of habitat features such as logs for use in rehabilitated areas. All remaining vegetation is mulched for use in rehabilitation. Top soil is removed using tracked dozers and placed in topsoil stockpiles for use in rehabilitation.

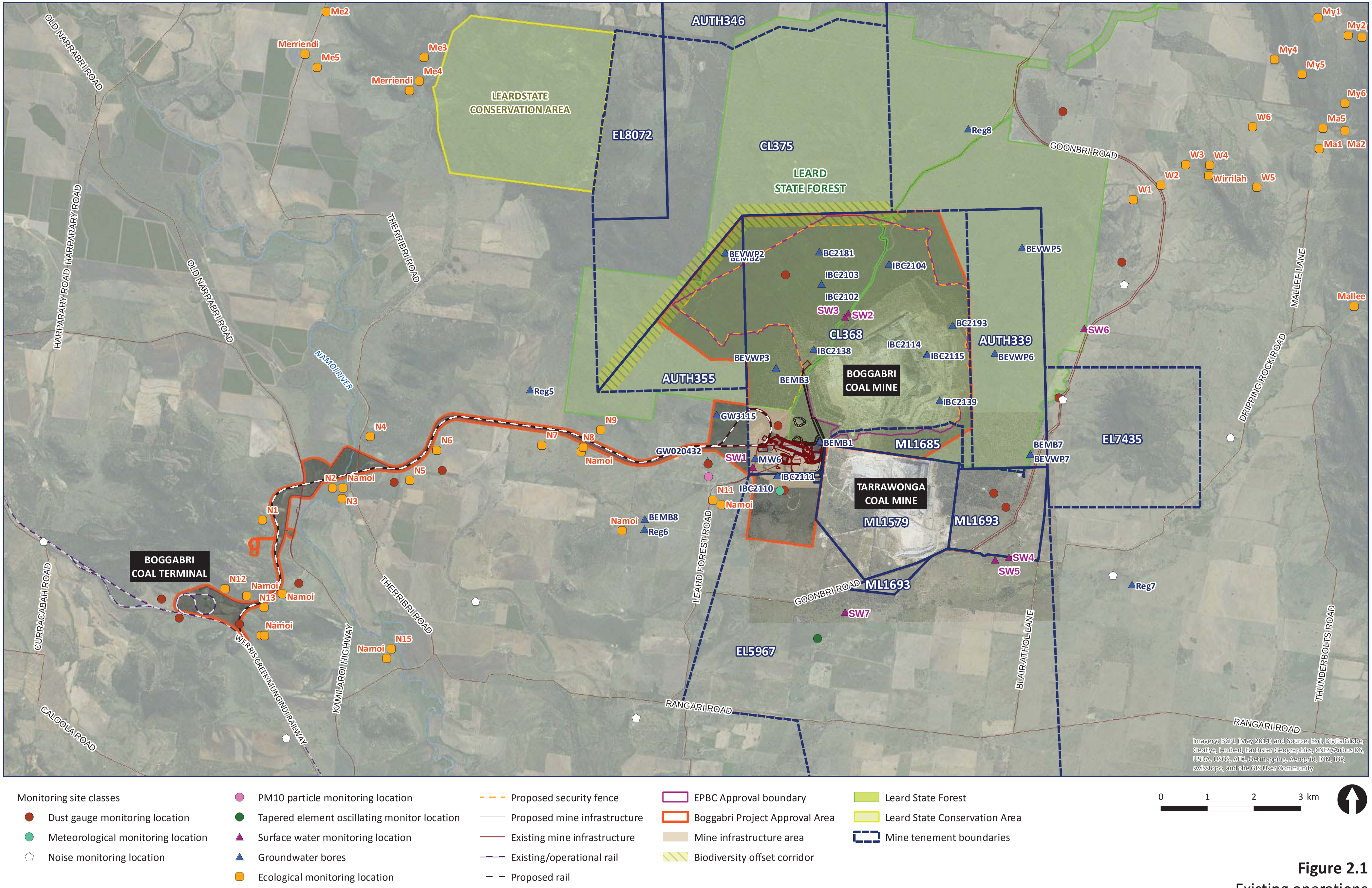


Figure 2.1
Existing operations

2.2.2 Mining operations

Mining commenced in 2006 from the south of the open cut area shown on Figure 2.1 using large hydraulic excavators and rear dump trucks. The first two years of mining concentrated on two separate, progressively developed pits (the 'Merriown' and 'Jeralong' pits) which were then joined to form the 'Bollol Creek' pit, which is the current mine pit.

Coal is mined from eights seams in the Bollol Creek Pit: the Herndale, Onavale, Teston, Thornfield, Braymont, Bollol Creek, Jeralong and basal Merriown seams. Mining is currently undertaken using truck and excavator operations. However a dragline may be used for future operations.

Overburden is blasted to allow for removal and is placed in either in- or out-of-pit emplacement areas (as shown on Figure 2.1). Under the project approval, blasting is permitted between 9.00am and 5.00pm Monday to Saturday.

2.2.3 Coal processing and transport

Once extracted, coal is transported to the ROM coal stockpile where it is fed into the ROM crusher and crushed to an average size of 50 millimetres (mm). Crushed coal is conveyed to a 380 ton loading bin from where it is loaded into oversize B-double trucks for transport via a 17 km sealed private haul road to the BCT. Product coal is transported by rail to the Port of Newcastle.

A CHPP is currently under construction within the MIA and will allow for further processing of ROM coal. A rail spur is also under construction that will allow coal trains to be loaded adjacent to the MIA. The rail spur follows a similar alignment to the private haul road (as shown on Figure 2.1). This infrastructure is expected to be commissioned in 2015.

2.3 Existing approvals

Table 2.2 summarises the current consents, authorisations and licences that apply to the Boggabri Coal Mine.

Table 2.2 Summary of current consents, authorisations and licences

Lease/licence/approval	Date granted	Expiry/duration
Exploration licences		
Exploration Permit Tender Area no. 1	22 December 1975	-
Coal leases (CL)		
CL368	15 November 1990	14 November 2032
Mining leases (ML)		
ML A355	19 July 1984	11 April 2018
ML A339	11 April 1984	11 April 2016
Project approvals		
Project approval 09_0182 (as modified)	18 July 2012	31 December 2033
EPBC Act Approval	11 February 2013	31 December 2053

Lease/licence/approval	Date granted	Expiry/duration
Other licences		
Environment Protection licence (EPL) 12407	5 September 2012	5 September 2017
Water Access Licence No: 2571 (90AL801761)	1 July 2004	Perpetuity
Water Access Licence No: 2572 (90AL801762)	1 July 2004	Perpetuity
Water Access Licence No: 2595 (90AL801817)	1 July 2004	Perpetuity
Water Access Licence No: 2596 (90AL801818)	1 July 2004	Perpetuity
Water Access Licence No: 15037	1 November 2006	30 October 2020
Water Access Licence No: 24103	(Cooboobindi/Gowrie)	-
Water Access Licence 90BL255995	1 November 2011	31 October 2016
Water Access Licence No: 29562	16 January 2012	23 April 2015
Water Licence 90BL255090	23 March 2010	22 March 2015
Approval of Controlled Works Part 8 of the Water Act 1912 – Floodplain construction works	01 October 2013	-

2.4 Environmental management

BCPL has implemented an Environmental Management Strategy 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 is the development and implementation of a number of environmental management plans, strategies and procedures to cover specific aspects of the Boggabri Coal Mine including:

- water management
- air quality
- flora and fauna
- cultural heritage
- hydrocarbon
- noise and vibration
- waste
- rehabilitation and land management
- public safety
- irrigation area.

BCPL has also implemented an environmental monitoring program which allows effective quantitative measurement and management of its environmental performance. The Boggabri Coal Mine monitoring network is shown on Figure 2.1 and comprises:

- a meteorological monitoring station
- three depositional dust gauges
- a High Volume Air Sampler (HVAS)
- nine noise monitoring sites
- 14 groundwater monitoring bores
- seven surface water sampling points.

The outcomes of the environmental monitoring program are published in the Annual Review (formerly Annual Environmental Management Report (AEMR)), and distributed to government agencies, employees, the Boggabri Community Consultative Committee (CCC) and other interested stakeholders.

2.5 Water management

The Boggabri Coal Mine water management system has been designed to segregate clean runoff, dirty runoff and contaminated water generated from rainfall events and mining operations. The following definitions have been adopted for the various runoff types:

- Clean water is defined as runoff from catchments that are not disturbed by mining operations.
- Dirty water is defined as runoff from disturbed areas within the mine site and includes runoff from overburden emplacements, haul roads and parts of the MIA. This water contains high levels of suspended solids.
- Contaminated water is defined as runoff generated from coal stockpiles, the CHPP, parts of the MIA and the mining void, as well as groundwater inflows to the mining void. This water contains high levels of suspended solids and is mildly saline.

Clean water runoff from undisturbed catchments is diverted around the mine working area and into 'Nagero Creek' as far as is practical. Where it is not practical to provide diversion drains, highwall dams capture clean runoff to minimise inflows to the mining void. Water captured in highwall dams is pumped out to 'Nagero Creek', an unnamed ephemeral waterway. However, they have been designed to spill to the mining void during large storm events.

Dirty water runoff is captured in sediment dams to encourage the settling of suspended solids. Runoff from large storm events discharges to 'Nagero Creek'. Captured water is either released to the creek or pumped to mine water dams for storage and reuse. This will depend on stored water quality and the site water balance. Captured water is expected to be suitable for release following settling of suspended solids. However, as waste rock emplacement runoff potentially has elevated acidity, salinity, dissolved metals and oils and greases, sediment dams are provided with manually operated valves on the outlet pipes so that discharge to the creek can be prevented if water quality is not suitable (e.g. to allow for flocculation).

Overflows from the adjacent TCM sediment dams that flow west towards BCM are diverted around the BCM MIA by a diversion drain. The drain discharges directly to 'Nagero Creek' to enable separation between licensed discharges from BCM and TCM.

Contaminated water is captured in mine water dams for storage and reuse and is not released to 'Nagero Creek'. Contaminated water is used as much as possible on site for dust depression.

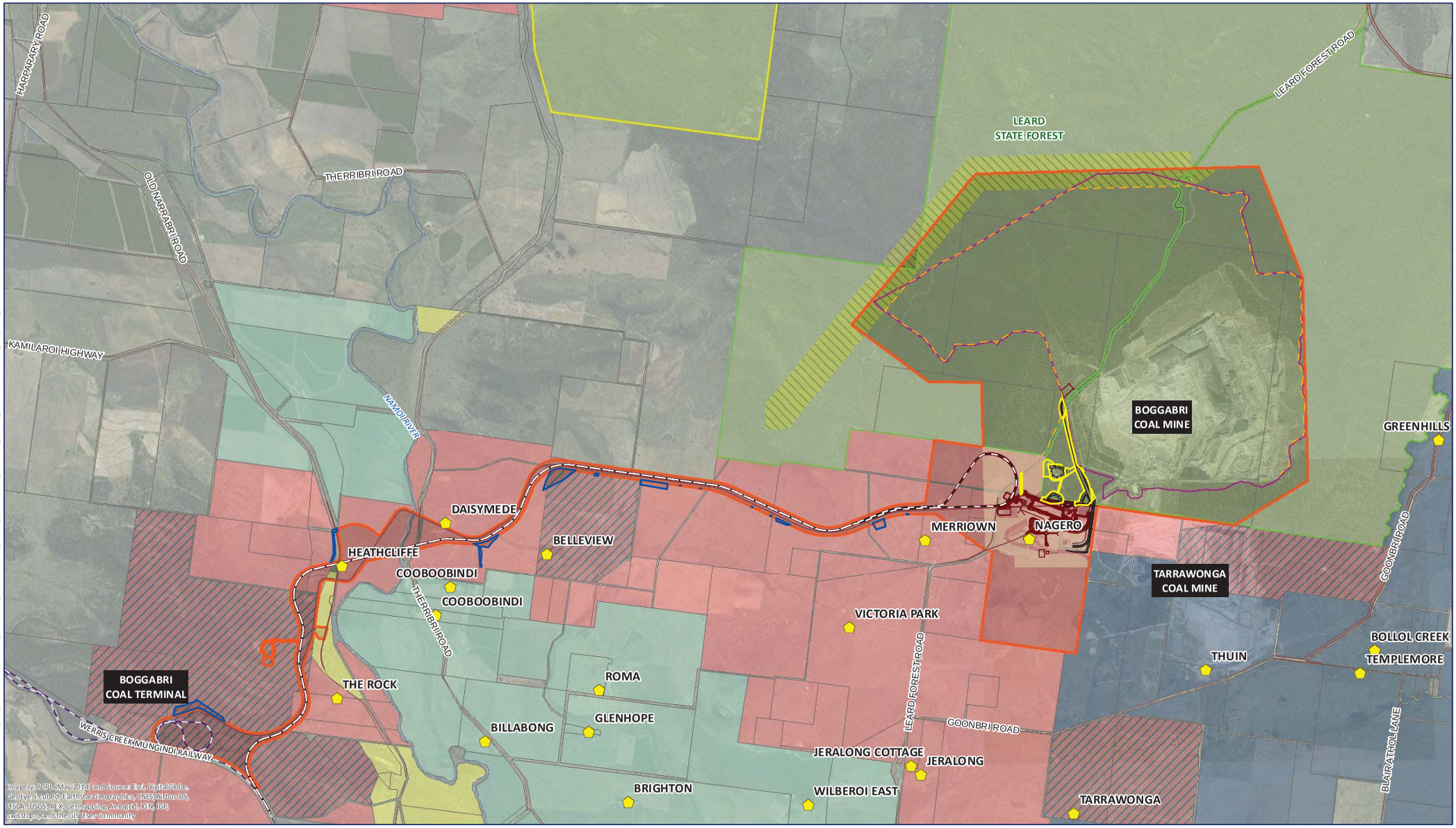
Although Boggabri Coal Mine can use an irrigation system to dispose of surplus water, this system is not currently operational. When the capacity of mine water dams is reached, surplus contaminated mine water will be stored in-pit in a temporary storage. The temporary storage will be a segregated void area within the advancing mining pit area and will have a capacity of approximately 2 megalitres (Ml). The temporary storage will be required until the irrigation system is implemented, or until the CHPP becomes operational and the site moves to an annual water deficit under average climatic conditions. After the CHPP becomes operational, water will still be stored in-pit during extreme wet weather events when the capacity of the mine water dams is reached, however, the existing mine water dams will be upsized to minimise the frequency and magnitude of in-pit flooding.

2.6 Land ownership

BCPL either own or have established access agreements with the landholders who own the land that the Boggabri Coal Mine operates on. Landownership for areas where project boundary adjustments are proposed under this modification is shown on Figure 2.2. Specific holdings that will be subject to boundary adjustments are described further in Table 2.3.

Table 2.3 Schedule of lands – proposed new project area

Lot	Deposited Plan (DP)	Property name	Ownership
156	DP455004	Heathcliffe	BCPL
59	DP754948	Daisymede	BCPL
60	DP754948	Bellview	BCPL/Tarrawonga Joint ownership
159	DP755475	The Rock	BCPL/Tarrawonga Joint ownership
1	DP622375	Velyama	BCPL
21	DP754940	Merriown	BCPL
263	DP1193634	n/a	Road reserve



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- Surrounding residences
- Proposed security fence
- Proposed mine infrastructure
- Existing mine infrastructure
- Existing/operational rail
- Proposed rail
- Proposed new project area
- Modification within existing project area
- EPBC Approval boundary
- Boggabri Project Approval Area
- Mine infrastructure area
- Biodiversity offset corridor
- Leard State Forest
- Leard State Conservation Area
- Cadastre boundary

Land ownership

- Mine owned / leased land
- Whitehaven Coal Ltd.
- Mine jointly owned
- Crown land
- Private

0 0.5 1 1.5 km

Figure 2.2
Property ownership

3. Proposed modification

3.1 Overview

As part of the ongoing development of the Boggabri Coal Project, BCPL has identified the need for amendments to the conceptual project design approved under PA 09_0182 to provide for the following activities:

- Amendment of the project boundary to include infrastructure built under other approvals or by other proponents – this will allow for existing infrastructure used by the BCPL to be included in the project area and managed as part of the overall operation.
- Modifications within the existing MIA (including extension of stockpile and laydown areas, minor amendment of haul road alignment and increasing sediment dam capacities).
- Other additions required to augment the project – including: construction of a boundary fence, use of additional portable fuel storage containers, creation of an equipment recycling yard and modification of water management structures.

