### Tarrawonga Coal Project

# Environmental Assessment

# **ATTACHMENT 3**

## POTENTIAL INTERACTIONS BETWEEN THE PROJECT AND OTHER MAJOR PROJECTS





Tarrawonga Coal Pty Ltd

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#### 1 BOGGABRI COAL MINE

#### 1.1 EXISTING OPERATIONS

Boggabri Coal Pty Limited (BCPL) owns the existing Boggabri Coal Mine (Coal Lease [CL] 368), an open cut coal mine located immediately to the north of the Tarrawonga Coal Mine (Figure 2-1 of the Environmental Assessment [EA]).

The Boggabri Coal Mine currently operates in accordance with a Development Consent (DA 36/88 file no. 79/1443) granted by the New South Wales (NSW) Minister for Planning in August 1989, as modified in July 2009 and October 2011. Under Development Consent DA 36/88, the Boggabri Coal Mine is currently approved to produce up to 3.5 million tonnes per annum (Mtpa) run-of-mine (ROM) coal until the end of December 2013.

The Boggabri Coal Mine is also operated in accordance with Environmental Protection Licence (EPL) 12407 issued under Chapter 3 of the NSW *Protection of the Environment Operations Act, 1997* (PoEO Act).

ROM coal is currently crushed on-site and transported by truck via a 17 kilometre (km) private haul road to the rail loadout facility at the Boggabri Coal Terminal, located to the south-west of the Boggabri Coal Mine on the Werris Creek Mungindi Railway (Figure 1-1 of the EA).

The Boggabri Coal Mine currently generates an average of 1.5 train movements per day (including laden and unladen trains) associated with product coal transport to the Port of Newcastle (BCPL, 2010).

#### 1.2 CONTINUATION OF THE BOGGABRI COAL MINE

In October 2009, BCPL submitted a Project Application for the Continuation of Boggabri Coal Mine to the NSW Department of Planning and Infrastructure (DP&I) seeking approval under Part 3A of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) (Project Application No. 09\_0182).

The Continuation of Boggabri Coal Mine involves open cut mining for a further 21 years from November 2011, extracting some 145.6 million tonnes (Mt) ROM coal over the mine life and producing up to 7 Mtpa product coal (BCPL, 2010). The potential environmental impacts of the proposal were assessed in the *Continuation of Boggabri Coal Mine Environmental Assessment* (BCPL, 2010). In this application, BCPL is also seeking approval for modified/additional site infrastructure facilities, including (BCPL, 2010):

- upgrades to the existing ROM pad;
- construction of a coal handling and preparation plant (CHPP) (with a nominal feed rate of approximately 500 tonnes per hour [tph]) and a bypass crusher (with a nominal feed rate of 1,250 tph);
- upgrades to the product stockpile area and product reclaim system; and
- construction of a 17 km private rail spur, rail loop and rail loadout facility which would connect to the Werris Creek Mungindi Railway and enable the transport of product coal directly from the mine.

At the Continuation of Boggabri Coal Mine maximum production rate, up to 5.5 train movements per day would be generated on the Boggabri Coal Mine private rail spur and Werris Creek Mungindi Railway (BCPL, 2010).

Coarse rejects produced by the Continuation of Boggabri Coal Mine would be transported by truck for co-disposal within in-pit emplacement areas at the Boggabri Coal Mine (BCPL, 2010). Fine rejects (i.e. tailings) from the CHPP would be dewatered and either trucked or pumped to tailings emplacement areas located within the open cut mining area. The fine rejects would be co-disposed with overburden to enable progressive rehabilitation (BCPL, 2010).

#### 1.3 BOGGABRI COAL MINE MODIFICATION 2

In August 2011, BCPL submitted a Modification Application for the Boggabri Coal Mine (Modification 2) to the DP&I.

In October 2011, Boggabri Coal Mine Modification 2 was approved (DA 36/88 Mod 2) by a delegate for the NSW Minister for Planning and Infrastructure.

