

BOGGABRI COAL PROJECT MODIFICATION
ENVIRONMENTAL ASSESSMENT

PREPARED
FOR
BOGGABRI COAL PTY LIMITED

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EXECUTIVE SUMMARY

Boggabri Coal Project

In July 2012, Project Approval was granted for the Boggabri Coal Project by the Planning Assessment Commission (PAC) of New South Wales (NSW) under delegation from the NSW Minister for Planning and Infrastructure pursuant to section 75J of the NSW *Environmental Planning and Assessment Act, 1979*.

Under Project Approval 09_0182, the Boggabri Coal Mine is approved to extract up to 8.6 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal and transport up to 7 Mtpa product coal from the site until 31 December 2033.

The Modification

The proposed Modification to Project Approval (09_0182) for the Boggabri Coal Mine involves the processing of up to 3 Mtpa of ROM coal from the Tarrawonga Coal Project at the Boggabri Infrastructure Facilities in Coal Lease (CL) 368, and the associated transport of up to an additional 3 Mtpa of product coal along the private Boggabri rail spur.

Reject material associated with the processing of coal from the Tarrawonga Coal Mine will be co-disposed, along with Boggabri reject material, in the Boggabri open cut mining area.

To accommodate coal from the Tarrawonga Coal Mine, the Boggabri Infrastructure Facilities will be expanded slightly in order to provide additional coal stockpiling areas and haul roads. These changes will require an adjustment to the boundary between CL 368 and Mining Lease 1579, as well as the relocation of existing Tarrawonga water storages located on the western toe of the Tarrawonga Northern Emplacement, which will be replaced by a new 50 megalitre capacity Tarrawonga sediment dam.

Minor increases in the capacity of Boggabri sediment dams will also be required to accommodate runoff from the expanded Boggabri Infrastructure Facilities area.

The processing of Tarrawonga coal at the Boggabri Infrastructure Facilities will increase water demand at the Boggabri Coal Mine. Boggabri Coal Pty Limited (Boggabri Coal) and Tarrawonga Coal Pty Ltd (TCPL) will use their surface water and groundwater licences to meet external make-up water supply requirements.

Justification and Need

The Modification is considered to be justified on environmental, social and economic grounds as the use of shared coal handling, processing and transport infrastructure is more efficient and has fewer environmental impacts than two independently operated mines.

The Modification will also enable cessation of ROM coal transport along public roads from the Tarrawonga Coal Mine to the Whitehaven Coal Handling and Preparation Plant (with the exception of domestic coal and gravel sales).

Tarrawonga Coal Project

The Tarrawonga Coal Project was approved by the PAC in January 2013 and involves the extension of the Tarrawonga Northern Emplacement area to the north into CL 368 and its integration with the southern part of the Boggabri waste rock emplacement. The extended Tarrawonga Northern emplacement area will become part of the Tarrawonga Coal Mine and will therefore be managed by TCPL.

Notwithstanding the above, the integration of the Boggabri and Tarrawonga waste emplacements will result in some alterations to the surface water management system described in the Boggabri Environmental Assessment (EA). These revisions have, therefore, been considered as part of the Modification.

Potential environmental impacts (including cumulative impacts) associated with the receipt of coal associated with the Tarrawonga Coal Project at the Boggabri Infrastructure Facilities area were considered and assessed in the Tarrawonga EA.

Key Environmental Issues and Management

The Modification will result in minor additional emissions of noise and dust at the Boggabri Coal Mine, due to the processing of Tarrawonga coal. However, these emissions will not result in additional noise or air quality impacts at sensitive receivers, compared to those impacts predicted for the Boggabri EA (i.e. those impacts assessed and approved by the PAC subject to the Boggabri Coal Project being managed in accordance with the relevant conditions of Schedule 3 of Project Approval [09_0182]).

Potential cumulative noise and air quality impacts associated with the Modification were assessed in the Tarrawonga EA.

The Modification will not change the location of sources of emissions of noise or dust associated with the Boggabri Coal Mine (or Tarrawonga Coal Project). On this basis, the noise and air quality monitoring and management systems required by Project Approval (09_0182) for the Boggabri Coal Mine are considered to be suitable for the Modification.

As described above, Boggabri Coal and Whitehaven Coal Mining Pty Ltd/TCPL will use their surface water and groundwater licences to meet external make-up water supply requirements associated with increased water demands due to the Modification.

The integrated waste emplacement will result in a relatively small decrease in catchment area reporting to 'Nagero Creek' at the Boggabri Coal Mine. However, runoff from the rehabilitated integrated waste emplacement will be directed to Bollol/Goonbri Creek. Bollol/Goonbri Creek and 'Nagero Creek' are tributaries of the Namoi River, and therefore, the cumulative change to the catchment area of the Namoi River will be negligible.

1 INTRODUCTION

1.1 PROJECT LOCATION AND PROPONENT

The Boggabri Coal Mine is operated by Boggabri Coal Pty Limited (Boggabri Coal), a wholly owned subsidiary of Idemitsu Australia Resources Pty Limited. The Boggabri Coal Mine is located approximately 15 kilometres (km) north-east of Boggabri in the north-west Region of New South Wales (NSW) (Figure 1-1). Operations at the Boggabri Coal Mine commenced in 2006.

The Boggabri Coal Mine open cut, overburden emplacement areas and the majority of mine-related infrastructure are located in Coal Lease (CL) 368.

1.2 BACKGROUND

1.2.1 Boggabri Coal Project

In October 2009, Boggabri Coal submitted a Project Application for the Boggabri Coal Project to the then NSW Department of Planning (now 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).

Activities associated with the Boggabri Coal Project are described and assessed in the *Continuation of Boggabri Coal Mine Environmental Assessment* (Boggabri EA) (Hansen Bailey, 2010) and include:

- continuation of the Boggabri Coal Mine for a further 21 years (i.e. until 31 December 2033);
- extraction of up to 8.6 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal;
- production and transportation off-site of up to 7 Mtpa product coal;
- construction and use of a Coal Handling and Preparation Plant (CHPP) at the Boggabri Infrastructure Facilities area;
- construction of additional ROM coal hopper and the extension of ROM coal stockpiles;
- upgrades and modifications to other existing mine facilities and infrastructure;
- construction and use of a 17 km private rail spur and loop linking the Boggabri Coal Mine to the Werris Creek Mungindi Railway;

- extension of the waste rock emplacement (maximum height of 395 metres [m] Australian Height Datum [AHD]); and
- increasing the total workforce from approximately 145 current staff to approximately 500 staff at peak production.

In July 2012, Project Approval was granted for the Boggabri Coal Project by the Planning Assessment Commission (PAC) of NSW under delegation from the NSW Minister for Planning and Infrastructure pursuant to section 75J of the EP&A Act.

Under Project Approval (09_0182), the Boggabri Coal Mine is approved to extract up to 8.6 Mtpa of ROM coal and transport up to 7 Mtpa product coal from the site until 31 December 2033.

Environmental performance conditions for the Boggabri Coal Mine are detailed in Project Approval (09_0182).