Individual components of the modification are summarised in Table 3.1 and discussed further in the following sections. Figure 3.1 provides an overview of where each component of the modification is located within Boggabri Coal Mine.

Table 3.1 Summary of proposed modification activities

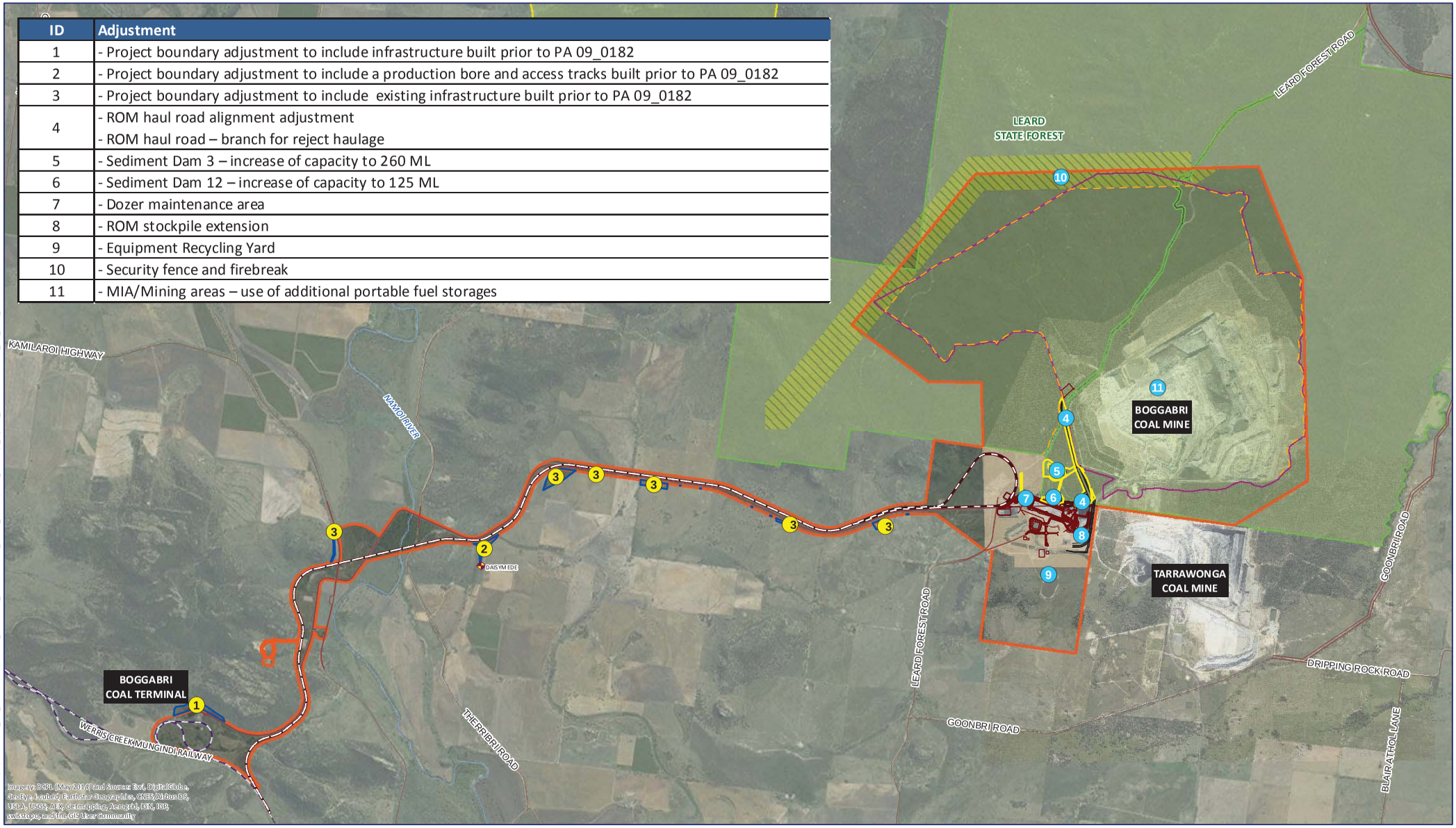
New No	Proposed activity	Additional ground disturbance required?(1)	Project boundary adjustment required?(2)
1	▪ **Adjust project boundary at BCT** - Project boundary adjustment to include infrastructure built as part of previous approvals, including: product stockpiles, vehicle loop and contour drains.	No	Yes
2	▪ **Adjust project boundary at Daisymede Property** - Project boundary adjustment to include a production bore and access tracks built as part of previous approvals.	No	Yes
3	▪ **Adjust project boundary at private haul road** - Project boundary adjustment to include existing infrastructure built as part of other approvals, including: ▸ 11kV and 132kV powerlines ▸ service tracks and construction pads used during construction of the BCT Haul Road built prior to PA 09_0182 ▸ underground power line built prior to PA 09_0182 ▸ borrow pits used during construction of the BCT Haul Road (built under DA 38/88) prior to PA 09_0182	No	Yes
4	▪ **Change alignment for ROM haul road** – adjustment to alignment of ROM Haul Road approved under PA 09_0182 and ancillary clean and dirty water drainage ▪ **Change alignment for Rejects haul road** – additional branch to ROM Haul Road to provide for haulage of rejects on the ROM Haul Road	Yes	No
5	▪ **Expand sediment dam 3** – increase of capacity to 260 Ml to provide capacity consistent with revised site water balance	Yes	No

New No	Proposed activity	Additional ground disturbance required?(1)	Project boundary adjustment required?(2)
6	▪ **Expand sediment dam 12** – increase of capacity to 125 Ml to provide capacity consistent with revised site water balance	Yes	No
7	▪ **Establish dozer maintenance area within MIA** – implementation of a hardstand area where dozers and other equipment will be serviced, this will include widening of an existing culvert crossing	No	No
8	▪ **Expand ROM stockpile within MIA** – construction of an extension to the ROM stockpile to provide for separation of different ROM grades and additional stockpiling	No	No
9	▪ **Establish equipment recycling yard** – establishment of a hardstand area where surplus plant and equipment is stored for use as spare parts	No	No
10	▪ **Construct boundary fence** – construction of a boundary fence, firebreak and access road around the perimeter of the project boundary	No	No
11	▪ **Additional portable fuel storages** – use of additional portable fuel storages within active mining areas and the MIA.	No	No

(1) This identifies where there is a requirement for additional ground disturbance or clearing for the modification activity outside the existing approved disturbance boundary of PA09_0182

(2) project boundary adjustments refer to activities occurring outside the current approved boundary of PA 09_0182

ID	Adjustment
1	- Project boundary adjustment to include infrastructure built prior to PA 09_0182
2	- Project boundary adjustment to include a production bore and access tracks built prior to PA 09_0182
3	- Project boundary adjustment to include existing infrastructure built prior to PA 09_0182
4	- ROM haul road alignment adjustment - ROM haul road – branch for reject haulage
5	- Sediment Dam 3 – increase of capacity to 260 ML
6	- Sediment Dam 12 – increase of capacity to 125 ML
7	- Dozer maintenance area
8	- ROM stockpile extension
9	- Equipment Recycling Yard
10	- Security fence and firebreak
11	- MIA/Mining areas – use of additional portable fuel storages



1 Project boundary adjustment, ground disturbance not required
2 Project boundary adjustment not required ground disturbance required
Existing bore
Proposed security fence
Proposed mine infrastructure
Existing mine infrastructure
Existing/operational rail
Proposed rail
Proposed new project area
Modification within existing project area
EPBC Approval boundary
Boggabri Project Approval Area
Mine infrastructure area
Biodiversity offset corridor
Leard State Forest
Leard State Conservation Area

0 0.5 1 1.5 km

Figure 3.1
Summary of proposed modifications

3.2 Project boundary extension

As described in Section 2.1, approval for the Boggabri Coal Mine was originally granted in 1989 under DA 36/88 and construction activities associated with this approval were generally complete by November 2006. This included construction of various infrastructure and ancillary facilities associated with the mine, including:

- offices, workshops, a bathhouse, access roads and water storages
- powerlines, drains and pipelines
- haul roads and coal stockpiles
- a coal crushing and sizing plant
- a rail spur and rail loop with a coal loading facility.

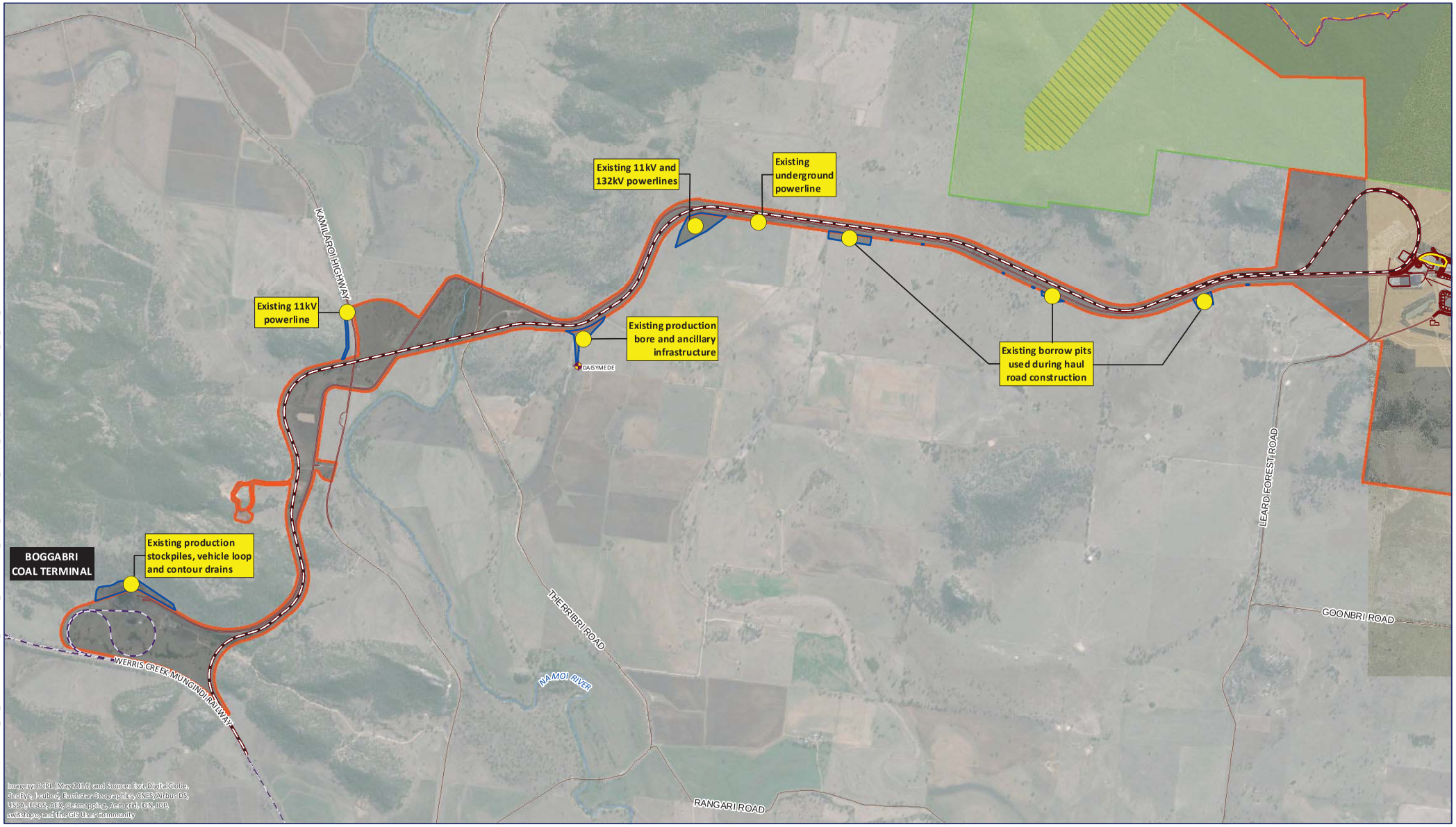
PA 09_0182 was approved on 18 July 2012, establishing a project boundary that was intended to capture the existing infrastructure and operations that comprised Boggabri Coal Mine and its planned expansion. As described in Table 3.1, a number of components of existing infrastructure and ancillary sites that were built prior to 2012 are located outside the project boundary. These features were previously omitted from the project boundary and it is proposed to correct this so that all ancillary infrastructure associated with Boggabri Coal Mine is covered by the PA 09_0182. By doing so, BCPL will be able to manage this infrastructure under its established management systems, without the need for further approvals.

The relevant approvals that each component of existing infrastructure would be included in the project area through a boundary adjustment under the proposed modification is described further in Table 3.2.

Table 3.2 Details of pre-existing infrastructure approvals

No.	Proposed activity	Relevant approval
1	**Adjust project boundary at BCT** – Project boundary adjustment to include existing infrastructure, including:	
	▪ product stockpiles	DA 38/88
	▪ vehicle loop	DA 38/88
	▪ contour drains	DA 38/88
2	**Adjust project boundary at Daisymede Property** – Project boundary adjustment to include existing infrastructure, including:	
	▪ a production bore	Bore licences 90BL25354 and 90BL255090
	▪ access tracks built as part of previous approvals.	DA 38/88
4	**Adjust project boundary at private haul road** – Project boundary adjustment to include existing infrastructure built as part of other approvals, including:	
	▪ 11kV and 132kV powerlines	DA 38/88
	▪ service tracks and construction pads used during construction of the BCT Haul Road	DA 38/88
	▪ underground power line	DA 38/88
	▪ borrow pits used during construction of the BCT Haul Road	DA 38/88

The adjustments of the project boundary proposed under this modification will not involve any ground disturbance or construction activities. Boundary adjustments will be for administrative purposes. The boundary adjustments proposed under the modification are shown in Figure 3.2 and described further in Table 3.3.



Project boundary adjustment, ground disturbance not required
Existing bore
Proposed security fence
Existing mine infrastructure
Existing/operational rail
Proposed rail
Proposed new project area
Modification within existing project area
EPBC Approval boundary
Boggabri Project Approval Area
Mine infrastructure area
Biodiversity offset corridor
Leard State Forest

0 0.5 1 1.5 km

Figure 3.2
Proposed boundary adjustments

3.3 Operational adjustments within project area

A number of elements of the modification require adjustments to approved operational activities, or construction of new infrastructure within established operational areas to provide more efficiency for the sites operations. These aspects of the modification are discussed further in the following sections.

3.3.1 ROM Haul Road alignment adjustment

The 2010 EA outlined an indicative plan for ROM haul roads to connect the MIA with the western side of the mine. PA 09_0182 approved these routes, which included associated clean and dirty water drains.

The ROM haul route running along the western side of the existing rehabilitation area has since been subject to detailed design and, although it will still remain within the existing project boundary set by the project approval, the refined plan requires it to be located outside the approval boundary set by EPBC 2009/5256 (the EPBC approval). The refined haul route boundary is shown on Figure 3.3.

When constructed, this road will be approximately 100 m wide to accommodate light and heavy vehicle separation roads, bounded by earthen bunds and have cross fall to the edges to ensure water drains to dirty water drains located either on either side or one side of the roadway. Construction will consist of clearing, stripping topsoil, cut to fill earthworks and pavement.

3.3.2 Rejects Haul Road alignment adjustment

A branch from the ROM haul road described above to the reject handling area within the MIA is proposed. This will provide haul trucks accessing the reject handling area with more direct access to the MIA and a shorter travel route. It will also address safety issues associated with restricted line-of-sight for trucks turning from that area onto the ROM haul road. The proposed rejects haul route is shown on Figure 3.3.