The Boggabri Coal Mine Modification 2 involves a continuation of mining for a further two years (i.e. extending the approved mine life from 14 November 2011 until the end of December 2013) at a maximum production rate of 3.5 Mtpa ROM coal, which enables BCPL to continue operations at the Boggabri Coal Mine while determination of the Continuation of Boggabri Coal Mine is pending.



As this modification is, in general terms, a smaller subset of the proposed Continuation of Boggabri Coal Mine, cumulative impacts associated with this modification and the Project do not require separate assessment in this EA.

#### 1.4 PROJECT INTERACTION WITH THE BOGGABRI COAL MINE

Whitehaven and BCPL have entered into an agreement that enables the handling, processing and transportation of Project coal at the Boggabri Coal Mine Infrastructure Facilities and private rail spur.

Under the agreement, BCPL will construct the upgraded Boggabri Coal Mine Infrastructure Facilities with sufficient capacity for the handling of 3 Mtpa ROM coal from the Project and associated processing of up to 1.5 Mtpa of Project coal through the Boggabri CHPP. Whitehaven would also have access to BCPL's rail loading facilities and private rail spur for the transportation of Project product coal.

BCPL would handle and process Project ROM coal at the Boggabri Coal Mine Infrastructure Facilities on a campaign basis. Project product coal would also be separately loaded to trains for transportation to the Port of Newcastle via the Boggabri Coal Mine private rail spur and Werris Creek Mungindi Railway. A tolling fee would be paid by Whitehaven to BCPL for the use of the Boggabri Coal Mine Infrastructure Facilities and private rail spur on both a fixed basis and usage basis.

BCPL would be responsible for the handling and disposal of coarse and fine reject material generated during the crushing, screening and processing of Project coal in the Boggabri CHPP.

In addition, the Tarrawonga Coal Mine's Northern Emplacement would be extended to the north and east within Mining Lease Application (MLA) 3 to integrate with the southern extent of the Boggabri Coal Mine waste rock emplacement (Figures 2-3 to 2-7 of the EA).

Tarrawonga Coal Pty Ltd's rehabilitation strategy and goals for the Project have been developed in consultation with BCPL, so that rehabilitation of the Project Northern Emplacement would be integrated with the rehabilitation of the Boggabri Coal Mine waste emplacement (Section 5 of the EA).

#### 1.4.1 Project Related Modifications to Boggabri Coal Mine Approvals

The Continuation of Boggabri Coal Mine EA (BCPL, 2010) assesses the potential impacts associated with expansion of the mine and the construction and use of the upgraded Boggabri Coal Mine Infrastructure Facilities and private rail spur.

Generally, the upgraded Boggabri Coal Mine Infrastructure Facilities, as described in the *Continuation of Boggabri Coal Mine Mine Environmental Assessment* (BCPL, 2010), would have sufficient capacity to accommodate the Project coal. However, some minor changes, including an additional product coal stockpile, modification to the product stacking system and an increase in the feed rate of the Boggabri Coal Mine bypass crusher, would be required.

Subject to approval of the Continuation of Boggabri Coal Mine, a further modification application would be made by BCPL to allow the receipt, handling and processing of Project coal at the Boggabri Coal Mine Infrastructure facilities. The modification would also address water management associated with the western services corridor and integrated waste emplacement, on-site disposal of coal reject material from the crushing and processing of Project coal and the additional rail movements required to transport Project coal products on the Boggabri Coal Mine private rail spur.

Commencement of the handling, processing and transportation of Project coal at the Boggabri Infrastructure Facilities and private rail spur would therefore be contingent upon the following:

- approval of the Continuation of Boggabri Coal Mine;
- approval of further alterations to the Boggabri Coal Mine via a separate modification application in support of BCPL handling, processing and rail loading of Project coals;
- approval of the Project; and
- any necessary amendments to the Boggabri Coal Mine and Tarrawonga Coal Mine EPLs 12407 and 12365, respectively) environmental management plans (e.g. waste management plans), and other related approvals or licences (e.g. from the NSW Division of Resources and Energy [DRE] under Section 100 of the NSW Coal Mine Health and Safety Act, 2002).