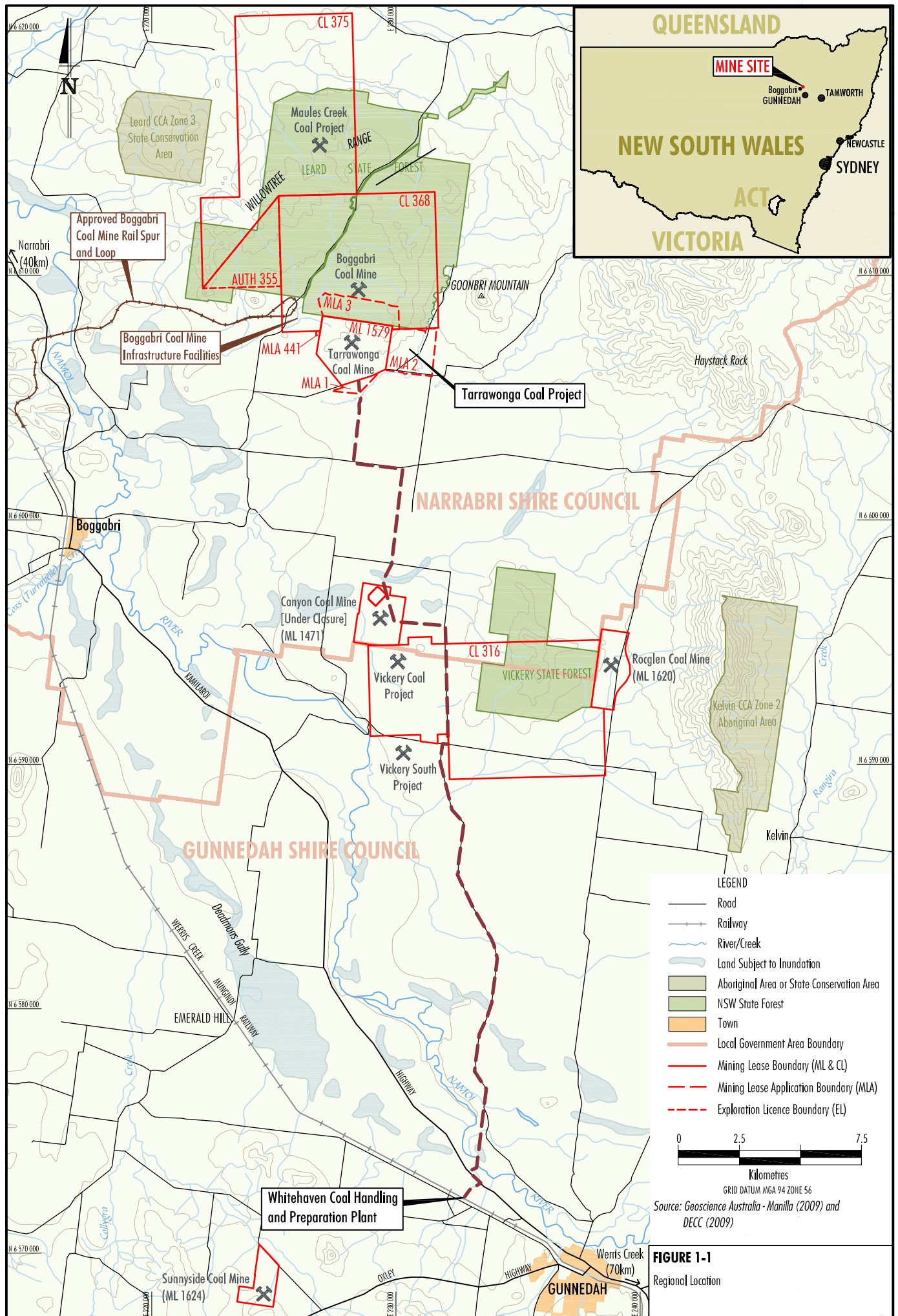
Figure 1-2 shows the approved layout of the Boggabri Coal Project.

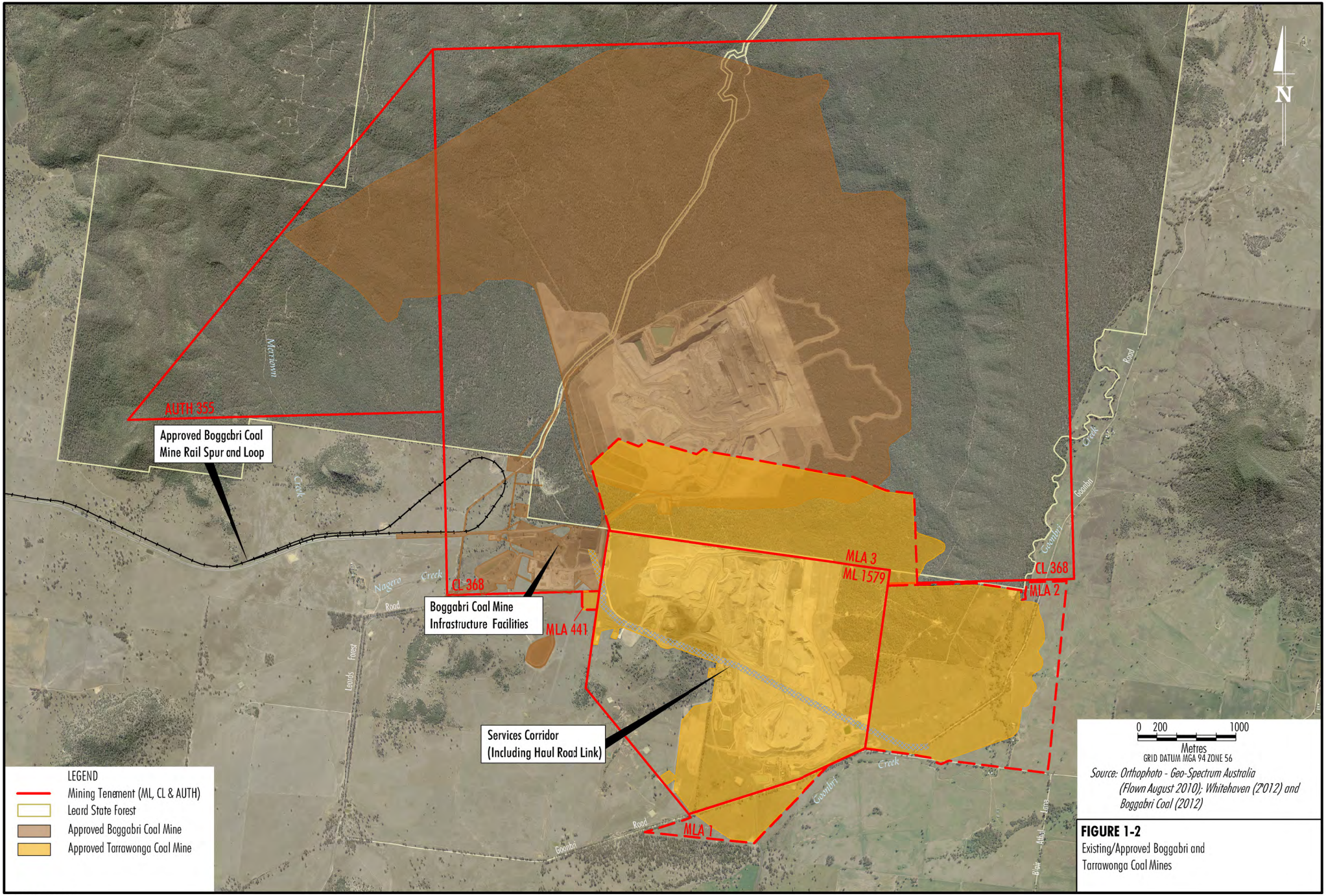
1.2.2 Tarrawonga Coal Project

The Tarrawonga Coal Mine is an open cut mining operation located approximately 15 km north-east of Boggabri and immediately south of the Boggabri Coal Mine (Figure 1-1). The Tarrawonga Coal Mine is owned and operated by Tarrawonga Coal Pty Ltd (TCPL), which is a joint venture between Whitehaven Coal Mining Pty Ltd (Whitehaven) (70 percent [%] interest) and Boggabri Coal (30% interest). The Tarrawonga open cut, overburden emplacement areas and the majority of the mine-related infrastructure are located in Mining Lease (ML) 1579.

ROM coal from the Tarrawonga Coal Mine is currently transported using on-highway haul trucks to the Whitehaven CHPP, which is located approximately 35 km to the south on the outskirts of Gunnedah (Figure 1-1).

In March 2011, TCPL submitted a Project Application and Environmental Assessment (Tarrawonga EA) to the DP&I seeking approval under Part 3A of the EP&A Act (Project Application No. 11_0047) for the Tarrawonga Coal Project.





In January 2013, Project Approval (11_0047) was granted for the Tarrawonga Coal Project by the PAC under delegation from the NSW Minister for Planning and Infrastructure pursuant to section 75J of the EP&A Act.