3.3.3 Sedimentation dam extensions

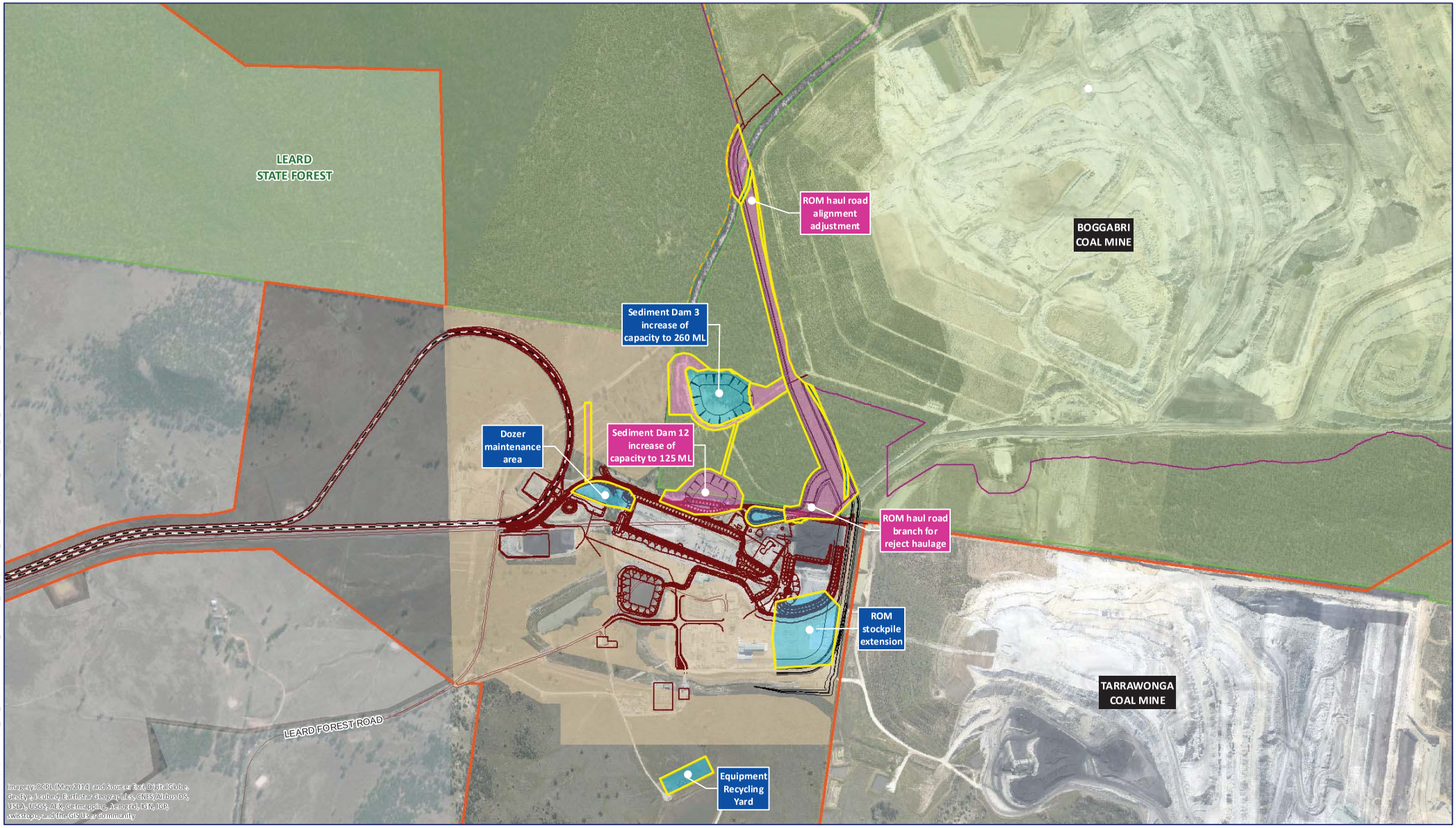
Following development of the water management plan and revision of the site water balance for the Boggabri Coal Project it was determined that the capacities of two existing sediment dams located to the north of the MIA were insufficient. These dams are known as Sediment Dam 3 (SD3) and Sediment Dam 12 (SD12). It was also determined that increasing the capacity of these dams will negate the need for construction of a new dam (SD13) that was approved under the project approval.

These dams capture run-off from overburden emplacement areas, stockpiles and rehabilitated areas to the east and will also capture run-off from the ROM and rejects haul road described in Sections 3.4.1 and 3.4.2. The dams are shown on Figure 3.3 and are described further in Section 3.5.

Construction works associated with the dams will consist of clearing, stripping topsoil and excavation of the water storage area. The dams would be lined with a layer of clay or similar impervious material to ensure interaction with groundwater does not occur.

3.3.4 Dozer service area

A hardstand area will be formalised within the MIA to service bulldozers and other earthmoving equipment as shown on Figure 3.3. This area has previously been used for equipment/plant storage and has previously been disturbed. It is proposed to level and compact this area to provide a stable working platform. A dedicated bulldozer access road will be established between this area and the proposed product stockpile, requiring extension of the existing culvert across ‘Nagero Creek’ that runs through the MIA.



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- Proposed security fence
- Proposed mine infrastructure
- Existing mine infrastructure
- Existing/operational rail
- Proposed rail
- Modification within existing project area - new impact
- Modification within existing project area - no new impact
- EPBC Approval boundary
- Boggabri Project Approval Area
- Mine infrastructure area
- Leard State Forest

0 0.25 0.5 0.75 km

Figure 3.3
Proposed MIA area modifications

3.3.5 ROM stockpile extension

It is proposed to extend the ROM stockpile by creating a secondary stockpile immediately to the south of the existing stockpile as shown on Figure 3.3. The new ROM area will measure approximately 270 by 320 m (7 ha) and is located in an existing disturbed area within the MIA previously been used for temporary equipment stockpiling and car parking.

Construction activities associated with the ROM extension construction will include cut and fill earthworks and pavement works. No clearing activities will be undertaken at this site as it will be located on an existing office/compound area that was used during construction activities associated with the project.

Once completed, the overall ROM stockpile area within the MIA will be approximately 75,000 square metres. This will provide BCPL with the ability to separate different grades of ROM coal within the ROM stockpiles and increase storage to provide for continued processing supply in the case of interruption of mining.

3.3.6 Equipment recycling yard

As shown on Figure 3.4, an equipment recycling yard is proposed to the south of the MIA in an area adjacent to Mine Water Dam 3 (MW3). This area will be used to store surplus or used equipment such as haul trucks, excavators and other plant and will be accessed via an existing access road.

Minor earthworks such as levelling, placing gravel capping, minor drainage works and construction of bunds will be undertaken to create this area. If required, suitable material will be imported from the mine as fill.

3.3.7 Boundary fence

A 1.2m stock fence will be constructed at the edge of the approved disturbance area as shown on Figure 2.1. The fence will consist of metal fence posts connected by three strands of barbed-wire. A 10m corridor containing a firebreak and access track will be constructed on the inside of the boundary fence. The boundary fence and associated access corridor will be constructed outside the biodiversity corridor between Boggabri Coal Mine and Maules Creek Coal Mine.

3.3.8 Additional portable fuel storages

The original EA for the Boggabri Coal Project included for transport and on-site storage of diesel fuel. Following this, BCPL identified the need to use temporary in-pit fuel storage facilities to house and dispense diesel, oils and lubricants for day-to-day operations. Modification 3, which was approved on 17 March 2014, provided for the use of an additional four fuel storages. These portable fuel storages are designed to meet the requirements of *Australian Standards (AS) 1940 – The Storage and Handling of Flammable and Combustible Liquids.* The storages are shaped like a shipping container and can be moved by a side lifting truck and are double walled to minimise the risk of spills.

The current modification application proposes to use an additional six fuel storages on site. This will assist the site to maintain its operations while production increases place additional fuel demands above the site's current fuel storage capacity.

3.4 Water management

A summary of surface water related changes resulting from the proposed modification is provided in Table 3.3 and shown on Figure 3.4.

Table 3.3 Summary of surface water related changes resulting from proposed modification

ID No.	Activity	Proposed surface water related changes	Proposed management measures
1	**Adjust project boundary at BCT**	▪ None	▪ None
2	**Adjust project boundary at Daisymede Property**	▪ None	▪ None
3	**Adjust project boundary at private haul road**	▪ None	▪ None
4	**Change alignment for ROM haul road** **Change alignment for Rejects haul road**	▪ Increase in SD12 catchment area to cater for haul road runoff (new area 29 ha). ▪ Change to alignment of clean and dirty water diversion drains along haul road required.	▪ Increase SD12 capacity to 125 Ml (refer to ID No. 7 below). ▪ Realignment of clean and dirty water diversion drains along haul road.
5	**Expand sediment dam 3**	▪ Increase SD3 capacity to 260 Ml. SD13 no longer required (previously proposed for Year 10 in the Part 3A EA). ▪ Realignment of dirty water diversion drains to SD3 required.	▪ Increase SD3 capacity to 260 Ml. SD13 no longer required. ▪ Realignment of dirty water diversion drains to SD3.
6	**Expand sediment dam 12**	▪ Increase SD12 capacity to 125 Ml to cater for changed catchment area (refer to ID No. 5 above) and to provide permanent storage capacity for water for reuse in the CHPP.	▪ Increase SD12 capacity to 125 Ml.
7	**Establish dozer maintenance area within MIA**	▪ No change to catchment areas for MIA sediment dams as hardstand area located in an existing disturbed area within the MIA. Runoff will be captured in the mine water management system. ▪ Extension of existing culvert crossing of unnamed creek running through MIA required.	▪ Hardstand area to be provided with dirty water drains to divert runoff to MIA sediment dams. ▪ Extend existing culvert crossing of 'Nagero Creek' running through MIA.
8	**Expand ROM stockpile within MIA**	▪ No change to catchment areas for MIA sediment dams as stockpile extension located in an existing disturbed area within the MIA. Runoff will be captured in the mine water management system.	▪ Stockpile extension to be provided with dirty water drains to divert runoff to MIA sediment dams.
9	**Establish equipment recycling yard**	▪ No change to catchment area for MW3. Equipment recycling yard is located within existing MW3 catchment and runoff will be captured in mine water management system. ▪ Minor increase in local catchment runoff to MW3 because of change from previous to impervious surface (considered insignificant to site water balance as yard footprint < 1 ha).	▪ Equipment recycling yard to be provided with dirty water drains to divert runoff to MW3.
10	**Construct boundary fence**	▪ Minor drainage works may be required for access roads (e.g. culvert crossings). ▪ Minor potential impacts related to construction activities.	▪ Erosion and sediment controls to be implemented in accordance with the approved SWMP.
11	**Additional portable fuel storages**	▪ Minor potential impacts related to spills.	▪ Pollution controls and spill response procedure implemented in accordance with the approved SWMP and Pollution Incident Response Management Plan.

To cater for proposed modifications to the ROM haul road and rejects haul road, diversion drains along these roads will be realigned. Coal contact runoff from the haul road itself will be directed to SD12 located in the MIA. Dirty runoff from the overburden emplacement will be conveyed via a culvert crossing beneath the haul road to SD3. Clean runoff from undisturbed catchments will continue to be diverted to natural watercourses, and will be separated from haul road and overburden runoff as much as practical.

To cater for proposed modifications within the MIA, diversion drains will be provided to direct runoff from the new hardstand areas to SD10, SD11 and SD12 located in the MIA.

To meet the requirements of the site water balance and to negate the need for SD13, SD3 will be upsized to 260 Ml. SD3 is an existing sediment dam capturing dirty runoff from active and rehabilitated overburden areas. SD3 is connected to MW3 via a rising main so that captured water can be reused onsite depending on stored water quality and the site water balance. The proposed 260 Ml capacity for this dam includes the 100 Ml that was assigned to SD3 and 159 Ml that was assigned to SD13 in the 2010 EA.

SD3 has been sized in accordance with the *Managing Urban Stormwater Volume 2E: Mines and Quarries Guidelines* (DECC 2008b). Sediment dams are sized for the 90th percentile 5 day storm event with an additional 50% allowance for sediment. Runoff coefficients of 0.4 and 0.75 are assumed for rehabilitated and active overburden areas respectively.

To cater for the modifications to the SD12 catchment area, SD12 will be upsized to 125 Ml. SD12 is an existing contaminated water sediment dam located in the MIA, and connected to MW3 via a rising main. The catchment area of SD12 is 29 ha. The additional 125 Ml proposed for this dam as part includes a 76 Ml 'temporary storage zone' to store runoff from the design storm event from the local catchment and a 49 Ml 'permanent storage zone' to store water on a long term basis for reuse in the CHPP. The 'temporary storage zone' will be maintained in a drawn down state by pumping to MW3 following a storm event, so that this storage zone has capacity to capture runoff from subsequent storm events.

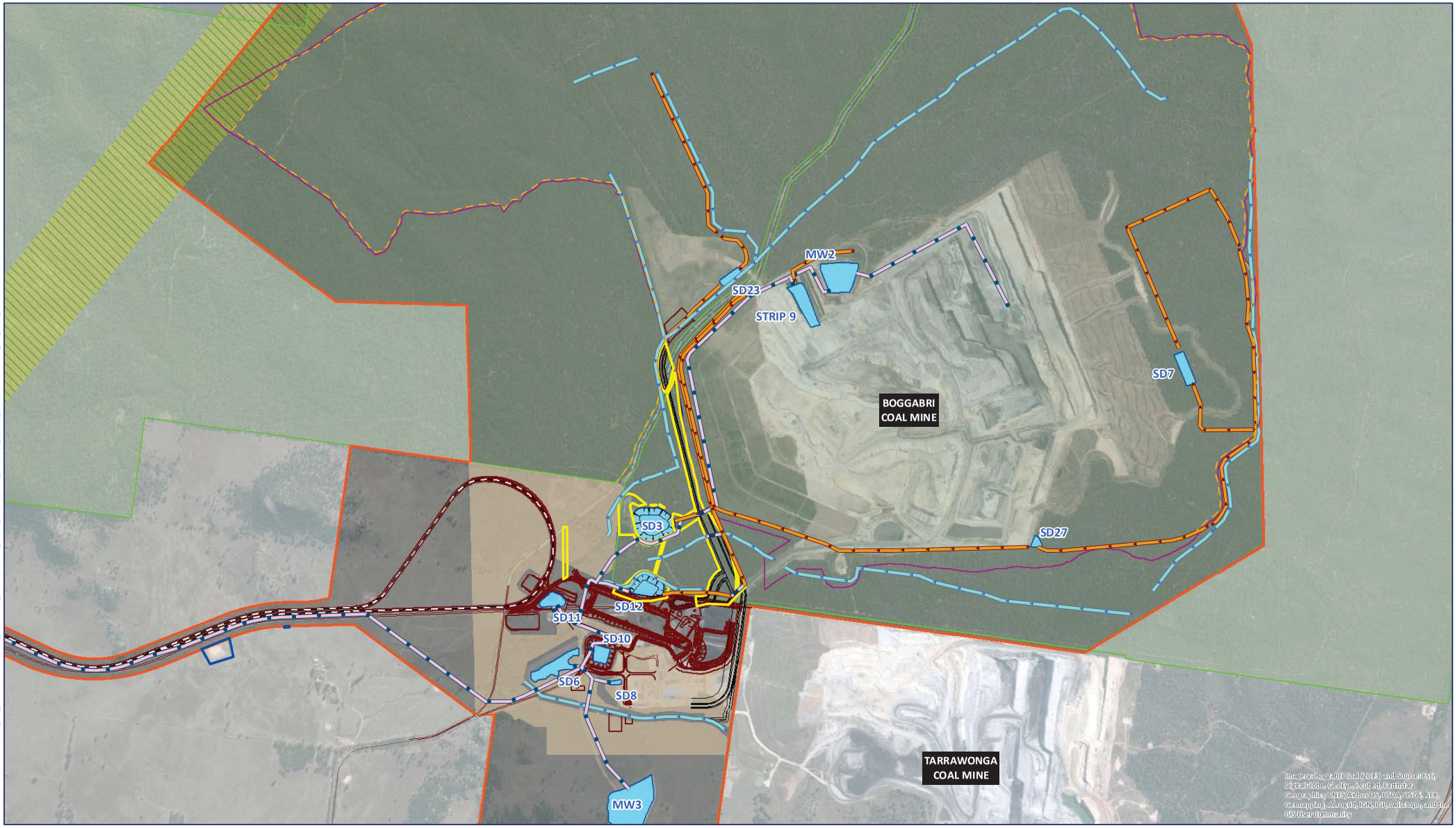
Contaminated water sediment dams SD10, SD11 and SD12 capturing runoff from the CHPP, MIA and rail loop areas have been sized at a minimum to capture runoff from the 100 year Average Recurrence Interval (ARI) 72 hour storm event with an additional 20% allowance for sediment. A runoff coefficient of 0.85 is assumed for these areas. SD12 has additional capacity on top of the minimum design criteria to store water on a long term basis for reuse onsite.