It should be noted that this EA does not seek approval for any modification to the approved Boggabri Coal Mine. Notwithstanding, where relevant, potential cumulative impacts associated with the receipt, handling, processing and transportation of Project coal at the upgraded Boggabri Coal Mine Infrastructure Facilities and private rail spur have been considered in this EA.

#### 2 WHITEHAVEN COAL MINES AND CHPP

Whitehaven owns the following coal mining and processing operations to the south of the Tarrawonga Coal Mine (Figure 1-1 of the EA):

- Rocglen Coal Mine (Mining Lease [ML] 1620);
- Sunnyside Coal Mine (ML 1624);
- Canyon Coal Mine (ML 1471); and
- Whitehaven CHPP.

Whitehaven also has a controlling interest in the Narrabri Coal Mine (ML 1609), located some 26 km to the west-northwest of the Tarrawonga Coal Mine.

Additional description of these operations and summary consideration of their potential interaction with the Project and relevance for cumulative impact assessment is provided below.

Whitehaven also owns the Werris Creek Coal Mine (ML 1563) located some 60 km to the south-east of Gunnedah, and approximately 95 km to the south-southeast of the Project. This operation does not pose a material source of potential cumulative impacts.

#### 2.1 ROCGLEN COAL MINE

The Rocglen Coal Mine (Project Approval [PA] 06\_0198) was approved in 2008 to extract some 1.5 Mtpa ROM coal for an approved mine life of 12 years. Sized ROM coal from Rocglen Coal Mine is trucked to the Whitehaven CHPP via Bluevale Road for processing (where required) and train loading.

In January 2010, Whitehaven submitted a Project Application for the Rocglen Coal Extension Project to the DP&I seeking approval under Part 3A of the EP&A Act (Project Application No. 10\_0015). The Rocglen Coal Extension Project involves an additional four years of mining beyond the approved mine life, with no change in the approved extraction rate of 1.5 Mtpa ROM coal or workforce levels. Sized ROM coal would continue to be trucked to the Whitehaven CHPP, with no increase in maximum daily coal trucking rates on Bluevale Road or the Kamilaroi Highway (Whitehaven, 2010).

The Rocglen Coal Extension Project was approved by the Deputy Director-General (Development Assessment and Systems Performance) of DP&I on 27 September 2011.

No material cumulative impacts associated with Rocglen Coal Extension Project have been identified for the Project.

#### 2.2 SUNNYSIDE COAL MINE

The Sunnyside Coal Mine (PA 06\_0308) was approved in 2008 to extract some 1 Mtpa ROM coal over a mine life of seven years.

Sized ROM coal from the Sunnyside Coal Mine is trucked to the Whitehaven CHPP for processing (where required) and train loading.

Sunnyside Coal Mine coal trucks access the Whitehaven CHPP from the south-west and do not interact with Project traffic on the Kamilaroi Highway.

#### 2.3 CANYON COAL MINE

Whitehaven maintains the Canyon Coal Mine site, which ceased operations in 2009, in accordance with the Canyon Open Cut Coal Mine Closure Plan (Whitehaven, 2009), DA 8-1-2005 Mod 2 and EPL 10094.

As there are no operations at the Canyon Coal Mine, there are no material potential interactions with the Project.

#### 2.4 WHITEHAVEN CHPP

The Whitehaven CHPP receives sized ROM coal from the Tarrawonga, Sunnyside and Rocglen Coal Mines (Figure1-1 of the EA).

The Whitehaven CHPP operates in accordance with Development Consent (DA 0079.2002) issued by the Gunnedah Shire Council under delegation from the Minister for Urban Affairs and Planning on 2 October 2002, as modified by the Gunnedah Shire Council in 2008 (Modification of Consent No. 305208) and the DP&I in 2011 (DA 0079.2002 Mod 2). The consent is valid for a period of 20 years and expires in October 2022. The Whitehaven CHPP is also operated in accordance with EPL 3637 issued under Chapter 3 of the PoEO Act.