The Tarrawonga Coal Project involves continued development of open cut mining operations at the Tarrawonga Coal Mine to facilitate a ROM coal production rate of up to 3 Mtpa for a 17 year project life (i.e. until 2029).

Figure 1-2 shows the approved operations at the Tarrawonga Coal Mine.

A key component of the Tarrawonga Coal Project is the construction and use of a services corridor (including a haul road) linking it to the Boggabri mine infrastructure. Coal trucks will use the services corridor to access the Boggabri Infrastructure Facilities. At these facilities, coal from the Tarrawonga Coal Project will be processed and/or loaded onto trains for off-site transport. Up to 1.5 Mtpa of Tarrawonga coal will be processed through the Boggabri CHPP, with the remaining 'bypass' coal (i.e. up to 3 Mtpa) being stockpiled separately and will be loaded onto trains.

Figure 1-3 is a schematic diagram showing the proposed changes to the Boggabri Infrastructure Facilities.

The Tarrawonga Coal Project also involves the extension of the Tarrawonga Northern Emplacement area to the north into CL 368 and its integration with the southern part of the Boggabri waste rock emplacement. TCPL will apply for a transfer of part of the existing CL 368 from Boggabri Coal to TCPL (Mining Lease Application [MLA] 3 on Figure 1-2). This means that the extended Tarrawonga Northern Emplacement area will become part of the Tarrawonga Coal Mine and will therefore be managed by TCPL.

1.3 MODIFICATION OVERVIEW

1.3.1 Document Purpose

This Environmental Assessment (Modification EA) was prepared by Boggabri Coal to support an application to modify Project Approval (09_0182) for the Boggabri Coal Mine.

The Boggabri EA did not describe the processing of Tarrawonga coal at the Boggabri Infrastructure Facilities in CL 368, or the associated transport along the private rail spur.

As such, a modification to Project Approval (09_0182) is required in order to assess and authorise these activities.

1.3.2 Summary of Changes

Table 1-1 provides a summary comparison of the approved Boggabri Coal Mine and the Modification. A detailed description of the Modification is provided in Section 2.

1.3.3 Justification and Need

The Modification will enable the receipt of Tarrawonga coal at the Boggabri Coal Mine Infrastructure Facilities, where it will be processed and transported off-site. This sharing of coal handling, processing and transport infrastructure will be more efficient and have fewer environmental impacts than two independently operated mines.

The Modification (and commissioning of the Boggabri CHPP and private rail spur) will also enable cessation of ROM coal transport along public roads from the Tarrawonga Coal Mine to the Whitehaven CHPP (with the exception of domestic coal and gravel sales).

1.3.4 Other Relevant Approval Considerations

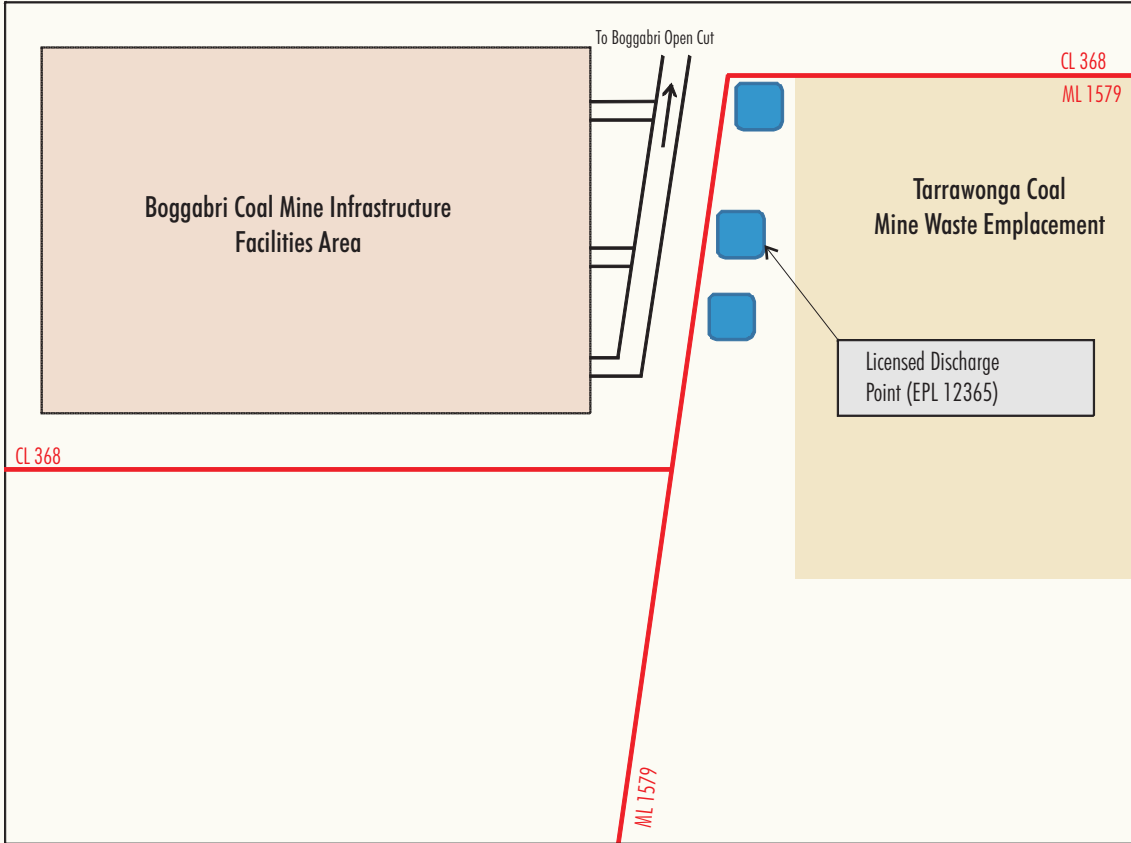
Potential environmental impacts (including cumulative impacts) associated with the receipt of Tarrawonga coal at the Boggabri Infrastructure Facilities area were considered and assessed in the Tarrawonga EA.

The Modification does not seek approval for the extension of the Tarrawonga Northern emplacement into CL 368 (and integration with the Boggabri waste emplacement), as these activities will be conducted in accordance with the project approval for the Tarrawonga Coal Project, and associated ML and environment protection licence (EPL) requirements.

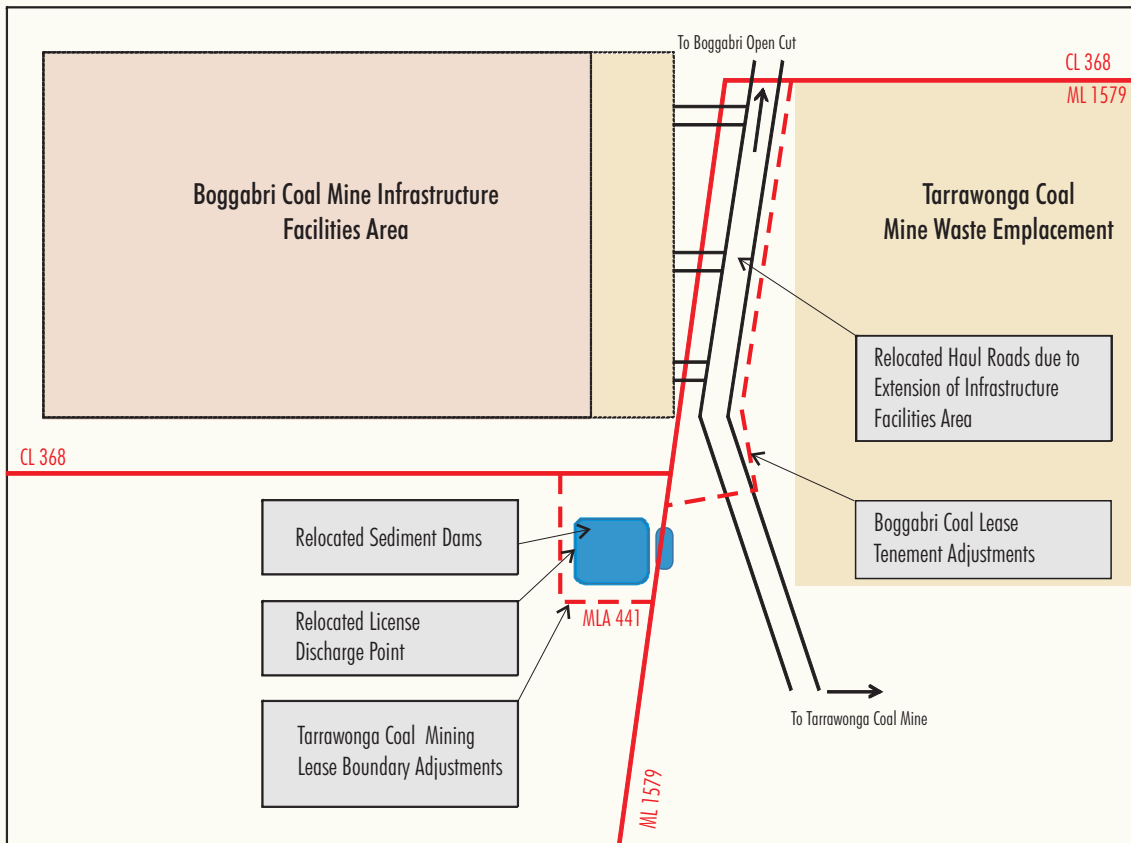
Accordingly, the water management and land management (e.g. rehabilitation) for areas within the Tarrawonga Coal Mine's mining tenements (i.e. including relevant areas of the integrated waste emplacement) (Figure 1-2) were described in the Tarrawonga EA.