Table 3.4 summarises the proposed changes to sediment dams as part of the proposed modification.

Table 3.4 Summary of proposed changes to dam capacities for proposed modification

Dam ID	Dam description	Design criteria (minimum)	Existing capacity (Ml)	Approved capacity (Ml) ^	Proposed capacity for Modification (Ml)
SD3	Existing dirty water sediment dam capturing runoff from active and rehabilitated overburden areas. Connected to MW3 via rising main.	90th percentile 5 day storm event + 50% allowance for sediment	35 Ml	100 Ml	260 Ml
SD12	Existing contaminated water sediment dam capturing runoff from MIA. Connected to MW3 via rising main.	100 year ARI 72 hour storm event + 20% allowance for sediment	36 Ml	30 Ml	125 Ml
SD13	Proposed dirty water sediment dam to capture runoff from active overburden areas (proposed for Year 10 mine staging plan in Part 3A EA)	90th percentile 5 day storm event + 50% allowance for sediment	n/a	159 Ml	0 Ml (no longer required)

Note: ^ Approved capacities sourced from approved Surface Water Management Plan (BCPL 2014a)



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- Clean water drain
- Dirty water drain
- Pump pipeline
- Culvert
- Proposed security fence
- Proposed mine infrastructure
- Existing mine infrastructure
- Dams/water storage
- Proposed new project area
- Modification impact area
- EPBC Approval boundary
- Boggabri Project Approval Area
- Mine infrastructure area
- Biodiversity offset corridor
- Leard State Forest

0 0.25 0.5 0.75 km

Figure 3.4
Surface water management system

4. Regulatory framework

This Section of the EA provides a description of the regulatory framework under which Boggabri Coal Mine operates and statutory considerations applicable to the proposed modification.

4.1 Approval pathway

4.1.1 Development consent

The NSW Minister for Local Government and Minister for Planning (now NSW Minister for Planning) granted development consent DA 36/88 to the Boggabri Coal Joint Venture on 22 August 1989 under Section 101 in Part 4 of the EP&A Act. This authorised the extraction of coal from the Boggabri Coal Mine for a period of 21 years following the date of the grant of a coal lease (CL) in respect of the development. CL 368 was granted by the Minister or Natural Resources in November 1990.

Modifications to DA 36/88 were granted in 2009, 2011 and 2012 for the alternation of mine plans. DA 36/88 was surrendered by BCPL on 31 December 2013 following the approval of PA 09_0182.

4.1.2 Project Approval

As discussed in Section 1.1, a new project approval under Part 3A of the EP&A Act was granted for the Boggabri Coal Project on 18 July 2012. This approval (the project approval) superseded DA 36/88 as the planning approval for Boggabri Coal Mine. Pursuant to Condition 14 of PA 09_0182, BCPL surrendered DA 36/88 on 17 July 2013. The project approval allows mining operations to be conducted in accordance with the Boggabri EA until the end of December 2033.

4.2 Commonwealth legislation

An approval under the EPBC Act is required for any action that is likely to have a significant impact on Matters of National Environmental Significance (MNES). Nine MNES are listed under Part 3 of the EPBC Act of which the following three are likely to be relevant to the Boggabri Coal Mine:

- listed threatened species and ecological communities
- migratory species
- protection of water resources from coal seam gas development and large coal mining development.

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, BCPL submitted a referral under Section 68 of the EPBC Act to determine whether the Boggabri Coal Project was a controlled action. On 5 February 2010, the Department of the Environment (DoE) (formerly 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 (approval no. 2009/5256 – the EPBC approval).

The proposed modification includes activities that would occur inside and outside the EPBC approval area, as outlined in Table 4.1.

Table 4.1 Summary of proposed modification activities

New No	Proposed activity	Within EPBC approval area?	Within EPBC offset area?
1	▪ **Adjust project boundary at BCT**	No(1)	No
2	▪ **Adjust project boundary at Daisymede Property**	No(1)	No
3	▪ **Adjust project boundary at private haul road**	No(1)	Partial(4)
4	▪ **Change alignment for ROM haul road** ▪ **Change alignment for Rejects haul road**	Partial (2)	No
5	▪ **Expand sediment dam 3**	No(1)	No
6	▪ **Expand sediment dam 12**	No(1)	No
7	▪ **Establish dozer maintenance area within MIA**	No(1)	No
8	▪ **Expand ROM stockpile within MIA**	No(1)	No
9	▪ **Establish equipment recycling yard**	No(1)	No
10	▪ **Construct boundary fence**	Yes(2)	NO
11	▪ **Additional portable fuel storages**	Partial	No

(1) These areas are located in areas that contained no MNES and were therefore not subject to assessment and approval under the EPBC Act

(2) These activities would occur both inside and outside the EPBC approval area. In areas outside the EPBC approval area, these activities would occur in areas where no MNES have been identified and therefore would not be subject to assessment or approval under the EPBC Act.

(3) Approximately 0.2ha of offset area would be included in the project area under this activity, although no ground disturbance would occur (refer to Section 6.1).

Condition 5 of the EPBC approval requires BCPL to define staged disturbance limits during the life of the mine, that must be adhered to. BCPL provided updated information required under this condition to DoE in a memo dated 26 March 2014, accounting for the proposed changes in EPBC approval disturbance limits that would occur under the proposed modification.

Under Condition 11 of the EPBC approval, BCPL is required to consult with DoE regarding activities that may occur in the offset area established under the approval (the EPBC offset area). The proposed modification would involve extension of a small section of the project area into the EPBC offset area to include existing infrastructure build under DA 38/88 (refer to Section 3.3.1). BCPL included details of this action in the letter to DoE described above.

Through liaison with DoE it was determined that the proposed modification does not constitute a controlled action. A letter was sent to DoE notifying them of this and the proposed modification on 3 December 2014.

4.3 State legislation

4.3.1 Environment Planning and Assessment Act, 1979

The project approval was granted under the now repealed Part 3A of the EP&A Act. Consequently Boggabri Coal Mine constitutes as a “transitional Part 3A project” pursuant to the conditions and provisions in Schedule 6A of the EP&A Act.

Clause 3 of the Schedule 6A provides that Part 3A of the EP&A Act continues to apply to and in respect of "transitional Part 3A projects" following its repeal. That is, Part 3A of the EP&A Act continues to apply, notwithstanding its repeal.

Approval for the proposed modification is therefore sought under Section 75W of the EP&A Act, which states:

75W Modification of Minister's Approval:

> *"1. 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 the Part.*
>
> *2. 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.*
>
> *3. The Minister may modify the approval (with or without conditions) or disapprove of the modification."*

Section 75W(2) states that the Minister's approval is not required where the modified project will be consistent with the approved project. BCPL does not consider the proposed modification to be entirely consistent with the project approval. Accordingly, BCPL is seeking a modification to PA 09_0182 under Section 75W of the EP&A Act.

The proposed modification does not represent a radical departure from the existing project approval, consequently it is considered that the Minister is able to modify the approval under Section 75W of the EP&A Act.

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 art 3A of the EP&A act. Pursuant to Section 75U, the following authorisations are not required for the Modification:

- a permit under Section 20, 205 or 2019 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*
- a water use approval under Section 89, a water management work approval under Section 90 or an activity approved under Section 91 if the *Water Management Act 2000* (WM Act).

The matters that will ordinarily be considered in these applications for these authorities have been addressed in this EA and the 2010 EA.

4.3.2 Other NSW legislation

Consideration of other legislation that may be applicable to the proposed modification is outlined in Table 4.2.

Table 4.2 NSW Legislation

Legislation	Key requirements	Relevance to the project
Mining Act 1992	▪ This act establishes a framework for the regulation of exploration and mineral extraction, including: ▸ Compensation of landholders for loss or damage ▸ Means for an appropriate return to the state from mineral resources ▸ Measures to ensure the appropriate rehabilitation of mine sites. ▪ Under this act, exploration and mining must be undertaken under an authorisation or lease. ▪ Under Section 6 of this act, an authorisation is also required for '*the construction, maintenance or use of any reservoir, dam (including a tailings dam), drain or water race*'	▪ Boggabri Coal Mine operates under CL 368 awarded under this act. ▪ Boggabri Coal Mine operates under a Mining Operations Plan (MOP) developed in accordance with CL 368 and this act. ▪ The modifications to water storages included under the proposed modification will be located entirely within CL 368. ▪ BCPL will amend the Boggabri Coal Mine MOP to incorporate the activities included in the proposed modification, if it is approved.
Noxious Weeds Act 1993	▪ The *Noxious Weeds Act 1993* provides for a coordinated approach to the removal and control of scheduled noxious weeds across the NSW.	▪ No permits or approvals are required under this Act, but it is the responsibility of BCPL to provide for the removal and proper disposal of any listed weeds found within the project area. Noxious weeds are discussed and management measures proposed in Section 6.1.
Protection of the Environment Operations Act 1997 (PoEO Act)	▪ This act establishes a regime for the prevention of pollution and a regulatory framework for environmental protection. ▪ EPLs are required from the NSW Office of Environment and Heritage (OEH) under this Act for 'scheduled activities' and 'scheduled development work'.	▪ The NSW Environmental Protection Authority (EPA) licences the operation of the Boggabri Coal Mine. ▪ EPL covers the following scheduled activities: ▸ Coal works ▸ Crushing, grinding or separating ▸ Mining for coal ▪ The proposed modification does not cover or modify any scheduled activity undertaken at the site. ▪ The EPA will determine any requirements for modification of the Boggabri Coal Mine EPL as part of the approval process for the proposed modification.
Roads Act 1993	▪ Development that affects a public road, Crown road, highway, main road, freeway or tollway requires approval from the NSW Roads and Maritime Services (RMS) or the local council under this Act.	▪ The proposed modification does not involve any activities that will affect a public road or highway, therefore approval is not required under this act.
Threatened Species Conservation Act 1995 (TSC Act)	Approval is required to: a) harm any animal that is of, or is part of, a threatened species, population or ecological community b) pick any plant that is of, or is part of, a threatened species, population or ecological community c) damage critical habitat, or d) damage habitat of a threatened species, population or ecological community.	▪ The proposed modification will not involve a significant impact to any threatened species, population or endangered community and therefore approval is not required under this act.

Legislation	Key requirements	Relevance to the project
Water Management Act 2000 (WM Act)	■ This Act governs access to, and the use of, water in NSW where water sharing plans (WSP) have commenced. ■ The following WSPs apply to 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 ▸ Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Source 2011. ■ Under these WSPs, several approvals may be applicable, including: ▸ Water Access Licence (WAL), which approves access to a share of a water source. ▸ Works Approval, which applies to water supply drainage or flood mitigation works. ▸ Water Use Approval, which applies to specific uses of extracted water. ▸ Controlled Activity Approval, which applies to works in, on or under waterfront land (40 m from the upper bank). ■ If groundwater extraction is required for the project, an Aquifer Interference Approval may be required for the work under clause 91F of the WM Act.	■ BCPL holds sufficient WALs for its current water take and this would not change under the proposed modification. ■ A Works Approval is not required, as the proposed modification does not involve any activities located on floodplain areas. A works approval is not required for projects approved under Part 3A of the EP&A Act. ■ A Water Use Approval is not required for the proposal as activities subject to approval under the EP&A Act are exempt. ■ The proposed modification does not involve work within 40 m of the upper bank of a creek, therefore a controlled activity approval under the WM Act.
Water Act 1912	■ If an activity is being undertaken in an area where a gazetted WSP is not in place, a licence or permit is required to extract water from a surface or groundwater system, including dewatering of excavations.	■ The project area is covered by a number of WSPs and therefore this Act does not apply. ■ Under Section 167(1) of this Act, approval is required for works undertaken on a floodplain such as the Namoi River Floodplain. As the proposed modification does not involve any activities on a floodplain, approval under this act is not required.

4.4 State environmental planning policies

Under Section 75R(2)(b) of the EP&A Act, State Environmental Planning Policies (SEPPs) apply to projects which Part 3A applies.

Given this, various SEPPs potentially of relevance to Boggabri Coal Mine have been identified and discussed.

4.4.1 Mining, petroleum production and Extractive Industries 2007 (Mining SEPP)

The aims of the Mining SEPP include providing for the proper management and development for mineral, petroleum and extractive mineral resources for the social and economic welfare of the State and to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive mineral resources and to establish appropriate planning controls to encourage ecologically sustainable development (ESD) and establishes relevant matters for consideration by a consent authority.

The considerations set out by clauses 12 to 17 of the Mining SEPP (which sets out matters for consideration in development applications) are examined and reported upon throughout this EA. This EA undertakes the assessments required by clause 12 of the Mining SEPP.

4.4.2 SEPP 33 – Hazardous and Offensive Development

SEPP 33 – Hazardous and Offensive Development (SEPP33) requires the consent authority to consider the merits of proposed activities including the location of the development and the way in which it is to be carried out. A review of the relevant components of this modification has confirmed that the development is not considered to be potentially hazardous or offensive. As such, a detailed preliminary hazardous analysis is not required.

Further, as per SEPP 33 applies only to proposals that are potentially dangerous or offensive and the proposed development does not constitute a potentially hazardous or offensive industry under clause 3, SEPP 33 does not apply to the proposed modification.

4.5 Local environmental plans

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 LEP.

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.

The proposed modification will be carried out in lands zoned within RU1. Open cut mining is permissible with development consent within zone RU1 and therefore the proposed modification is considered to be consistent with the Narrabri LEP.

4.6 Other considerations

4.6.1 New England North West Strategic Regional Land Use Plan

The New England North West Strategic Regional Land Use Plan (SRLUP) was published by the NSW DP&I in 2012 covering a number of LGAs including the Liverpool Plains, Gunnedah, Moree Plains and Narrabri LGAs (DP&I 2012). The Plan represents one component of the Government's broader Strategic Regional Land Use Policy which has been developed to address land use conflicts in regional areas.

An integral component of the England North West Strategic Regional Land Use Plan is the introduction of a new decision making framework, referred to as the 'gateway process'. This process involves an early stringent assessment of the potential impacts of mining and coal seam gas development on agricultural land and water resources.

The gateway process does not apply to the proposed modification, as it will not involve any additional mining activities in addition to those approved under the project approval.

5. Consultation

5.1 Consultation for the modification

Table 5.1 outlines the stakeholder consultation activities undertaken for the modification.

Table 5.1 Stakeholder consultation

Stakeholder	Summary of consultation	Issues raised	How addressed in this EA
NSW Department of Planning and Environment (DP&E)	▪ Briefing of proposed modification in October 2014 ▪ Pre-submission review of proposed modification in November 2014 ▪ Phone conversations and letter written on 3 December 2014	▪ Potential for impacts to biodiversity ▪ Potential for impacts to cultural heritage ▪ Potential for air quality impacts. ▪ Methods for impact assessment.	▪ Section 6
NSW Office of Water (NOW)	▪ Phone briefing of proposed modification in November 2014 ▪ Meeting to discuss proposed modification in November 2014.	▪ Construction activities on Namoi River floodplain	▪ Section6.3
Registered Aboriginal Parties	▪ Meeting to discuss proposed modification on 16 October 2014 ▪ Additional information and a request for information regarding cultural heritage values was provided to the RAPs on 23 October 2014 ▪ A meeting was held with the Gomeroi Traditional Custodians on 17 November 2014, the elders of this group are also RAPs ▪ An Aboriginal Stakeholder Community Forum was held in Gunnedah on 18 November 2014 to discuss the Cultural Heritage Assessment for the proposed modification ▪ A letter was sent to RAPs who did not attend the meetings held in November 2014 or provided comments previously	▪ Potential impacts to cultural heritage	▪ Section 6.3 and Appendix C
Commonwealth government	▪ On-site briefing in November 2014 and letter sent in November 2014	▪ Impacts to MNES	▪ Section 4.2 ▪ Section 6.1

5.2 Ongoing stakeholder engagement

BCPL undertakes a range of ongoing stakeholder engagement activities as part of its ongoing operations, including:

- regular meetings of the Boggabri CCC
- quarterly Aboriginal Stakeholder Consultative Forums
- quarterly meetings with Gomeroi Traditional Custodians
- updates to the BCPL website
- distribution of regular community newsletters
- recurring meetings with neighbouring land owners and mining operations
- preparation of regular reports, such as the AEMR, which is distributed to a range of stakeholders.