The major components of the Whitehaven CHPP are:

- ROM coal stockpiles;
- CHPP;
- product coal stockpiles;
- reject ponds and settlement ponds;
- coarse reject stockpile; and
- rail loadout facility.

All sized ROM coal received is stockpiled in either ROM coal stockpiles for processing in the CHPP, or in product stockpiles for bypass loading at the rail loadout facility. Up to 3 Mtpa of sized ROM coal is approved to be processed in the CHPP and the rail loadout facility is approved to handle up to 4.1 Mtpa of product coal.

Approximately two laden trains transporting product coal to the Port of Newcastle via the Werris Creek Mungindi Railway are dispatched from the site per day.

Coarse rejects from the CHPP are discharged to the reject stockpile area, where they are backloaded (in empty coal haulage trucks) to the Tarrawonga Coal Mine for placement in the open cut. Approval under the EP&A Act has also been obtained to backload coarse rejects to the Sunnyside and Rocglen Coal Mines.

Fine rejects are pumped to a series of ponds where they are dewatered. Following dewatering, the fine rejects are loaded onto coal trucks and transported to the former Gunnedah Colliery for emplacement in the Melville Pit (approximately 6 km to the south-west of the CHPP).

In August 2011, Whitehaven submitted a modification application for the Whitehaven CHPP (Additional Reject Ponds Modification) to the DP&I seeking approval under Part 4 of the EP&A Act (Application No. DA 0079.2002 Mod 2). The Additional Reject Ponds Modification was approved by the DP&I in December 2011 (DA 0079.2002 Mod 2). The Additional Reject Ponds Modification involved an increase to the storage capacity for fine rejects at the Whitehaven CHPP, including construction of three additional reject ponds and two additional settlement ponds. The potential environmental impacts of the proposal were assessed in the *Environmental Assessment for the Establishment of Additional Reject Ponds at the Whitehaven CHPP* (Whitehaven, 2011).

Construction works for these ponds will be over a period of approximately six weeks using typical construction earthmoving equipment, and no material changes to the operation of the CHPP or coal loading are proposed (Whitehaven, 2011).

It is anticipated that the upgrades to the Whitehaven CHPP will be completed prior to commencement of the Project and hence no material cumulative impacts (e.g. road transport) would arise.

Following the commissioning of the upgraded Boggabri Coal Mine Infrastructure Facilities, sized ROM coal from the Project would no longer be trucked to the Whitehaven CHPP.

The Whitehaven CHPP has been included as a continued source of coal train movements on the Werris Creek Mungindi Railway in the Project cumulative train noise assessment (Appendix C of the EA).

#### 2.5 NARRABRI COAL MINE

Stage 1 of the Narrabri Coal Mine (PA 05\_0102) was approved in 2007 to extract some 2.5 Mtpa ROM coal using continuous underground miners over a mine life of 21 years (from January 2008). Stage 1 was modified in 2010 (PA 05\_0102\_Mod 1) to enable a change in the sequence of the underground mining development and development of additional surface infrastructure, including the construction of a CHPP within the approved pit top area.

Stage 2 of the Narrabri Coal Mine (PA 08\_0144) was approved in 2010 and included introduction of longwall mining operations, operation of the CHPP and an increase in the coal extraction rate to some 8 Mtpa ROM coal over a mine life of 21 years. Stage 2 was further modified in 2011 (PA 08\_0144 Mod 1) for a minor alteration to the underground coal extraction plan.

Coal from the Narrabri Coal Mine is transported by rail on the Werris Creek Mungindi Railway to the Port of Newcastle. Narrabri Coal Mine is an approved cumulative source of coal trains on the Werris Creek Mungindi Railway. Approved Narrabri Coal Mine trains have been considered in the Project cumulative train noise assessment (Appendix C of the EA).

#### 3 MAULES CREEK COAL PROJECT

Aston Coal 2 Pty Ltd (Aston) owns the Maules Creek Coal Project (CL 375) (Figure 1-1 of the EA), which is approved under Development Consent DA 85/1819 to produce up to 9 Mtpa product coal, however, no open cut mining operations have commenced at the site (Aston, 2011).