Notwithstanding the above, the integration of the Boggabri and Tarrawonga waste emplacements will result in some alterations to the surface water management system described in the Boggabri EA. These revisions are, therefore, considered in this Modification EA.

EXISTING BOGGABRI COAL MINE



PROPOSED MODIFICATION



Source: Boggabri Coal (2012)

FIGURE 1-3

Schematic Diagram Showing Proposed Changes to Boggabri Infrastructure Facilities

Table 1-1
Summary of the Approved Boggabri Coal Mine and the Proposed Modification

Component	Summary of Approved Boggabri Coal Mine	Summary of the Modification
Mine Life	Mining operations until 31 December 2033.	No change to the Boggabri Coal Mine life.
ROM Coal Production	ROM coal production of up to approximately 8.6 Mtpa from the Boggabri Coal Mine.	No change to the amount of ROM coal mined at the Boggabri Coal Mine.
Infrastructure Facilities Area	Construction and use of a CHPP, bypass crusher and associated auxiliary equipment.	No change. Note that the Boggabri EA assessed operation of the Boggabri CHPP at 3 Mtpa, whereas this Modification involves coal processing at a rate of up to 3.5 Mtpa.
Coal Stockpiles	Extension of existing coal stockpiles.	Additional extension of ROM and product coal stockpiles to accommodate coal from the Tarrawonga Coal Mine.
CHPP Coal Processing	Processing (i.e. washing) of up to 3 Mtpa ROM coal from the Boggabri Coal Mine at the Boggabri CHPP. Remaining ROM coal bypassed.	Processing of a combined total of 3.5 Mtpa of coal (i.e. including up to 1.5 Mtpa of Tarrawonga coal). No change to bypass of Boggabri Coal. Bypass of up to 3 Mtpa of Tarrawonga Coal.
Product Coal	Up to 7 Mtpa product coal from the Boggabri Coal Mine.	No change to the 7 Mtpa of Boggabri product coal to be dispatched from the Boggabri Coal Mine. Up to an additional 3 Mtpa of Tarrawonga product coal to be dispatched from the Boggabri Coal Mine.
Product Coal Transport	7 Mtpa of product coal to be transported off-site via rail on the 17 km private rail spur from approximately May 2014 onwards.	No change to rail movements associated with transporting coal from the Boggabri Coal Mine. Additional rail movements associated with transporting up to 3 Mtpa of product coal from the Tarrawonga Coal Mine.
Reject Material	Coarse rejects and tailings co-disposed in the Boggabri open cut mining area.	No change. Up to approximately 200,000 tonnes (t) of additional reject material associated with the processing of coal from the Tarrawonga Coal Mine.
Waste Rock Emplacement	Extension of the existing Boggabri waste rock emplacement (maximum height of 395 m AHD).	No change to the Boggabri waste rock emplacement. Tarrawonga waste rock emplacement designed to integrate with the Boggabri waste rock emplacement as per the Tarrawonga approval.
Water Management	On-site water management system comprising water management storages and collection drains, runoff diversions, sediment control and open cut dewatering. Licensed discharge of excess water stored on-site.	Reduction in the overall catchment area of the Boggabri Coal Mine due to integration of waste rock emplacements. No change.
Mining Operation Hours	24 hours per day, seven days per week.	No change.

1.4 LEGISLATIVE FRAMEWORK

The legislative framework for the Boggabri Coal Project is described in the Boggabri EA.

The legislative framework relevant to the Modification is described below.

1.4.1 Section 75W of the Environment Planning and Assessment Act, 1979

The Boggabri Coal Project Approval was granted under Part 3A of the EP&A Act by the PAC in July 2012 and therefore constitutes a “transitional Part 3A project” pursuant to the savings and transitional provisions in Schedule 6A of the EP&A Act.

Clause 3 of 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.¹

Approval for the proposed changes is sought as a modification to the Project Approval (09_0182) under section 75W of the EP&A Act. Section 75W of the EP&A Act relevantly provides:

75W Modification of Minister’s approval

(1) *In this section:*

Minister’s approval means an approval to carry out a project under this Part, and includes an approval of a concept plan.

modification of approval means changing the terms of a Minister’s approval, including:

- a) *revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
- b) *changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*

(2) *The proponent may request the Minister to modify the Minister’s approval for a project. The Minister’s approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*

(3) *The request for the Minister’s approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*

(4) *The Minister may modify the approval (with or without conditions) or disapprove of the modification.*

...

1.4.2 State Environmental Planning Instruments

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

Given this, various SEPPs potentially of relevance to the Boggabri Coal Project were described in the Boggabri EA, including:

- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development;*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection;*
- *State Environmental Planning Policy No. 55 – Remediation of Land;*
- *State Environmental Planning Policy (Major Projects) 2005;*
- *State Environmental Planning Policy (Infrastructure) 2005; and*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2005.*

No change is required to the location of the development, land uses, materials handled or the development of infrastructure at the Boggabri Coal Mine due to the Modification.

The use of shared coal handling, processing and transport infrastructure at the Boggabri Infrastructure Facilities area has fewer environmental impacts than two independently operated mines.

In addition, there will be public benefit associated with the Modification as it will enable cessation of ROM coal transport along public roads from the Tarrawonga Coal Mine to the Whitehaven CHPP.

¹ Part 3A of the EP&A Act (as in force immediately before its repeal) continues to apply for the Boggabri Coal Project. The description and quotations of relevant references to clauses of Part 3A in this document are, therefore, as if Part 3A of the EP&A Act is still in force.

On this basis, consideration of additional SEPPs (i.e. in addition to those considered for the Boggabri Coal Project) is not required for the Modification.

1.4.3 Environment Protection and Biodiversity Conservation Act, 1999

Additional disturbance associated with the Boggabri Coal Project (i.e. beyond the approved disturbance area for the Boggabri Coal Mine) was determined to be a “controlled action” by the then Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) (now the Department of Sustainability, Environment, Water, Population and Communities) on 5 February, 2010 (EPBC Ref: 2009/5256).

The Action was considered likely by the DEWHA to have a significant impact to listed threatened species and ecological communities and listed migratory species, which are matters protected by the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act).

As such, the Action required assessment and approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities under Part 3 of the EPBC Act.

In February 2013 approval for the Boggabri Coal Project was granted under the EPBC Act by the Commonwealth Minister.

The Modification will not result in any material change to the disturbance described in the Boggabri EA, and will not result in any additional significant impacts to listed threatened species and ecological communities or listed migratory species. As a result, the Modification has not been referred for assessment and approval under the EPBC Act.