6. Environmental impact assessment

6.1 Biodiversity

A detailed Biodiversity Assessment was prepared for the proposed modification and is included as Appendix B. This section provides a summary of that assessment.

The assessment included significance assessments for threatened species, populations or communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) or *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)* that were known or predicted to occur in the proposal locality (within a 10 km radius of the modification area), that had a moderate to high likelihood of occurring in the area, based on suitable habitat and that were likely to be impacted upon by the construction.

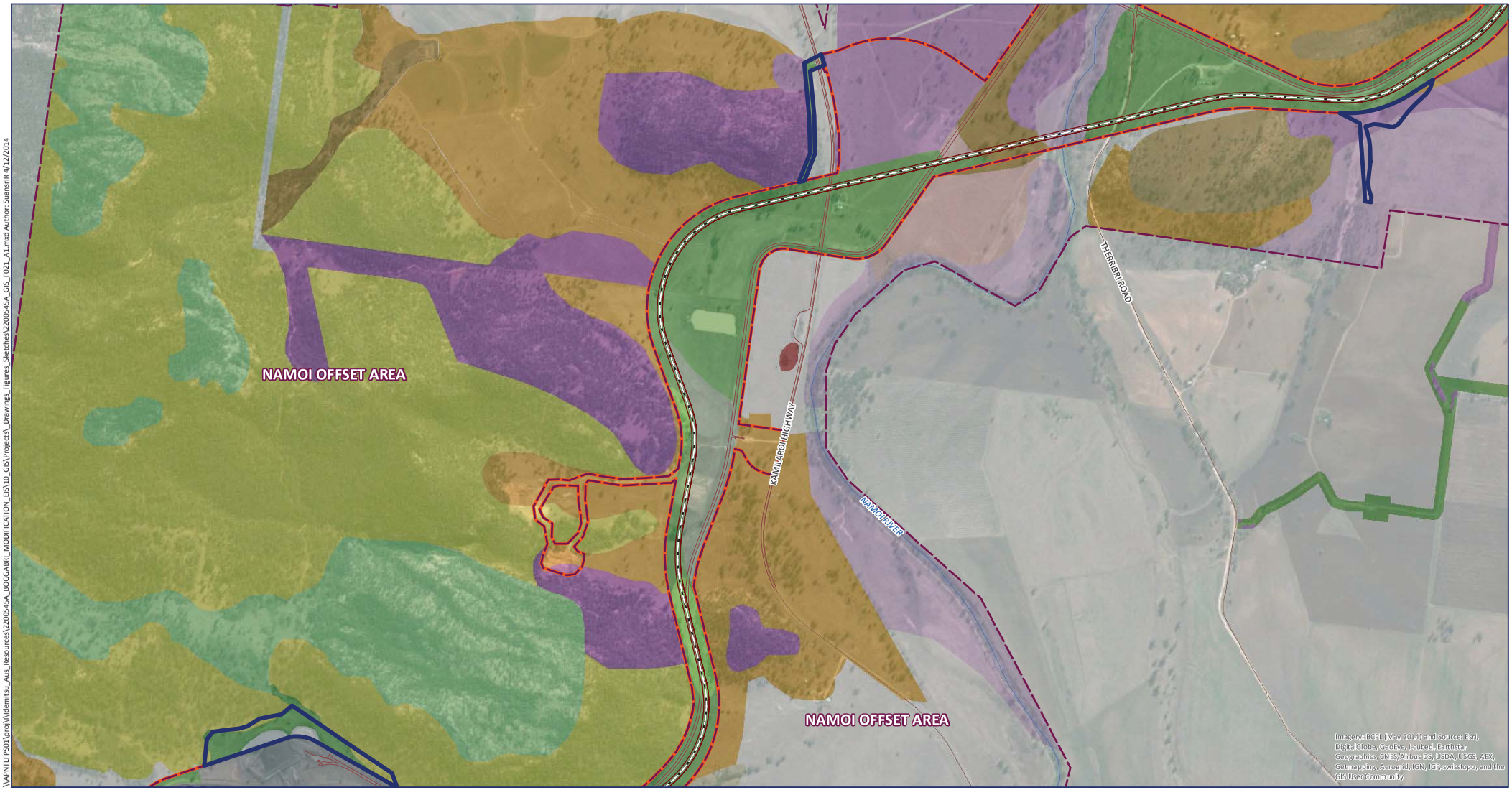
6.1.1 Existing environment

Boggabri Coal Mine is located in the Brigalow Belt South bioregion. This region covers an area of approximately 27,196,933 ha encompassing the towns of Baradine, Binnaway, Coonabarabran, Dubbo, Gunnedah, Merriwa, Moree and Narrabri (NSW National Parks and Wildlife Service 2003).

The biodiversity values of the project area have been extensively assessed and documented from concept studies completed in 1976, to detailed surveys recently completed for the continuation of mining submission. Ecological surveys were completed within the locality for the following studies:

- Boggabri Coal – Biodiversity Monitoring, February 2006 – August 2012 (Parsons Brinckerhoff 2011a).
- Continuation of Boggabri Coal Mine – Biodiversity Impact Assessment (Parsons Brinckerhoff 2010a).
- Preliminary vegetation mapping and survey report for Boggabri Coal lease (Parsons Brinckerhoff 2009).
- Flora and Fauna Summary of the Boggabri Coal Project (Parsons Brinckerhoff 2005).
- Results of Fauna survey work undertaken by the NSW National Parks and Wildlife Service within Leard State Forest (Pennay 2001).
- Report on the botany, wildlife and ecology of the Leard State Forest. Draft Environmental Impact Statement for Amax-BHP Joint Venture Boggabri Coal Project (James B. Croft and Associates 1983).

Biodiversity values including the flora, fauna and vegetation communities that occur within the project area are described further in Appendix B. Vegetation communities that occur within the proposed new project area are shown on Figures 6.1a-c.



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Endangered ecological communities
- Plains Grassland
- Weeping Myall Woodland
- White Box - White Cypress Pine grassy woodland
- Yellow Box - Blakelys Red Gum grassy woodland

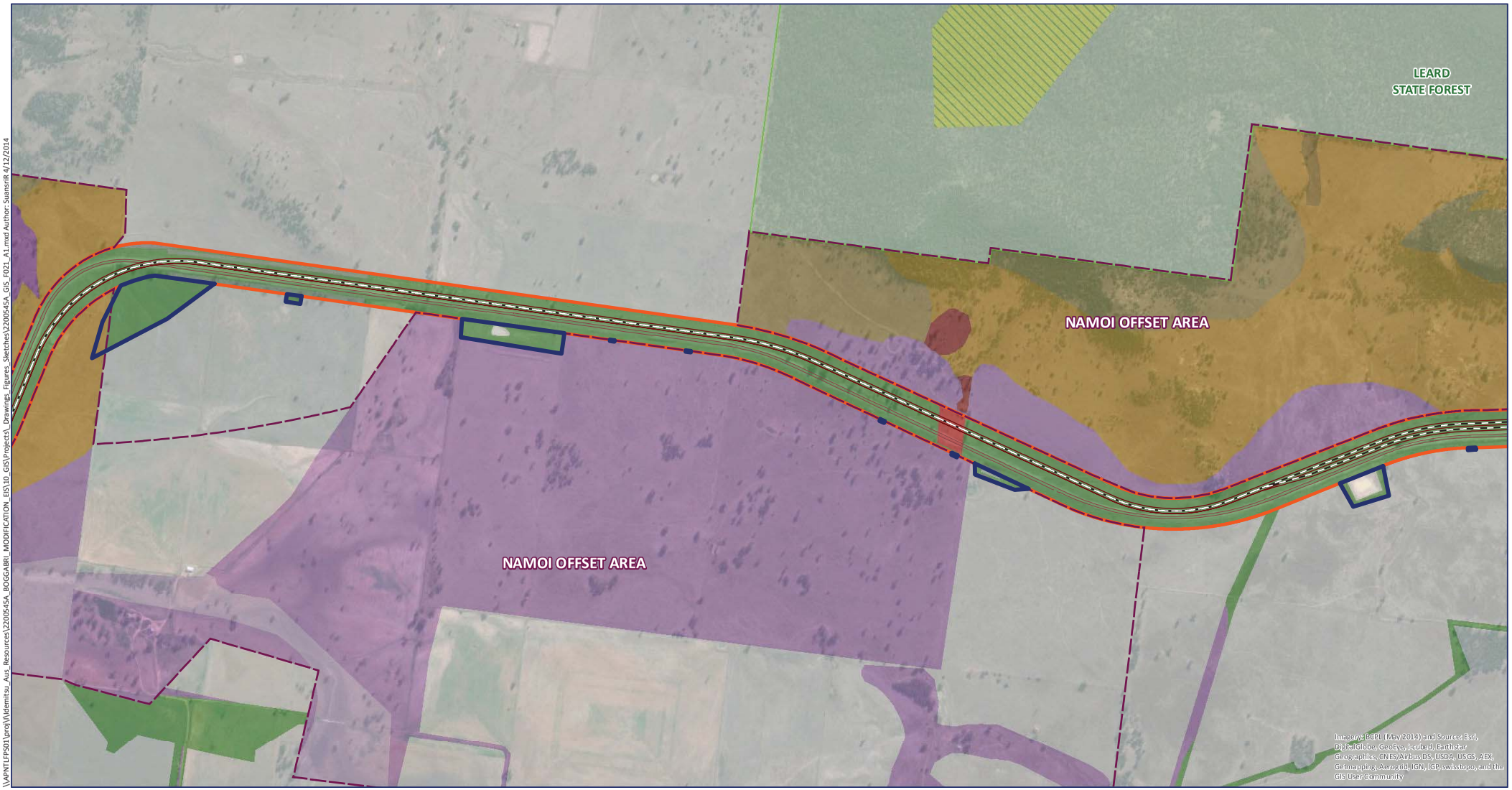
All other communities
- Blue-leaved Ironbark heathy woodland
- Derived native grassland
- Dwyers Red Gum woodland
- Exotic grassland
- Pilliga Box - Poplar Box - White Cypress Pine grassy open woodland
- River Red Gum riparian woodlands and forests
- Silver-leaved Ironbark heathy woodland
- White Box - Melaleuca riparian forest
- White Box - Narrow-leaved Ironbark - White Cypress Pine shrubby open forest
- White Pine - Narrow-leaved Ironbark Shrub - Grass Open Forest SW

- Existing mine infrastructure
- Existing/operational rail
- Proposed rail
- Road

- Proposed new project area
- Boggabri Project Approval Area
- Namoi offset area

0 0.25 0.5 0.75 km

Figure 6.1a
Vegetation communities within the proposed new project area



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Endangered ecological communities
- Weeping Myall grassy open woodland
- Weeping Myall Woodland
- White Box - White Cypress Pine grassy woodland
- Yellow Box - Blakelys Red Gum grassy woodland

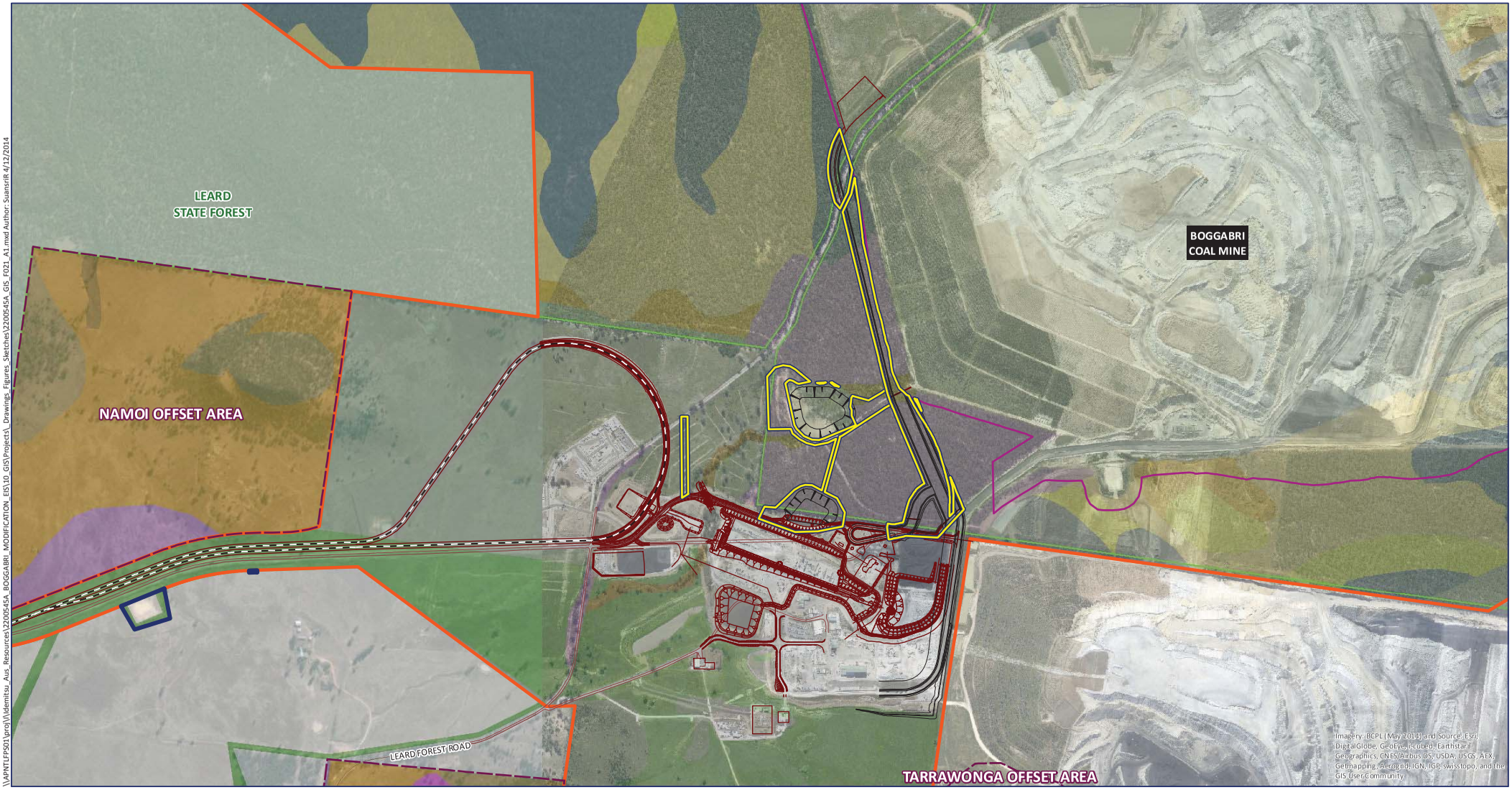
All other communities
- Derived native grassland
- Exotic grassland
- Pilliga Box - Poplar Box - White Cypress Pine grassy open woodland
- River Red Gum riparian woodlands and forests
- Silver-leaved Ironbark heathy woodland
- White Pine - Narrow-leaved Ironbark Shrub - Grass Open Forest SW

- Existing mine infrastructure
- Proposed rail
- Road

- Proposed new project area
- Boggabri Project Approval Area
- Namoi offset area
- Biodiversity offset corridor

0 0.25 0.5 0.75 km

Figure 6.1b
Vegetation communities within the proposed new project area



Endangered ecological communities
- White Box - Narrow-leaved Ironbark - White Cypress Pine grassy open forest
- White Box - White Cypress Pine grassy woodland
- Yellow Box - Blakelys Red Gum grassy woodland

All other communities
- Derived native grassland
- Exotic grassland
- Narrow-leaved Ironbark - White Cypress Pine shrubby open forest
- Pilliga Box - Poplar Box - White Cypress Pine grassy open woodland
- Regrowth - White Cypress Pine
- White Box - Narrow-leaved Ironbark - White Cypress Pine shrubby open forest
- White Pine - Narrow-leaved Ironbark Shrub - Grass Open Forest SW
- Proposed mine infrastructure
- Existing mine infrastructure
- Proposed rail
- Road
- Proposed new project area
- Modification within existing project area
- Boggabri Project Approval Area
- Namoi offset area
- EPBC approval boundary

0 0.25 0.5 0.75 km

Figure 6.1c
Vegetation communities within the proposed new project area

6.1.2 Potential impacts

6.1.2.1 Vegetation clearing

Clearing of native vegetation is listed as a key threatening process under both the NSW TSC Act and the Commonwealth EPBC Act. The proposed modification will require additional clearing of native vegetation, beyond that previously approved under PA 09_0182, for construction of new infrastructure near the MIA such as the expansion of SD 3 and SD12, and the ROM haul road.