In August 2010, Aston submitted a Project Application for the Maules Creek Coal Project to the DP&I seeking approval under Part 3A of the EP&A Act (Project Application No. 10\_0138).

The Maules Creek Coal Project involves the development of a 21 year open cut mining operation with an extraction rate of some 13 Mtpa ROM coal, and the construction and use of associated surface infrastructure, including:

- a CHPP;
- train loading facilities; and
- a rail spur and loop connecting to the Werris Creek Mungindi Railway (with the preferred option connecting to the southern portion of the proposed Boggabri Coal Mine private rail spur).

The potential environmental impacts associated with the changes described above were assessed in the *Maules Creek Coal Project Environmental Assessment* (Aston, 2011).

There would be no direct interaction between the operation of the Maules Creek Coal Project and the Project.

Potential cumulative environmental impacts associated with the Maules Creek Coal Project have been considered in this EA, where relevant, and include traffic, air quality emissions, noise emissions, groundwater drawdown and population effects (Section 4 of the EA).

#### 4 OTHER FUTURE DEVELOPMENTS

#### 4.1 VICKERY COAL PROJECT

In 1986, Namoi Valley Coal Pty Ltd (a subsidiary of Rio Tinto Limited) was granted approval under the EP&A Act to construct and operate the Vickery Coal Mine (CL 316), following dual applications to the Gunnedah Shire Council (Application Number 23/86) and the Narrabri Shire Council (Application Number 18/86).

Approximately 4 Mt ROM coal was extracted from the Vickery Coal Mine using open cut mining methods between 1991 and 1998, with operations ceasing at the mine in May 1998.

Whitehaven acquired CL 316 from Rio Tinto Limited on 15 January 2010.

Current estimates by Whitehaven indicate that open cut mining at the Vickery Coal Project could produce at least 4.5 Mtpa ROM coal for a 30 year mine life. On this basis Whitehaven has commenced preparing a Development Application for the Vickery Coal Project for submission to the DP&I.

#### 4.2 VICKERY SOUTH PROJECT

The Vickery South Exploration Licence (EL) area (EL 7407) is held by Coalworks (Vickery South) Pty Ltd and covers an area of approximately 700 hectares (ha).

Coalworks Limited (Coalworks) has completed a pre-feasibility study for the Vickery South Project (Figure 1-1 of the EA), with the study concluding that an open cut mining operation could be developed, producing up to 3 Mtpa of ROM coal for approximately 16 years, including a CHPP for washing of coal and a rail loadout (Coalworks, 2011).

In December 2010, Coalworks (Vickery South) Pty Ltd signed a joint venture agreement with ICRA Vickery Pty Ltd, a wholly owned subsidiary of the Japanese general trading company, ITOCHU Corporation (Coalworks, 2011).

#### 4.3 GOONBRI EXPLORATION LICENCE AREA

The Goonbri EL area (EL 7435) is held by the Goonbri Coal Company Pty Ltd, and covers an area of approximately 1,000 ha immediately to the east of the Tarrawonga Coal Mine (Figure 1-1 of the EA). Coal exploration activities are currently being undertaken within EL 7435.

It is considered unlikely that any significant or sustained cumulative impacts would arise from the exploration activities being undertaken by Goonbri Coal Company Pty Ltd in EL 7435 as exploration activities are generally short-term, of a limited extent and will be closely regulated by the DRE.

#### 4.4 CAROONA COAL PROJECT

The Caroona EL area (EL 6505) is held by Coal Mines Australia Pty Ltd (a subsidiary of BHP Billiton) and covers an area of approximately 344 square kilometres (km<sup>2</sup>).

EL 6505 is located to the west of Werris Creek approximately 80 km south of the Project and approximately 45 km south-west of Gunnedah.