1.4.4 Water Management Act, 2000 and Water Act, 1912

External water demand for the Boggabri Coal Project will be sourced from licensed surface water and groundwater extraction.

The Modification will result in an increase in water demand at the Boggabri Coal Mine due to the increase in ROM coal processing at the Boggabri CHPP. TCPL will be responsible for securing water required for the processing of Tarawonga coal at the Boggabri CHPP.

Consideration of the access licence dealing principles under the *Water Management Act, 2000* and a summary discussion of the licences required for each water source associated with the Boggabri Coal Mine are provided below.

There will be no change to groundwater inflows to the Boggabri Coal Mine open cut associated with the Modification.

Alluvial Aquifer Groundwater Sources

External water will be extracted from alluvial aquifer groundwater and/or surface water associated with the Namoi River.

For the groundwater component, Clause 4(3) of the *Water Sharing Plan for the Upper and Lower Namoi Groundwater Sources, 2003* (Upper and Lower Namoi Groundwater Water Sharing Plan) provides that the plan applies to the following waters:

- (3) *The Upper and Lower Namoi Groundwater Sources include all water contained in the unconsolidated alluvial sediment aquifers associated with the Namoi River and its tributaries.*

Note. Bores drilled through the unconsolidated alluvial sediments into the underlying Great Artesian Basin (GAB) are tapping a different groundwater source. On a map, they may appear to lie within the boundaries of the Lower Namoi, however they are within the deeper GAB groundwater source and are not included as a part of this Plan.

The alluvial aquifers within the vicinity of the Boggabri Coal Mine fall within the Upper Namoi Zone 4, Namoi Valley (Keepit Dam to Gin’s Leap) Groundwater Source of the Upper and Lower Namoi Groundwater Water Sharing Plan.

Appropriate aquifer access licences and share components for any take of water from alluvial aquifers will be sought and obtained under the *Water Management Act, 2000* in consultation with the NSW Office of Water (NOW). These aquifer access licences will be obtained in accordance with the aquifer licence dealing rules outlined in Part 11 of the Upper and Lower Namoi Groundwater Water Sharing Plan and managed in accordance with the rules outlined in Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan as outlined in the sub-sections below.

Boggabri Coal and TCPL currently hold volumetric licence allocations in the Upper Namoi Zone 4, Namoi Valley (Keepit Dam to Gin’s Leap) Groundwater Source. Details of these water access licenses are provided in Appendix A.

If required, Boggabri Coal and TCPL will apply for the assignment of appropriate allocation for the extraction of alluvial groundwater for the Modification under section 71Q or nomination of additional water supply works under section 71W of the *Water Management Act, 2000*. Note that section 71W(3) relevantly states:

- (3) *For the avoidance of doubt, a water supply work or group of water supply works may be nominated under this section even though no approval is required to be held in relation to the work or works under this Act.*

Management of Local Impact

Division 2, Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan provides provision for the management of local impact on the groundwater resource. Relevant provisions of Division 2, Part 10 are outlined below.

Clause 36 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 36 *Extraction interference between neighbouring bores*
- (1) *With the exception of a water supply work (bore) for the supply of basic landholder rights only, applications for a new water supply work (bore) within 100 metres of any bores for the supply of basic landholder rights, will require an investigation by the proponent of the potential impact on neighbouring bores.*
- ...
- (3) *A minimum distance of 400 metres is to be maintained between all new water supply works (bores), except for a replacement water supply work (bore) and those for the supply of basic landholder rights only.*
- (4) *A new water supply work (bore) that is not a replacement water supply work (bore) shall be located no closer than 200 metres from a property boundary.*
- (5) *Notwithstanding the provisions of subclauses (3) and (4), the Minister may, upon application by an access licence holder, vary the distance restrictions specified in subclauses (3) and (4) if:*
- (a) *a hydrogeological study undertaken by the licence holder, assessed as adequate by the Minister, demonstrates minimal potential for adverse impact on existing licensed extraction, including consideration of cumulative impact,*

- (b) *written consent is obtained by the applicant from adjacent landowners, and*
- (c) *there is a process for remediation in the event that an adverse impact occurs in the future, specified as conditions on the licence.*

...

- (7) *A new water supply work (bore) with the exception of a replacement water supply work (bore) or a water supply work (bore) for the supply of basic landholder rights only, cannot be constructed within a minimum distance of:*
- (a) *500 metres of a bore nominated by a local water utility access licence,*
- (b) *400 metres of a Departmental monitoring bore,*
- (c) *400 metres of a bore extracting from the Great Artesian Basin,*
- (d) *500 metres of a wetland, or*
- (e) *200 metres of a river.*

Section 75U(1) of the EP&A Act provides that water supply work approvals under section 90 of the *Water Management Act, 2000* are not required for an approved Part 3A Project. Therefore the restrictions set out in clause 36 of the Upper and Lower Namoi Groundwater Water Sharing Plan do not apply to bores approved as part of the Boggabri Coal Project.

Any additional extraction from the alluvial aquifer will not occur within:

- 100 m of any bore for the supply of basic landholder rights;
- 400 m of a water supply work (bore) not owned by Boggabri Coal or Whitehaven/TCPL;
- 200 m of a property boundary with an adjoining property not owned by Boggabri Coal or Whitehaven/TCPL;
- 500 m of a bore nominated by a local water utility access licence;
- 400 m of a Departmental monitoring bore;
- 400 m of a bore extracting from the Great Artesian Basin; or
- 500 m of a wetland.

Surface Water Sources

External surface water supply will be sourced from the Namoi River, as described in the Boggabri EA.

Under the *Water Management Act, 2000*, the Upper Namoi and Lower Namoi Regulated River Water Sharing Plan commenced on 1 July 2004.

Clause 4 of the Upper Namoi and Lower Namoi Regulated River Water Sharing Plan applies to the following waters:

- 4 *Water sources and waters to which this Plan applies*
 - (1) *The water sources in respect of which this Plan is made shall be known as the Upper Namoi Regulated River Water Source and the Lower Namoi Regulated River Water Source (hereafter these water sources).*
 - (2) *The Upper Namoi Regulated River Water Source is that between the banks of all rivers, from Split Rock Dam downstream to Keepit Dam, which at the date of commencement of this Plan, have been declared by the Minister to be regulated rivers.*
 - (3) *The Lower Namoi Regulated River Water Source is that between the banks of all rivers, from Keepit Dam downstream to the junction of the Namoi River with the Barwon River, which at the date of commencement of this Plan, have been declared by the Minister to be regulated rivers.*
 - ...
 - (6) *This Plan applies to all waters contained within these water sources but does not apply to water contained within aquifer water sources underlying these water sources or to waters on land adjacent to these water sources.*

Boggabri Coal and Whitehaven Coal on behalf of TCPL currently hold general security and supplementary water access licences for the Lower Namoi Regulated River Water Source. Details of these water access licences are provided in Appendix A.

1.5 SITE LOCATION AND TENURE

The Boggabri Coal Mine is primarily located within CL 368 and Authorisation (A) 355 (Figure 1-2).

The Tarrawonga Coal Project is primarily located within ML 1579, however mining operations will extend into a portion of CL 368 (i.e. including the integration of the Tarrawonga Northern Emplacement and Boggabri waste emplacement) (Figure 1-2).

As part of the Modification, the Boggabri Infrastructure Facilities will be expanded in order to provide additional coal stockpiling and haul roads necessary to receive and process the Tarrawonga coal. These changes will extend the stockpile areas and haul roads slightly to the east and will require an adjustment to the boundary between CL 368 and ML 1579, as well as the relocation of the existing Tarrawonga water storages (i.e. Sediment Dam [SD] 17, Sediment Basin [SB] 6 and SB7), which are located on the western toe of the Tarrawonga Northern Emplacement (Figure 1-3). In place of these dams, a new haul road and diversion drain will be constructed, with the new lease boundary to be located between the two.