This will involve the removal 22.7 ha of native vegetation and approximately 1.2 ha of an EEC (Yellow Box-Blakey's Red Gum grassy woodland) listed under the TSC Act and EPBC Act (refer to Table 6.1). These vegetation communities are shown on Figures 6.1a-c.

An area of 12.9 ha that would be included in the proposed new project boundary is located within the biodiversity offsets defined in the Boggabri Coal Mine Biodiversity Offsets Strategy (Parsons Brinckerhoff 2010b). This area contains predominantly disturbed and exotic vegetation and would not be cleared, but would be included in the new project boundary to accommodate previously constructed infrastructure. As such, this area will not be impacted and has not been included in the impact assessments prepared for the proposed modification (refer to Appendix B).

Table 6.1 Potential loss of native vegetation within the proposed modification area

Vegetation community	TSC Act listing[1]	EPBC Act listing[2]	Total Modification Area (ha)[3]	Area not previously assessed (ha)[4]	Area within offsets (ha)[5]
Exotic grassland with scattered trees	–	-	15.5	-	8.4
Derived native grassland	-	-	0.8	0.8	-
Pilliga Box – Poplar Box White Cypress Pine grassy open forest	–	-	19.0	17.2	1.7
White Box White Cypress Pine grassy woodland[1]	E	-	0.7	-	0.7
River Red Gum riparian woodlands and forests	–	-	0.9	-	0.9
White Box – Narrow-leaved Ironbark – White Cypress Pine shrubby open forest	–	-	1.2	-	1.2
Yellow Box-Blakely's Red Gum grassy woodland[2]	E	CE	1.2	1.2	-
Narrow - leaved Ironbark - White Cypress Pine shrubby open forest	-	-	3.5	3.5	-
Total clearing for Modification			**42.8**	**22.7**	**12.9**
Total Native Vegetation within Modification area			**27.3**	**22.7**	**4.5**
Total TSC Act EEC clearing for Modification			**1.9**	**1.2**	**0.7**
Total EPBC Act EEC clearing for Modification			**1.2**	**1.2**	**-**

(1) TSC Act, E = Endangered.

(2) TSC Act, E = Endangered and EPBC Act, CE = Critically Endangered.

(3) For the purpose of this EA, Total modification area (ha) = all sites assessed within the Biodiversity Assessment (Appendix B)

(4) For the purpose of this report, Area not previously assessed (ha) = all sites for which new impacts (Sites 4-9 only) to biodiversity has not yet been assessed within the existing EA (PA 09_0182) (Appendix B)

(5) For the purpose of this report, Area within offsets = Total Modification Study Area (ha) within Namoi River Offsets associated with the proposed Project Boundary adjustments for existing disturbances and not subject to new impacts(Appendix B).

Loss of vegetation and habitats result in a range of direct and indirect impacts to vegetation communities and species of plant and animal including:

- Loss of 22 individuals of the threatened flora species, *Tylophora linearis*
- reduction in the extent of vegetation communities and associated habitats
- loss of local populations of species
- fragmentation of remnants of vegetation communities or local populations of individual species
- increased edge effects and habitat for invasive species
- reduction in the viability of ecological communities resulting from loss or disruption of ecological functions (e.g. increased desiccation, light penetration, herbivore, weed invasion, predation, and parasitism)
- destruction of flora and fauna habitat and associated loss of biological diversity (habitat removal may include removal of hollow bearing trees, loss of leaf litter layer, and resultant changes to soil biota)
- soil exposure and altered water flow patterns resulting in increased erosion and sedimentation.

The proposed modification will have an impact on flora and fauna habitats with the removal or modification of an additional 22.7 ha of native vegetation that is outside the current project boundary.

The impact assessments undertaken as part of the Biodiversity Assessment (refer to Appendix B) confirm that the removal of 22.7 ha of native vegetation is unlikely to have a significant impact upon any threatened species, populations or communities.

6.1.2.2 Impacts to offset areas

BCPL has developed a robust Biodiversity Offset Strategy (BOS) for the Boggabri Coal Project (Boggabri EA Offset Strategy) (Parsons Brinckerhoff 2010b, 2011b).

Some components of the proposed modification are within the identified biodiversity offsets in the Boggabri Coal Mine BOS. These include adjustments to the project boundary at the BCT, Daisymede bore and private haul road to incorporate existing infrastructure (refer to Section 3.2). These proposed modifications will require revisions to the BOS, as approved under PA 09_0182.

In addition to the proposed project boundary modifications, the proposed modification will result in new impacts within or near the currently approved project boundary (refer to Section 3.3.). These new impacts will require additional offsets and are discussed in detail in Appendix B.

In March 2014, the Draft NSW Biodiversity Offsets Policy for Major Projects (Draft Policy) was released for public exhibition. The Draft Policy has now been finalised (Offset Policy 2014) and will be implemented from 1 October 2014 when it will be mandatory for all state significant developments. The Offset Policy 2014 reduced the number of offset principles to six and introduced the use of a new assessment methodology, the Framework for Biodiversity Assessment (FBA).

While BCPL is committed to providing offsets for the impacts of the proposed modification in accordance with the approved BOS, the recent NSW Biodiversity Offsets Policy for Major Projects (Offset Policy 2014) has been considered and is discussed further in Section 6.1.3.

The extent of the proposed modification impacts to areas included under the BOS is presented in Table 6.2.

Table 6.2 Vegetation clearing and associated offset requirements

Vegetation community	TSC Act listing[1]	EPBC Act listing[2]	Area within offsets (ha)[3]
Exotic grassland with scattered trees	–	-	8.4
Pilliga Box – Poplar Box White Cypress Pine grassy open forest	–	–	1.7
White Box White Cypress Pine grassy woodland ()1	E	-	0.7
River Red Gum riparian woodlands and forests	–	-	0.9
White Box – Narrow-leaved Ironbark – White Cypress Pine shrubby open forest	–	-	1.2
Total area of Modification within offsets			**12.9**
Total Native Vegetation within offsets			**4.5**
Total area of TSC Act CEEC within Modification offsets			**0.7**
Total area of EPBC Act CEEC within Modification offsets			**-**

(1) TSC Act, E = Endangered.

(2) EPBC Act, CE = Critically Endangered.

(3) For the purpose of this report, Area within offsets = Total Modification Study Area (ha) (as defined in Appendix B) within Namoi River Offsets associated with the proposed Project Boundary adjustments for existing disturbances and not subject to new impacts.

6.1.2.3 Other impacts

Fauna injury or death could occur as a result of the proposed activities during the construction phase, particularly when vegetation and habitats are being cleared. Vehicle strike during construction, operation and maintenance works is not considered to be significant and is not likely to significantly increase as a result of the proposed modification.

The construction phase of the proposed modification has the potential to disperse weeds into areas where weed species do not currently occur. The most likely causes of weed dispersal will include earthworks, movement of soil and attachment of seed (and other propagules) to vehicles and machinery. This may, in turn, reduce the habitat quality of the sites for threatened species. Dispersal of weeds during the operation phase will relate generally to maintenance activities.

The invasion of exotic perennial grasses, such as *Chloris gayana** and *Lolium perenne** which was recorded abundantly within the areas that will be affected by the proposed modification. This is recognised as a Key Threatening Process (KTP) under the TSC Act. The proposed modification has the potential to result in further spread of these species.

KTP's are listed under Schedule 3 of the NSW TSC Act and Commonwealth EPBC Act. A process is defined as a KTP if it threatens or may threaten the survival, abundance, or evolutionary development of a native species or ecological community. A process can be listed as a KTP if it could cause a native species or ecological community to become eligible for adding to a threatened list (other than conservation dependant), or cause an already listed threatened species or community to become more endangered, or if it adversely affects two or more listed threatened species or ecological communities.

The proposed modification will result in the loss of native vegetation and will thus contribute to one KTP - clearing of native vegetation and land clearance. The proposed modification is not likely to significantly

increase the introduction or spread of exotic weed species, if undertaken in accordance with mitigation measures discussed in Section 6.1.3.

6.1.3 Mitigation measures

6.1.3.1 Biodiversity management plan

Impacts associated with biodiversity will be managed through the implementation of the BCPL Biodiversity Management Plan (BMP) (BCPL 2012). These are detailed in Appendix B.

6.1.3.2 Proposed biodiversity offsets

BCPL is currently refining its BOS in accordance with Condition 43 of PA 09_0182, in consultation with the DoE. The final offset package including refined vegetation mapping resulting from the proposed modification, independent field validation and baseline ecological monitoring will be incorporated into a revised BOS and Biodiversity Management Plan.

BCPL is committed to the approved BOS development in accordance with the consolidated PA 09_0182. This commitment includes revisions to the BOS resulting from the refined vegetation mapping identified after the development of the BOS.

Offsets will be provided for the proposed modification in accordance with the quantum (ratio) and principles of the existing BOS. The BOS will be amended to ensure the lands previously identified within the Namoi River Offset Area and subsequently excised for the proposed new project area will be replaced by an alternative offset. It is considered that the quantum of this transfer will comprise up to 4.5 ha of native vegetation and threatened species habitat.

The BOS is currently undergoing an independent verification process and will be subject to further revisions following the implementation of the regional offset strategy and the identification and provision of an additional 1,103 ha residual offset requirements (as per Condition 39 of PA 09_0182).

The relatively minor changes to the Namoi River Offset Area resulting from the proposed modification and associated refined vegetation mapping will be incorporated into the final amended BOS and BMP.

BCPL considers the relatively minor impacts described from the proposed modification to be adequately offset by the substantial BOS approved as part of PA 09_0182. The minor modifications are considered part of the Boggabri Coal Project's detailed design and project refinement, as is expected for a project of this scale and significance. Nevertheless, BCPL is currently securing additional offsets to meet its residual offset commitment of 1,103 ha. In combination with this additional offset commitment, BCPL will provide an additional offset for the impacts of the proposed modification. This offset will be consistent with the final ratio of 5.6.1 specified in the approved BOS which has been developed in accordance with the *OEH Principles for Biodiversity Offsets* and consideration of the recent NSW Biodiversity Offsets Policy for Major Projects (2014).

A summary of the total offset requirements for the new impacts associated with the Modification are provided below in Table 6.3.

Table 6.3 Offset requirements for impacts associated within the modification

Vegetation community	TSC Act listing[1]	EPBC Act listing[2]	Area not previously assessed (ha)[3]	Offsets requirement (ha)[4]
Derived native grassland	-	-	0.8	4.5
Pilliga Box – Poplar Box White Cypress Pine grassy	–	-	17.2	96.3

Vegetation community	TSC Act listing[1]	EPBC Act listing[2]	Area not previously assessed (ha)[3]	Offsets requirement (ha)[4]
open forest				
White Box White Cypress Pine grassy woodland[1]	E	-	-	-
River Red Gum riparian woodlands and forests	–	-	-	-
White Box – Narrow-leaved Ironbark – White Cypress Pine shrubby open forest	–	-	-	-
Yellow Box-Blakely's Red Gum grassy woodland[1,2]	E	CE	1.2	6.7
Narrow - leaved Ironbark - White Cypress Pine shrubby open forest	-	-	3.5	19.6
Total Native Vegetation offset for Modification			**22.7**	**127.1**
Total TSC Act EEC offset for Modification			**1.2**	**6.7**
Total EPBC Act EEC offset for Modification			**1.2**	**6.7**

(1) TSC Act, E = Endangered.
(2) EPBC Act, CE = Critically Endangered.
(3) For the purpose of this report, the area not previously assessed (ha) = all sites for which new impacts to biodiversity has not yet been assessed within the existing EA (PA 09_0182) (refer to Appendix B for more detail)
(4) For the purpose of this report, offset requirements = application of the ratio of 5.6.1 specified in the approved BOS to all areas not previously assessed.

The proposed additional offset for the proposed modification will therefore incorporate a minimum of 127.1 ha of native vegetation and threatened species habitat.

6.1.3.3 NSW Biodiversity Offsets Policy for Major Projects (2014)

In March 2014, the Draft NSW Biodiversity Offsets Policy for Major Projects (Draft Policy) was released for public exhibition. The Draft Policy has now been finalised (Offset Policy 2014) and will be implemented from 1 October 2014 when it will be mandatory for all SSD and SSI projects.

The Offset Policy 2014 reduced the number of offset principles to six and introduced the use of a new assessment methodology, the Framework for Biodiversity Assessment (FBA). While BCPL is committed to providing offsets for the Modification in accordance with its current BOS, consideration to the principles outlined in the recent NSW (Offset Policy 2014) policy is provided below:

- *Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts.*

  Given the location and nature of the mine and its context with regard to existing infrastructure and coal resource, there is limited scope for using alternative locations to entirely avoid impacts on biodiversity. The proposed impacts are associated with increasing capacity of existing dams, design of water infrastructure and widening of existing haul roads for safety and design changes. Where possible details design changes associated with the modification have considered “minimising impacts to native vegetation” and utilised exiting disturbance areas.

- *Offset requirements should be based on a reliable and transparent assessment of losses and gains.*

  The proposed offsets for the modification are based on the existing approved BOS, and will be based on comparison of offset site values with the residual impacts on biodiversity. This BOS incorporated a transparent, targeted and quantifiable assessment of losses and gains in consultation with DP&E and

OEH and will result in a net improvement over time in both size and scale, providing a ratio (offset: clearing) of approximately 5.6:1.

- *Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities.*

  The proposed offset for the modification will be targeted to contain the specific species, habitat and vegetation requirements as impacted by the overall mine. The proposed offset sites generally contain vegetation types of similar or greater conservation value, located in the same IBRA subregion, contain similar habitat values for threatened species and threatened ecological communities listed on the TSC Act.

- *Offsets must be additional to other legal requirements.*

  The proposed offsets for the modification will be in addition to the existing offset requirements for the PA 09_0182 and consistent with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (Department of Sustainability Environment Water Population and Communities 2012).

- *Offsets must be enduring, enforceable and auditable.*

  The additional offset areas will be protected by an agreement that will place legal restrictions on the future use and management of the land that would exist within the title for the land in perpetuity. This will ensure that the offsets are enduring and that they will offset the impact of the development for the period that the impact occurs.

- *Supplementary measures can be used in lieu of offsets.*

  The offsets for the modification will be direct land based and not require supplementary measures.

6.2 Aboriginal and non-Aboriginal heritage

A Cultural Heritage Assessment for the proposed modification was undertaken by Insite Heritage Pty Ltd and is provided in Appendix C. This section provides a summary of that assessment.

The assessment was prepared in consultation with representatives of the BCPL Registered Aboriginal Parties (RAPs), who participated in field surveys and were consulted with regarding the findings of the assessment and its recommendations.

BCPL has developed a comprehensive Cultural Heritage Management Plan (CHMP) (BCPL 2013a) to manage heritage matters within its approved project area. The Cultural Heritage Assessment was based on field inspections undertaken in accordance with the CHMP, as part of the due diligence process required for all potentially ground disturbing works. Where possible, the location of any proposed activities was adjusted to avoid impacts to identified archaeological or cultural heritage sites.

Activities included in the proposed modification that are located within previously approved disturbance areas have been subject to previous archaeological assessments as part of the 2010 EA or subsequent modifications. Activities that are outside the approved disturbance areas were inspected for the assessment. As all potentially ground disturbing activities associated with the proposed modification are located within the approved project area, they will be managed in accordance with the CHMP.

Findings of field inspections were discussed with RAPS at a meeting to discuss the proposed modification on 16 October 2014. An Aboriginal Stakeholder Community Forum was held in Gunnedah on 18 November 2014 to further discuss the modification. A separate meeting was held with the Gomeroi Traditional Custodians on 17 November 2014. All RAPs were invited to provide feedback on the proposed modification by 28 November 2014.