BHP Billiton has indicated that any future development at the Caroona Coal Project would be limited to underground mining within defined exploration target areas and no open cut mining would be undertaken (Coal Mines Australia Pty Ltd, 2010).

#### 4.5 SHENHUA WATERMARK

The Watermark EL area (EL 7223) is held by Shenhua Watermark Coal Pty Ltd, covers an area of approximately 195  $\text{km}^2$ , and adjoins the northern boundary of the Caroona EL area.

EL 7223 is located approximately 55 km south of the Project and approximately 20 km south of Gunnedah.

As a requirement of the recent renewal of EL 7223 any future mine plan will be restricted by (Liberal NSW, 2011):

• the retention of a minimum 150 metre horizontal barrier of natural material between mining and the Gunnedah Formation/Namoi Groundwater System in any future mine plan; and  any potential development shall not include longwall mining underneath the deep alluvial irrigation aquifers or floodplain or open cut mining anywhere on the floodplain.

### 4.6 COAL SEAM GAS DEVELOPMENTS

The Namoi Catchment Water Study Independent Expert Phase 2 Report (Schlumberger Water Services, 2011) provides an overview of coal seam gas developments in the Namoi catchment.

In summary, the majority of the Namoi catchment is subject to Petroleum Exploration Licences held by a number of companies. Progressive exploration activities including the construction of pilot test wells are being undertaken by a range of companies across the basin.

Petroleum Assessment Lease 2 and Petroleum Production Lease 3 have been issued to Eastern Star Gas Limited to the west and south-west of Narrabri.

Eastern Star Gas Limited has also submitted Project Applications as follows:

- for the Narrabri Coal Seam Gas Project Gas Field Development to the DP&I in September 2010 (MP-10\_0162) seeking approval under Part 3A of the EP&A Act; and
- for the Narrabri to Wellington Gas Pipeline (Eastern Star Gas Pipeline Pty Ltd) to the DP&I in October 2010 (10/0146) seeking approval under Part 3A of the EP&A Act.

East Coast Power Pty Ltd has also submitted a Project Application for the Narrabri Gas-Fired Power Station Project and Related Projects to the DP&I in September 2006 (06-0304) seeking approval under Part 3A of the EP&A Act

#### 4.7 GUNNEDAH ETHANOL BIO-REFINERY PROJECT

Primary Energy Pty Ltd lodged a Project Application (P05\_0112) for the Gunnedah Ethanol Bio-Refinery Project in 2006.

The Project Description report prepared by Primary Energy Pty Ltd (2006) indicates the Project would include a dry milling ethanol bio-refinery on Quia Road Gunnedah, processing 220,000 t of wheat and sorghum and producing up to 80 megalitres of fuel grade ethanol per year. Primary Energy Pty Ltd (2006) also indicates the Gunnedah Ethanol Bio-Refinery Project would include:

- production of fertiliser, aqueous ammonia and green electricity;
- provision of a rail siding;
- up to 500 construction jobs and 50 operational jobs; and
- transport of some 35 percent of raw materials to the site by road.

#### 4.8 CONSIDERATION OF CUMULATIVE ASSESSMENT ISSUES FOR OTHER FUTURE DEVELOPMENTS

It is considered unlikely that any significant or sustained cumulative impacts would arise from the exploration activities being undertaken by mining and coal seam gas companies in the region, as these activities are generally short-term, of a limited extent and will be closely regulated by the DRE.

Environmental impact assessment for all future major projects with material impacts on the environment is required under the EP&A Act (including the projects listed above). This requirement also applies to future exploration projects that are likely to have a significant impact on the environment.

There is currently insufficient information to definitively consider the potential cumulative environmental impacts of the Project in the context of future major projects in the Gunnedah Basin, if these projects do not currently have detailed and publicly available environmental impact assessment documentation.

Environmental impact assessment documentation prepared for these future projects will be required to address potential cumulative environmental impacts, including interactions with the Project, if relevant. However, it is noteworthy that the majority of the future projects described above are sufficiently distant from the Project that any potential cumulative impacts are likely to be limited to more general population or transport growth effects in the wider region.

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