Runoff from the Tarrawonga Northern Emplacement will enter the new drain and travel in a southerly and then westerly direction into a new 50 megalitre (ML) capacity Tarrawonga sediment dam. A lease has been applied for around this new storage so that it will be contained within TCPL tenements (i.e. MLA 441 on Figure 1-3). A smaller 5 ML capacity sediment dam will also be constructed in this area in order to capture dirty water runoff from the haul road. It will overflow to the new 50 ML sediment dam.

TCPL will apply for the transfer of part of ML 1579 to Boggabri Coal to accommodate the relocated haul road.

The Modification does not seek approval for the relocation of sediment dams at the Tarrawonga Coal Mine, or the construction of the 50 ML dam, as these activities form part of the Project Approval for the Tarrawonga Coal Project.

1.6 CONSULTATION

1.6.1 Department of Planning and Infrastructure

Consultation with the DP&I regarding use of the Boggabri Coal Mine CHPP and rail spur for Tarrawonga coal was conducted as part of the preparation of the Tarrawonga EA in January and July 2011. Specific consultation regarding this Modification EA was undertaken in July 2012.

1.6.2 Whitehaven and Tarrawonga Coal

Whitehaven, TCPL and Boggabri Coal have entered into a commercial agreement to enable the handing, processing and transportation of coal from Tarrawonga Coal Mine at the Boggabri Infrastructure Facilities area (i.e. the subject of the Modification).

This Modification EA has been prepared in consultation with Whitehaven and TCPL.

1.6.3 Other Stakeholders

The Tarrawonga EA clearly identified and described the proposed Modification activities and the fact that Boggabri Coal will lodge an approval application for them subject to the approval of the Boggabri Coal Project (refer to Attachment 3 of the Tarrawonga EA).

The Tarrawonga EA also assessed the potential cumulative noise and air quality impacts associated with the Tarrawonga Coal Project operating in conjunction with the Boggabri Coal Project (including the processing and rail transport of coal via the Boggabri CHPP and rail spur).

The Tarrawonga EA was placed on public exhibition by the DP&I between 24 January and 29 February 2012. As such, stakeholders and other interested parties have had the opportunity to review and provide comments on the key aspects of the Modification during consultation for the Tarrawonga EA.

In addition, a public meeting was held by the PAC on 14 December 2012 in Boggabri allowing the PAC to hear from people interested in the Tarrawonga Coal Project.

2 MODIFICATION DESCRIPTION

Relevant changes to the Boggabri Coal Mine associated with the Modification are described below. There will be no change to the mining method or the development of the open cut due to the Modification.

2.1 BOGGABRI INFRASTRUCTURE FACILITIES

2.1.1 Boggabri Coal Mine

The existing Boggabri Infrastructure Facilities area is to be developed further as a result of the recent approval of the Boggabri Coal Project. Once construction is completed these facilities will comprise:

- ROM coal stockpiles to accommodate the receipt of up to 8.6 Mtpa ROM coal from the Boggabri Coal Mine;
- a CHPP with nominal feed rate of 500 tonnes per hour (tph), and associated feed crushing system;
- a bypass crusher with nominal feed rate of 1,250 tph, and associated ROM coal hopper;
- a product stockpile with capacity of up to 600,000 t;
- a product reclaim system, comprising dozers and an underground reclaim feeder system and reclaim tunnel with nominal capacity of 5,000 tph;
- a product loadout bin;
- a rail loop, linking to private rail spur and Werris Creek Mungindi Railway;
- water management structures, including sediment dams and diversion drains; and
- other associated infrastructure, including administration buildings, bath house, fuel service bay and workshop area.

ROM coal delivered by haul trucks to the Boggabri Infrastructure Facilities area will either be unloaded at the ROM coal stockpile, or delivered directly to the bypass crusher ROM coal hopper.

Stockpiled ROM coal will either be transferred to the CHPP feed system or bypass crusher ROM coal hopper for processing.

The Boggabri EA assessed up to 3 Mtpa of ROM coal from the Boggabri Coal Mine being processed (i.e. washed) through the CHPP, with the remaining coal to be bypassed (i.e. crushed only).

Product coal from both the CHPP and bypass crusher will be loaded to the product stockpile, and will be reclaimed and loaded to trains via the loadout bin.

In accordance with Project Approval (09_0182), up to 7 Mtpa of product coal is approved to be transported off-site.

2.1.2 The Modification

Coal Handling and Processing

Under the proposed Modification, the Boggabri CHPP will process coal at a rate of up to 3.5 Mtpa, which is within the maximum 500 tph design capacity of the CHPP (refer to Section 4.2.2 of the Boggabri EA). As a result, no significant changes to the CHPP itself are required as a result of the Modification.

The 3.5 Mtpa of coal to be processed through the CHPP will consist of approximately 2 Mtpa of Boggabri coal and up to 1.5 Mtpa of Tarrawonga coal. Remaining ROM coal (up to 3 Mtpa of Tarrawonga coal) will be bypassed. The amount of bypass coal will be determined by the prevailing market conditions at the time up to the maximum approved.

Additional fixed and mobile equipment required at the Boggabri Infrastructure Facilities area to process the Tarrawonga coal will consist of:

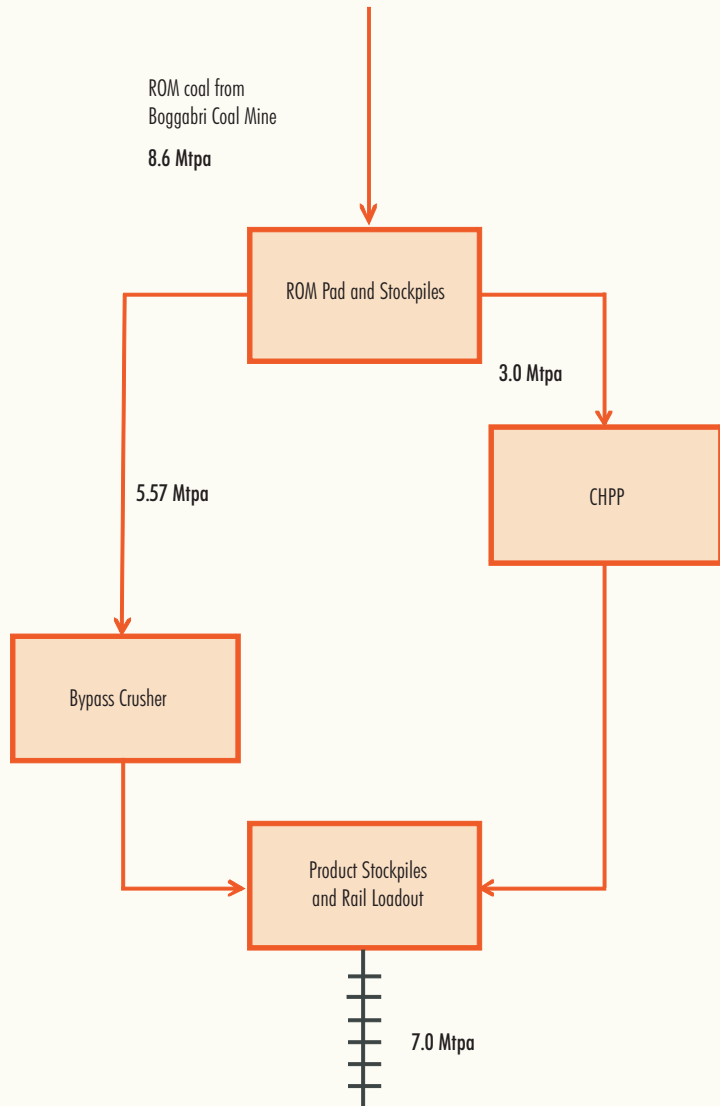
- 1 x loader (Komatsu WA900 or equivalent);
- 1 x dozer (D10R or equivalent); and
- 2 x trucks (Cat 777 or equivalent).

Figure 2-1 shows two simplified material handling flow diagrams for the Boggabri Coal Mine and the Modification for the scenario where 1.5 Mtpa of Tarrawonga ROM coal is washed at the Boggabri CHPP.