6.2.1 Potential impacts

The Cultural Heritage Assessment identified the following potential impacts associated with the proposed modification, which will be managed in accordance with the CHMP:

- **Expansion of SD 12** – this will impact on an Aboriginal modified tree is located in the proposed disturbance footprint known as BC52. This tree is identified in the CHMP as a site that can be salvaged if impacts cannot be avoided.

  A new site was identified during surveys for the proposed modification known as NV80. This site consists of eight artefacts located at three points and is located within the proposed new project boundary at SD12. This site would not be impacted and would be protected during dam expansion works in accordance with the procedures for protection outlined in the CHMP.

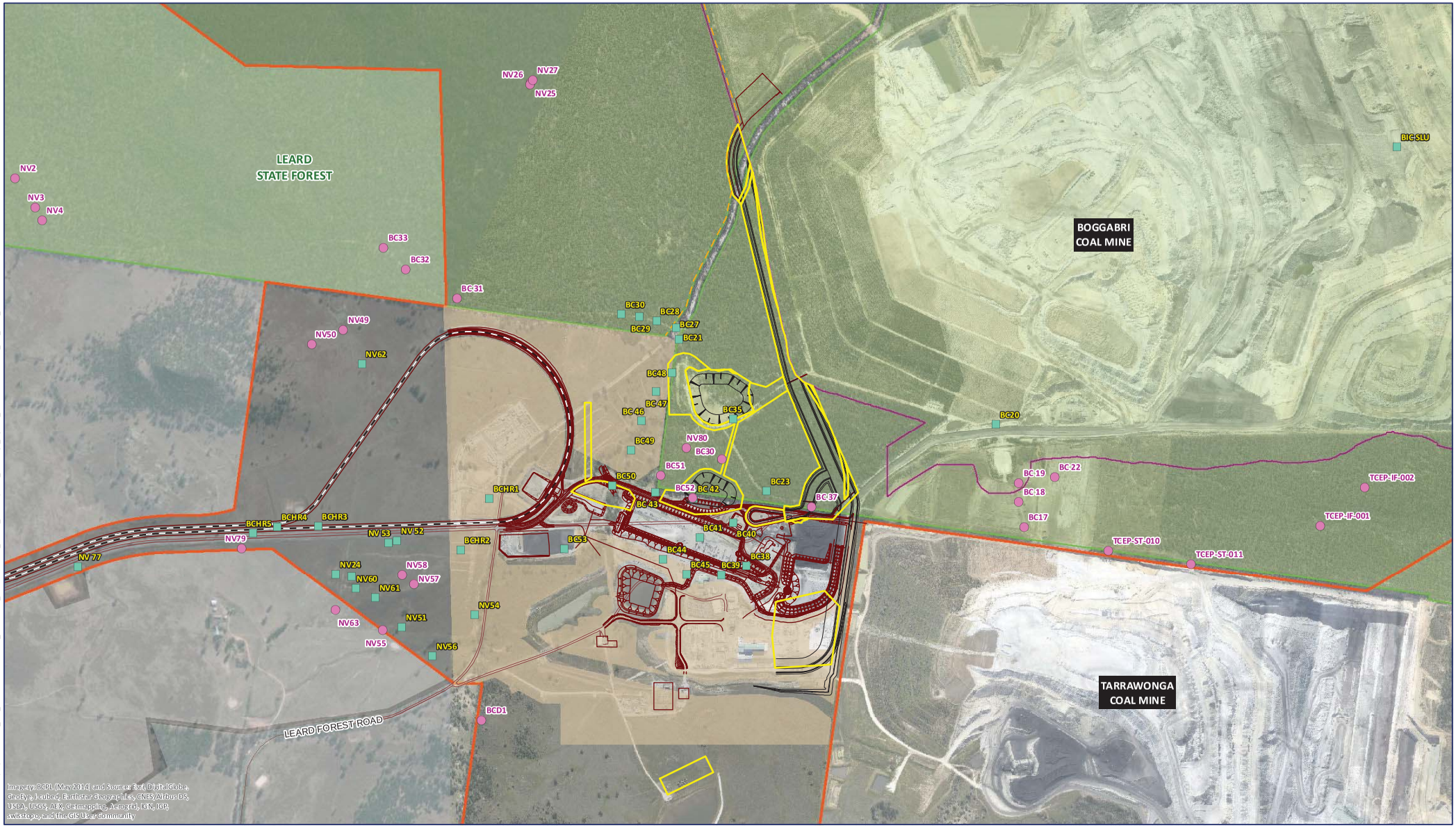
  The extension of SD 12 will impact on an area that is likely to have subsurface materials from the site BC42. The partial excavation of this site as part of construction of SD 12 resulted in 52 artefacts being retrieved and it is likely that further sites will be located in the proposed expanded footprint of the dam. BC42 is nominated as a site that can be salvaged if impacts cannot be avoided.

- **ROM Haul Road** – construction of this road would impact on a historically modified tree known as site BC 37 (20-4-0130). This tree is a survey marker for Lot 30, Parish of Leard, County Nandewar. The tree is marked by two scars – one an arrow and the other being '30', indicating the tree marks the alignment of the Lot 30 boundary. Lot 30 was created between 1882 and 18993 and therefore these marks date to this period. The survey mark is considered to have low local significance, as it is not rare in a regional context.

  This tree was previously identified as a site to be retained and managed by the CHMP. A statement of heritage impact has been prepared for impacts to this tree and is included in Appendix C. As the requirement for approval under the *Heritage Act 1977* is not required for activities approved under Part 3A of the EP&A Act (refer to Section 4.3.1). It is therefore proposed that the tree is salvaged and relocated to the Nagero Property following archival recording, where it will be curated by BCPL. This will be undertaken in accordance with the CHMP.

Aboriginal and non-Aboriginal heritage sites identified as part of the Cultural Heritage Assessment and previous assessments are shown on Figure 6.2. This figure shows:

- In-situ sites – which still remain in place and have not been salvaged or impacted
- Changed sites – which have been salvaged or impacted in accordance with PA 09_0182 or previous approvals.



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Heritage site - insitu
Heritage site - changed
Proposed security fence
Proposed mine infrastructure
Existing mine infrastructure
Proposed rail

Modification within existing project area
EPBC Approval boundary
Boggabri Project Approval Area
Mine infrastructure area
Leard State Forest

0 0.25 0.5 0.75 km

Figure 6.2
Heritage sites

Consultation with the RAPs identified no specific sites of cultural heritage significance within the existing and proposed new project area. A concern was expressed by one RAP group regarding the potential for the proposed activities to impact on megafuana remains. This concern is addressed in detail in Appendix C.

The term megafuana relates to animals that evolved following the extinction of dinosaurs and exist in present day species such as the Red Kangaroo, Saltwater Crocodile and Emu. This group consisted of mammals, birds and reptiles with a body mass of over 40 kilograms. The extinction of a number of Australian megafauna species occurred prior to the last glacial maximum period (commencing approximately 26,500 years ago). Two sites containing evidence of archaeological deposits and megafauna remains have been found within north-western NSW. These sites (Lime Springs and Trinkey) are located approximately 50 km to the south-west of Gunnedah, NSW.

A predictive model prepared for the Cultural Heritage Assessment determined that the landscape contexts associated with megafauna finds are not consistent with the landscape contexts contained within the proposed new project area that would be established under the proposed modification. Megafuana sites are generally associated with cave sites and wet areas such as the base of springs or Paleo-lakes. It was determined that, as the disturbance activities associated with the proposed modification are generally minimal in nature, any impacts to sites potentially containing megafuana would be unlikely. If any megafuana remains are found during activities associated with the proposed modification, procedures for unexpected finds of heritage and archaeological items would be implemented as described in the CHMP.

6.2.2 Proposed mitigation activities

BCPL will revise its CHMP in consultation with the RAPs and the OEH to include any new project areas and activities associated with the proposed modification. This will occur prior to disturbance works occurring.

Sites impacted by the proposed modification will be salvaged prior to disturbance in accordance with the salvage procedure outlined in Section 5 of BCPL's CHMP.

6.3 Surface water

Boggabri Coal Mine is largely contained within the catchment of an unnamed ephemeral waterway, locally called 'Nagero Creek'. A small area to the south of the MIA is located within the catchment of Bollol Creek. 'Nagero Creek' and Bollol Creek are both small tributaries of the Namoi River, which is part of the Barwon-Darling River system.

The Namoi River catchment is bounded by the Great Dividing Range in the east, the Liverpool Ranges and Warrumbungle Ranges in the south, and the Nandewar Ranges and Mount Kaputar to the north. Major tributaries of the Namoi River include Coxs Creek, Mooki River, Peel River, Cockburn River, Manilla River and Macdonald River, which all join the Namoi River upstream of Boggabri.

The Namoi River catchment has an area of approximately 42,000 km^2. The catchment extends over 350 km in an east-west direction between the Great Dividing Range and the Barwon River. The Namoi River catchment area to Boggabri is approximately 22,600 km^2.

Split Rock Dam on the Manilla River and Keepit Dam on the Namoi River are the two main water storages in the Namoi River catchment. These structures allow the delivery of flows to meet the needs of water users downstream.

Average annual rainfall in the Namoi River catchment is highly variable, and decreases across the catchment from around 1,000 mm along the Great Dividing Range in the east, to around 470 mm in the western extent of the catchment.

The Namoi Valley is subject to regular flooding. The existing mining area and MIA are not located within the floodplain; however, the existing product coal haul road crosses the floodplain.

6.3.1 Potential impacts

The proposed modification has the potential to impact on surface water resources via the release of dirty and contaminated runoff from disturbed areas to the downstream watercourse and changes to the site water balance, as well as erosion and sediment impacts associated with construction activities.

During the operation phase, surface water impacts will be mitigated through the implementation of the approved Site Water Management Plan, which will require with minor amendments to cater for the proposed modification.

Potentially contaminated runoff from the proposed realigned haul road and new hardstand areas in the MIA will be captured within the mine water management system. Captured water will be stored for reuse onsite and will not be released to 'Nagero Creek'. As such, no significant impacts to downstream water quality as a result of the proposed modification are expected. The proposed new hardstand areas are located in existing disturbed areas within the MIA and no significant changes to the volume of potentially contaminated runoff captured within the mine water management system, or to the overall site water balance are expected.

During the construction phase, erosion and sediment controls will be implemented in accordance with the existing approved Construction Environmental Management Plan (CEMP) (BCPL 2013b) and Water Management Plan (WMP) (BCPL 2014b).

In consideration of the above, the proposed modification will not have any material impacts on surface water resources and is considered to be consistent with the impacts assessed in the 2010 EA.

6.3.2 Proposed management measures

The design criteria and underlying philosophy of the surface water management system will not change as a result of the proposed modification. Only minor changes to the approved surface water management system will occur for the proposed modification. These are discussed further in Section 3.5.

6.4 Groundwater

6.4.1 Existing groundwater systems

The groundwater aquifers located in the vicinity of the mine include:

- alluvial aquifers – comprising alluvial deposits associated with the Namoi River and its tributaries
- Coal seam aquifers – generally located within coal seams, particularly the Merriown Seam
- colluvium aquifers – associated with weathered volcanic deposits.

Groundwater levels and quality

The current groundwater monitoring network employed by BCPL consists of 14 monitoring bores screened across different geological units, including the Maules Creek Formation aquifer, the colluvial aquifer and the alluvial aquifer. The current monitoring program includes the following:

- quarterly monitoring of groundwater levels/pressures
- quarterly monitoring of field parameters
- six-monthly laboratory groundwater quality analysis
- reporting in the AEMR.

This monitoring network is currently undergoing augmentation, including the additional of BCPL bores and BTM Complex bores. Automatic data loggers will be installed in some bores, which log water levels every six hours and are downloaded quarterly.

6.4.2 Potential impacts

The proposed modification would require minor excavation works which are not expected to create impacts to local groundwater aquifers due to the shallow depth of any required excavations. Excavations would only be required to level ground for the construction of the haul road and hardstand areas.

Excavation of the existing base of SD3 and SD12 would be required, although this would not be expected to intersect any underlying groundwater aquifers as it would be undertaken to re-establish the original depth of the dam and remove any built-up sediments. The expanded sediment dams SD3 and SD12 would have the potential to affect groundwater through seepage from the dam to an aquifer if a connection was established; however, this would be prevented by the installation of an impermeable layer such as clay at the base of each dam.

6.4.3 Mitigation measures

Any dewatering from excavations would be collected and released into the mine's dirty water management system.

6.5 Air quality

6.5.1 Existing environment

A detailed air quality assessment was prepared for Boggabri Coal Mine as part of the 2010 EA. An air quality dispersion model was developed for this assessment based on the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005). This assessment determined that construction and operation of the overall mine may cause air quality impacts to two privately-owned receivers. These residences have since been acquired by BCPL or adjoining mining operators.

BCPL has developed an Air Quality and Greenhouse Gas Management Plan (AQGHG MP) to manage its air quality impacts, as specified under PA 08_0182. The AQGHG identifies the nearest sensitive air quality receivers to the mine, activities that have the potential to impact on air quality at these receivers and actions required to monitor and manage particulate and greenhouse gas emissions from the mine.

6.5.1.1 Site meteorological conditions

Summer months at the Boggabri Coal Mine are mostly hot and winter periods are relatively short with frequent frosts. January is typically the hottest month, reaching an average maximum temperature of 34°C. July is typically the coolest month, reaching an average maximum temperature of 16.9°C.

Temperature inversions are most common in winter months, forming in later afternoon and reaching maximum resistance at dawn. Summer months have higher mean rainfall (approx. 80 mm) compared to winter months (50 mm). There is potential for poor dispersion during inversion conditions.

The mine receives wind from the south-east in summer and the north-west in winter. Winds in autumn and spring months are more variable. Autumn is typically the windiest season. Air quality risk is heightened during high winds that could affect sensitive receptors in the South and South East.

6.5.1.2 Air quality criteria

BCPL's air quality assessment criteria, as outlined in Schedule 3, Condition 27 of the Project Approval, are shown in Table 6.4.

Table 6.4 Air quality goals for particulate matter

Pollutant	Averaging period	Criterion	
Total suspended particulate matter (TSP)	Annual	90 µg/m^3	
Particulate matter <10 µm (PM_{10})	Annual	30 µg/m^3	
	24 hour	50 µg/m^3	
Deposited Dust	Annual	**Maximum increase**	**Maximum total**
		2 g/m^2/month	4 g/m^2/month

6.5.1.3 Environmental performance

Dust deposition

BCPL currently undertakes depositional dust monitoring at three sensitive receivers to provide an indication of levels of dust in the atmosphere. Prior to the amendment of the sites EPL in 2012, this monitoring was undertaken at 15 sites surrounding the mine. Figure 6.3 shows the results of this monitoring for 2013.