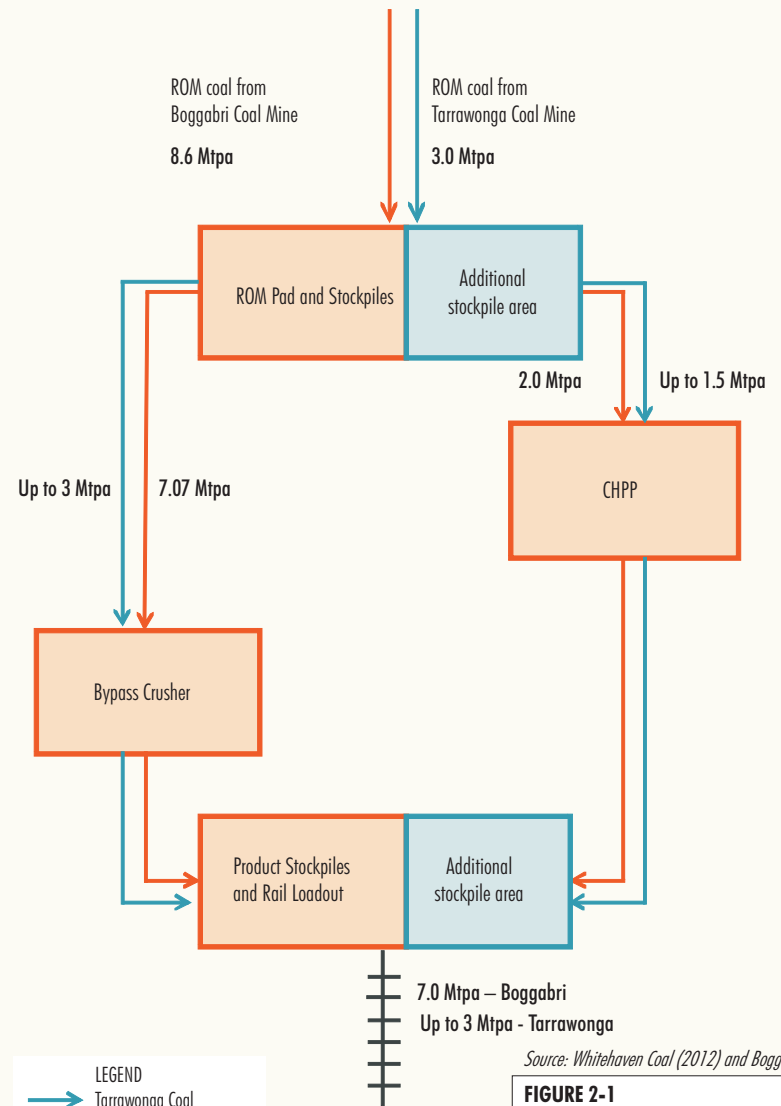
Coal Stockpiles

An extension of the ROM coal stockpile area, and associated relocation of the haul road to the open cut, will be required to accommodate coal from the Tarrawonga Coal Mine.

BOGGABRI COAL MINE



PROPOSED MODIFICATION



LEGEND
 → Tarrowonga Coal
 → Boggabri Coal

Source: Whitehaven Coal (2012) and Boggabri Coal (2012)

FIGURE 2-1
Simplified Materials Handling Flow Diagram

As described in Section 1.5, the relocation of the haul road (to the east) will result in the requirement to remove sediment dam SD17 and sediment basins SB6 and SB7 at the Tarrawonga Coal Mine and replace them with by a single 50 ML sediment dam located to the south of the Boggabri Infrastructure Facilities area. A smaller 5 ML capacity sediment dam will also be constructed in this area in order to capture dirty water runoff from the haul road. It will overflow to the new 50 ML sediment dam.

The Tarrawonga Coal Mine 50 ML sediment dam within MLA 441 was approved as part of the Tarrawonga Coal Project, and its construction and use does not form part of the Modification.

The extension of the ROM coal stockpile will also result in minor changes to the locations and sizes of surface water management structures at the Boggabri Infrastructure Facilities area.

In addition, an extension to the product coal stockpile area will be required for Tarrawonga product coal, along with an additional associated product coal conveyor.

Figures 2-2 and 2-3 show the revised Boggabri Infrastructure Facilities area, incorporating the extended coal stockpile areas, relocated haul road and Tarrawonga Coal Mine 50 ML sediment dam.

Production Coal Transport

The processing of Tarrawonga coal at the Boggabri Infrastructure Facilities area will result in up to an additional 3 Mtpa of product coal being loaded to trains via the approved Boggabri rail loadout bin or a dedicated Tarrawonga rail loadout bin and associated conveyor.

Tarrawonga product coal will be transported off-site via the Boggabri private rail spur. This will result in up to an additional 10 to 11 coal trains per week (on average) being dispatched on the Boggabri private rail spur and Werris Creek Mungindi Railway to the Port of Newcastle.

Access to suitable rail capacity for trains transporting Tarrawonga coal from the Boggabri private rail spur will be Whitehaven's responsibility. Whitehaven has entered into long-term arrangements with the Australian Rail Track Corporation (ARTC) for rail access from Whitehaven's operations to the Port of Newcastle. These arrangements provide Whitehaven with the rail capacity required for its long-term coal production, including approximately 47.5 million tonnes of product coal to be generated over the life of the Tarrawonga Coal Project.

2.2 COAL REJECT DISPOSAL

2.2.1 Boggabri Coal Project

As described in the Boggabri EA, coarse and fine coal reject material will be transported back to emplacement areas located within the Boggabri open cut.

There is adequate disposal capacity for all coal reject material from the Boggabri CHPP produced during the life of the Boggabri Coal Mine.

The management of coal reject material will be conducted in accordance with the Water Management Plan for the Boggabri Coal Mine, which is required under Condition 38 of Schedule 3 of Project Approval (09_0182). The Plan will include detailed plans, including design objectives and performance criteria for the design and management for the emplacement of reject materials and acid or sulphate generating materials.