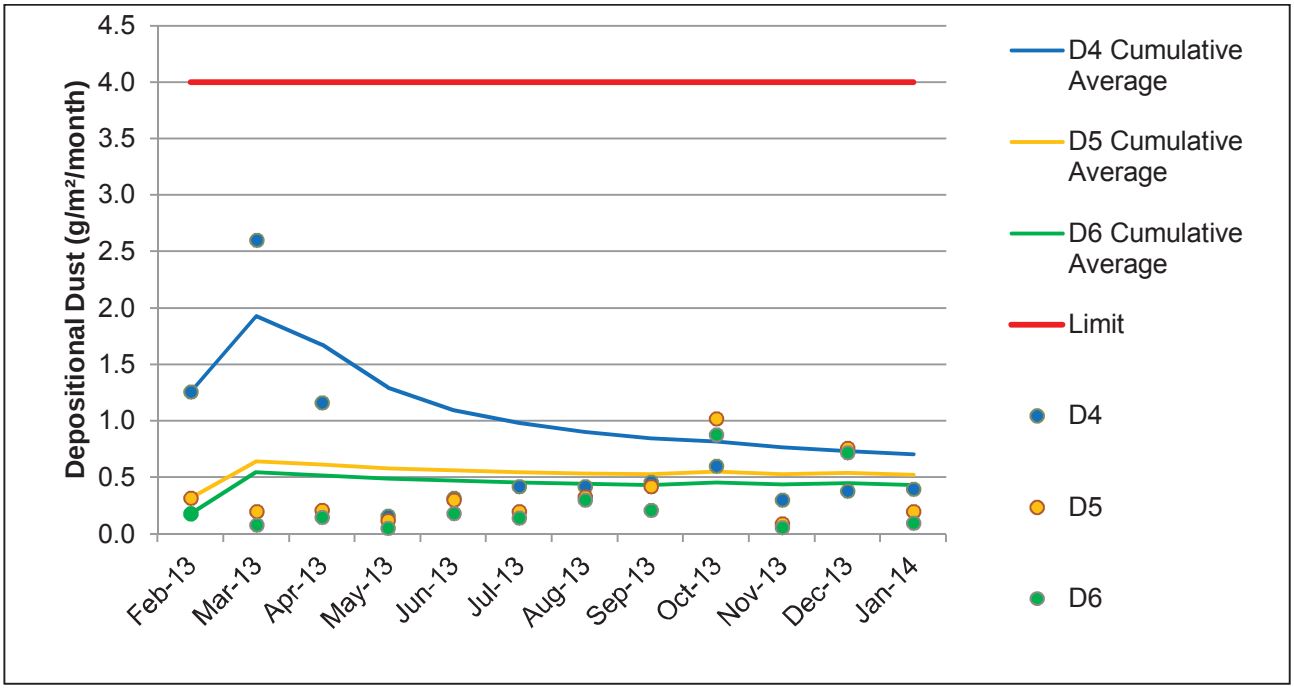

Figure 6.3 Depositional dust results for 2013

Three exceedances of the maximum depositional dust criteria were detected in 2013. Analysis of these samples determined that each of these samples was contaminated with impurities such as bird droppings, vegetation and insects and once these had been removed, the results were within the required limit.

Particulate matter

BCPL monitors particulate matter using a High Volume Air Sampler (HVAS) located on the Merriown property, approximately 1 km west of the mine. In accordance with EPL 12407, sampling is undertaken for a

period of 24 hours every 6 days, totally 61 sample events over the reporting period. Figure 6.4 shows the results of particulate matter monitoring for 2013.

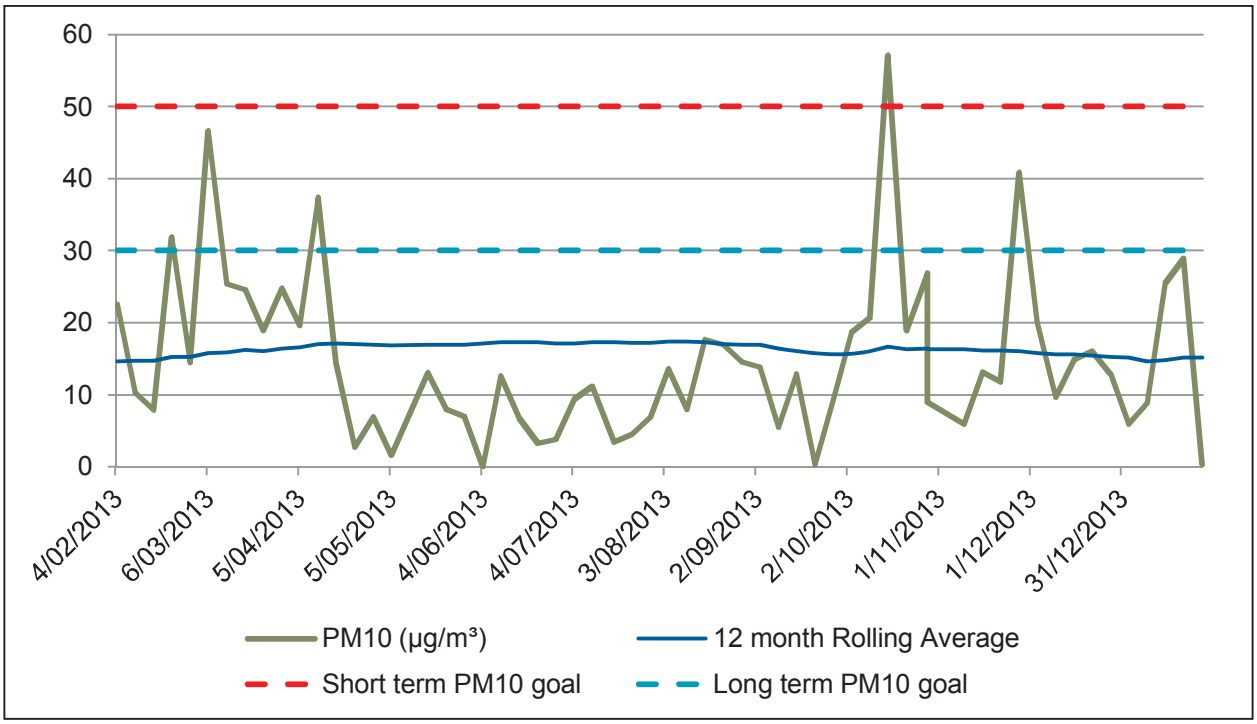

Figure 6.4 Particulate matter results for 2013

As shown on Figure 6.4, one exceedance of the 24-hour criterial for PM_{10} was detected in 2013. Analysis of particulate matter monitoring results and prevailing winds at the time of the exceedance indicated that farming or grazing activities to the west of the monitor may have contributed to this exceedance.

6.5.2 Potential impacts

The proposed modification has the potential to generate air quality impacts during the construction of new infrastructure and hardstand areas near the MIA area (refer to Section 3.3). Air quality impacts would result from the generation of dust from disturbed areas and exhaust emissions from vehicles and equipment used during construction.

The construction activities associated with the proposed modification would cause a relatively low level of disturbance and intensity when compared to adjacent mining, coal processing and transport operations. Due to this and the distance to the nearest sensitive receiver (the Wilberoi East residence, 4.75 km to the south), the potential for construction activities associated with the proposed modification is considered to be negligible.

The increase of the ROM coal stockpile may result in the generation of additional dust during operation. The air quality assessment for the 2010 EA predicted that emissions of 16,118 kg of dust per year would occur from the current ROM stockpiles at the mine. Based on this figure, the proposed additional ROM stockpile would generate 19,498 kg of dust (as TSP) per year. Based on the estimated overall emissions for Year 5 of the project of 7,219,260 kg/year, the increased ROM stockpile would contribute an additional 0.27% to emissions from the mine. This would reduce as production at the mine increases to 0.23% in Year 21.

Given the negligible contribution of the additional ROM stockpile area to the emissions from the mine and that monitoring of air quality in adjacent areas shows the mine is operating well within its required air quality criteria, operational activities associated with the proposed modification are not expected to result in any air

quality impacts, provided the management and mitigation measures described in Section 6.5.3 are implemented.

6.5.3 Mitigation measures

The following measures will be implemented to ensure any air quality impacts associated with the proposed modification are mitigated:

- construction and operational activities associated with the proposed modification will be undertaken in accordance with BCPL's established AQCHCMP (BCPL 2013) and the CEMP (BCPL 2013b)
- the existing dust suppression system installed on the existing ROM stockpile will be extended to the new ROM stockpile area. This system consists of water sprays and the use of water carts.

6.6 Noise

6.6.1 Receiving environment

Noise is managed by BCPL in accordance with its Noise Management Plan (NMP), which covers all operational activities that have the potential to generate noise at the mine.

Boggabri Coal Mine is located in a quiet rural area, generally away from major roads or other major industry. The key noise generating activities occurring in the surrounding area are associated with the mine and surrounding mines. Also included are construction activities associated with expansion of the mine such as construction of a rail spur and expansion of the MIA, and construction of the Maules Creek Mine.

Monitoring had demonstrated that background noise levels in the surrounding area regularly fall to 30 dBA or below.

Receptors sensitive to noise impacts from construction and operational activities associated with the Boggabri Coal Mine were identified in the 2010 EA. A background noise level of 30 dBA was adopted for all receivers and time periods in accordance with the NSW Industrial Noise Policy (EPA 2000).

6.6.2 Potential impacts

The proposed modification includes the following noise generating activities:

- modifications within the MIA (including extension of stockpile and laydown areas, minor amendment of haul road alignment and increasing sediment dam capacities)
- other additions required to augment the project – including: construction of a boundary fence, use of additional portable fuel storage containers, creation of an equipment recycling yard and modification of water management structures.

These activities would be located within the approved mine footprint and involve construction and earthmoving works that are typical as part of the ongoing operation of an open cut mine. These activities are expected to be inaudible over the existing noise levels generated by the mine. As shown on Figure 2.2 the nearest privately owned sensitive receiver to the construction works is the Wilberoi East residence, which is located approximately 4.75 km to the south of the proposed equipment recycling yard (the nearest activity associated with the proposed modification). If an increase in noise did occur at a privately owned residence such as Wilberoi East, BCPL's established noise management system will identify and managed it to avoid or mitigate impacts (this is discussed further in Section 6.6.3).

6.6.3 Mitigation measures

The following measures will be implemented to ensure any noise issues associated with the proposed modification are mitigated:

- Construction and operational activities associated with the proposed modification will be undertaken in accordance with BCPL's established Noise Management Plan (BCPL 2009) and the CEMP (BCPL 2013b).
- Construction activities will be undertaken during standard construction hours:
  - Monday to Friday – 7.00am to 6.00pm
  - Saturdays – 8.00am to 1.00pm
  - Sundays and Public Holidays – none.

6.7 Other impacts

The Boggabri EA provided a comprehensive assessment of the socio-economic and environmental impacts of the Boggabri Coal Mine. Following the Boggabri EA, subsequent EA's were prepared for modifications of PA 09_0182 as follows:

- Modification 2 – *Environmental Assessment: Modification to Development Consent for Boggabri Coal Mine August 2011* (Hansen Bailey 2011).
- Modification 3 – *Boggabri Coal Mine Project Approval Modification Environmental Assessment October 2013* (Hansen Bailey 2013).

The impacts identified in the previous EA's prepared for Boggabri Coal Mine were reviewed for this assessment and it was determined that the modification will not result in any additional impacts to those previously considered.

BCPL operates under a number of environmental management strategies and procedures that have been designed and implemented to manage, monitor and minimise the potential impacts of its operations on the surrounding environment. These procedures and strategies provide the framework for ongoing management of environmental impacts and specify management practices to minimise these through design, operation and ongoing monitoring of operations at Boggabri Coal Mine.

An integral part of BCPL's environmental management system is its environmental monitoring network, which is described in further detail in Section 2.5. Supporting the environmental monitoring network, is the site's suite of environmental management plans, procedures and strategies which have been developed to address specific aspects of the operation. This suite of plans includes:

- air quality and greenhouse gas management plan
- blast fume management protocol
- blast management plan
- cultural heritage management plan
- environmental management strategy
- forestry plantation offset strategy
- groundwater management plan
- noise management plan
- rehabilitation management plan
- social impact management plan
- site water balance
- surface water management plan
- traffic management plan
- construction environmental management plan
- water management plan.

If the proposed modification is approved, each of these plans will be reviewed and updated to reflect the changes to the project associated with the modification and any additional mitigation measures that have been developed as part of this EA.

7. Conclusion

7.1 Alternatives considered

Alternatives to each activity included under the proposed modification were considered during the design process to take into account potential environmental impacts, conflicts with other landuses and cumulative impacts associated with other construction activities occurring at the site. This resulted in a number of adjustments being made to some of the proposed activities, such as:

- adoption of existing hardstand areas and use of existing infrastructure, such as powerlines and drains to minimise additional disturbance
- consideration of alternatives to the extension of SD3 and SD3, such as the construction of additional sedimentation dams.

The only key alternative to the proposed modification was the 'do nothing' option, which would have resulted in none of the proposed activities being undertaken. This option would result in increasing inefficiencies occurring across the Boggabri Coal Mine which would, over time, affect BCPL's ability to develop the mine as planned under the 2010 EA. The 'do nothing' option would result in:

- the requirement for SD13 to be developed, resulting in additional disturbance to native vegetation
- inefficiencies in the use of the MIA area, including sub-optimal performance of a key haul road – this would result in increased fuel use and maintenance requirements for the mining fleet
- ancillary infrastructure requiring management outside the mine's project approval boundary – resulting in uneconomical use of resources and limited ability for BCPL to implement effective environmental management in these areas
- difficulties in managing areas of joint use between Boggabri and Tarrawonga Mines, such emplacement areas that will be combined.

Therefore, the 'do nothing' option was not considered further.

Overall, the activities included under the proposed modification were identified as having the least environmental and social impacts of all the viable options considered.

7.2 Ecologically sustainable development

The four principles of ESD are outlined in section 6(2) of the Protection of Environmental Operations Act 1979 (PoEO Act), and in Schedule 2 of the EP&A Regulations. In summary, the principles are:

- **The precautionary principle** – if there are threats of serious or irreversible damage, a lack of full scientific uncertainty should not be used as a reason for postponing measures to prevent environmental degradation.
- **Intergenerational equity** – the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
- **Conservation of biological diversity and ecological integrity** – the diversity of genes, species, populations and their communities, as well, as the ecosystems and habitats they belong to, should be maintained or improved to ensure their survival.
- **Improved valuation, pricing and incentive mechanisms** – environmental factors should be included in the valuation of assets and services.

Table 7.1 provides an assessment of how these principles apply to the proposed modification.

Table 7.1 Adherence of the proposed modification to the principles of ESD

Principle	How addressed by the project
The precautionary principal	■ The project is not anticipated to cause serious or irreversible environmental damage that will result in impacts of a permanent nature. ■ Detailed impact assessments have been undertaken for this EA, to predict as far as possible, potential impacts associated with the proposed modification. ■ All measures considered to be necessary to safeguard environmental values have been identified and included in preparation of this assessment.
Intergenerational equity	■ Environmental investigations have been undertaken for the proposed modification during the preparation of this EA and mitigation measures have been developed where necessary to minimise the impacts on the health, diversity and productivity of the environment and therefore maintain benefits for future generations. ■ The proposed modification will contribute towards the ongoing employment of staff of Boggabri Coal Mine, which will provide benefits for local, regional and state wide communities through direct and indirect employment, expenditure and royalties. ■ The proposed modification will not sterilise any land from future development or affect the beneficial uses of the area following completion of the Boggabri Coal Mine.
Conservation of biological diversity and ecological integrity	■ Potential impacts to flora and fauna species and vegetation communities of local, regional, state and national significance were assessed as part of this EA and the proposed modification was determined not to cause any significant impacts to any threatened or endangered species or communities.
Improved valuation, pricing and incentive mechanisms	■ The proposed modification will use existing equipment; infrastructure and staff associated with Boggabri Coal Mine and will therefore provide for efficient resource use. ■ The proposed modification will result in improved operational efficiencies for Boggabri Coal Mine, increasing the long-term productivity of the site.

7.3 Conclusion

The proposed modification consists of a number of small additions and modifications to the Boggabri Coal Project, none of which are predicted to cause substantial additional impacts to those previously approved under the project approval.

The proposed modification will result in additional environmental impacts associated with Boggabri Coal Mine, including:

- clearing of 22.7 ha of native vegetation, including approximately 1.2 ha of vegetation listed under the TSC Act and EPBC Act
- disturbance of an Aboriginal modified tree and historically modified tree.

The proposed modification will provide a number of benefits as it will provide for operational efficiencies which is a key component of the local and regional economy. Boggabri Coal Mine provides benefits to local, regional and statewide communities through employment, expenditure and royalties.

This EA has considered all aspects of the proposed modification that are considered to have the potential to cause additional environmental and social impacts to those previously assessed for Boggabri Coal Mine as part of PA 09_0182 (as modified). Through this EA, BCPL is committing to implementing further management measures to mitigate any identified impacts that may occur above those for which it has previously developed management measures.

These commitments include:

- revision of the BOS to include an additional of 127.1 ha of suitable native vegetation for the modifications impacts
- amendment of the sites environmental management plans, procedures and strategies to incorporate changes associated with the proposed modification
- salvage of impacted cultural heritage sites in consultation with the Boggabri RAPs.

BCPL has approval to develop a significant coal resource. The proposed modification to this approval will improve its operational efficiency and long-term operational security, and thereby assist with maximising the economic benefits associated with development of this coal resource. The proposed modification is not predicted to generate significant changes to the overall environmental impacts of Boggabri Coal Mine and is therefore considered to be justified.

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