2.2.2 The Modification

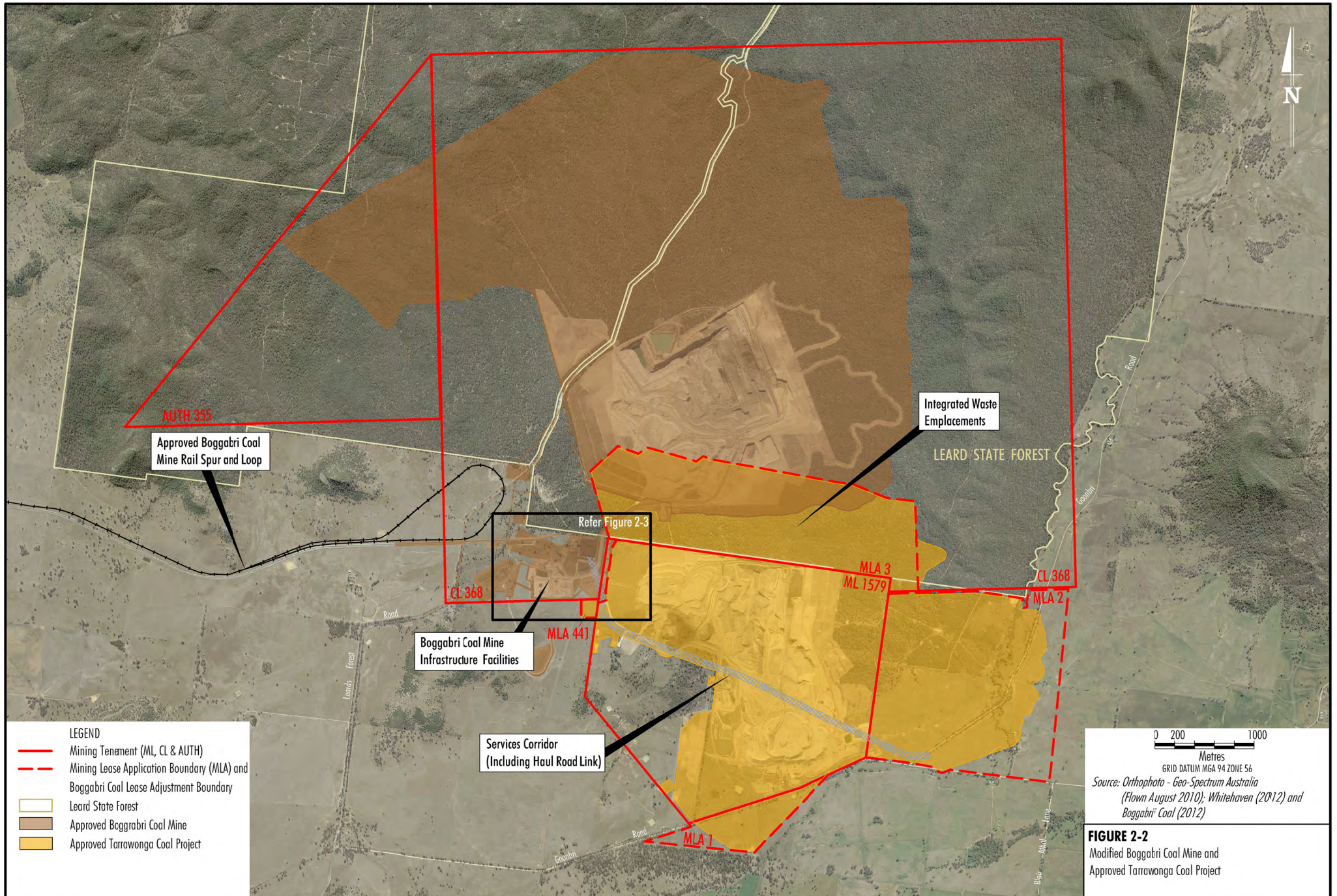
Boggabri Coal will be responsible for handling and disposal of coarse and fine reject material generated during the processing of Tarrawonga coal at the Boggabri CHPP. Up to approximately 0.2 Mtpa of Tarrawonga rejects will be produced at the Boggabri CHPP. There is suitable storage capacity within the Boggabri open cut for this additional material.

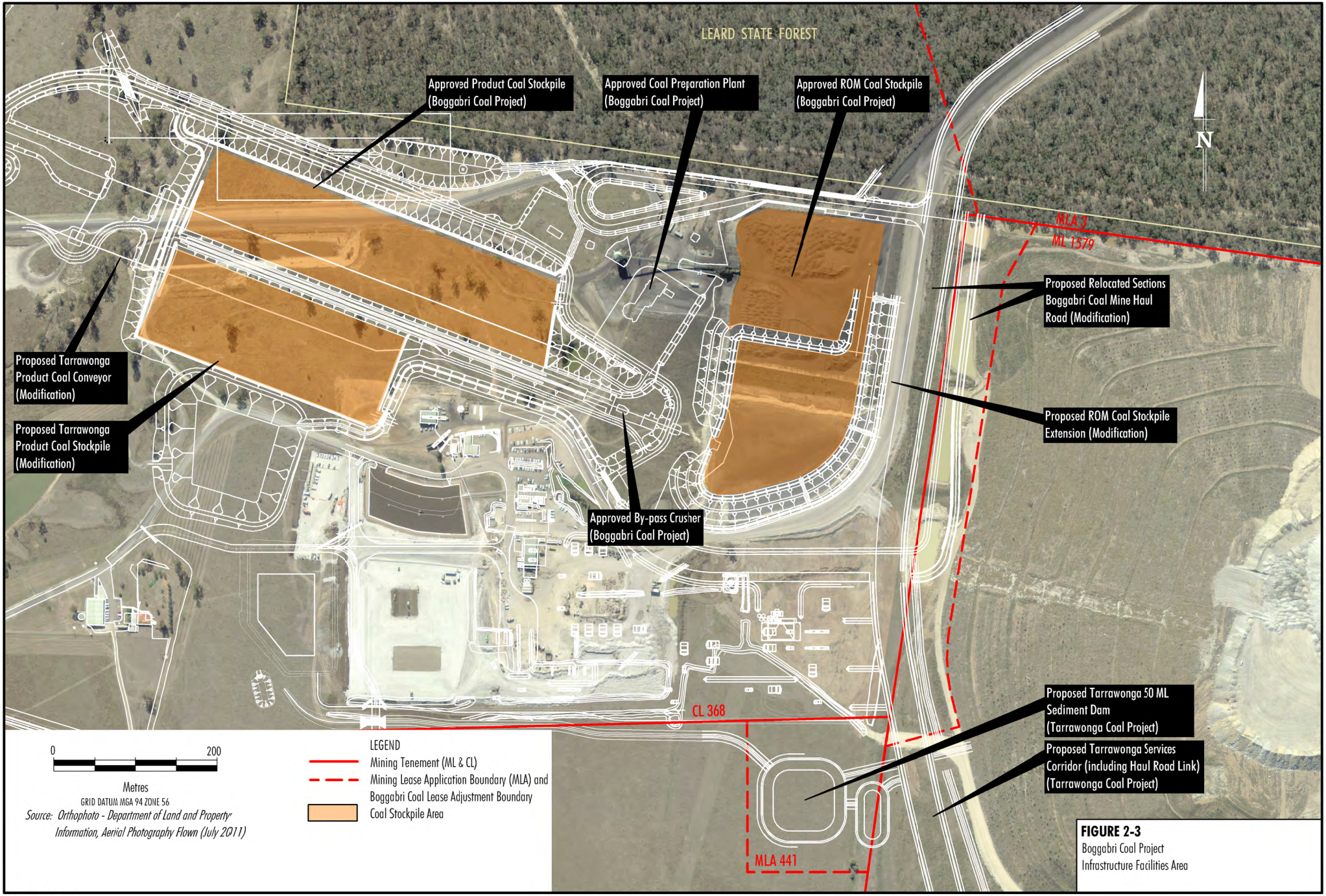
The bulk of the coarse and fine reject material produced from the processing of Tarrawonga coal is predicted to be non-acid forming (Geo-Environmental Management [GEM], 2012).

Coarse reject material is expected to be non-saline, and the fines material is expected to be slightly to moderately saline (GEM, 2012).

The management strategy for the in-pit disposal of these materials will address the potential risk that some of the reject materials are potentially acid forming, and that the fines materials are expected to be slightly to moderately saline.

The Water Management Plan for the Boggabri Coal Mine, required under Condition 38 of Schedule 3 of Project Approval (09_0182), will be revised to incorporate management of reject material associated with processing Tarrawonga coal.





LEARD STATE FOREST

Approved Product Coal Stockpile
(Boggabri Coal Project)

Approved Coal Preparation Plant
(Boggabri Coal Project)

Approved ROM Coal Stockpile
(Boggabri Coal Project)



MLA 3
ML 1579

Proposed Relocated Sections
Boggabri Coal Mine Haul
Road (Modification)

Proposed Tarrawonga
Product Coal Conveyor
(Modification)

Proposed Tarrawonga
Product Coal Stockpile
(Modification)

Proposed ROM Coal Stockpile
Extension (Modification)

Approved By-pass Crusher
(Boggabri Coal Project)

CL 368

Proposed Tarrawonga 50 ML
Sediment Dam
(Tarrawonga Coal Project)

Proposed Tarrawonga Services
Corridor (including Haul Road Link)
(Tarrawonga Coal Project)



Metres

GRID DATUM MGA 94 ZONE 56

Source: Orthophoto - Department of Land and Property
Information, Aerial Photography Flown (July 2011)

- LEGEND**
- Mining Tenement (ML & CL)
 - - - Mining Lease Application Boundary (MLA) and Boggabri Coal Lease Adjustment Boundary
 - Coal Stockpile Area

MLA 441

FIGURE 2-3
Boggabri Coal Project
Infrastructure Facilities Area

2.3 WASTE ROCK EMPLACEMENT INTEGRATION

The Boggabri EA shows progressive development of out-of-pit waste emplacement for the Boggabri Coal Mine. The southern batter of the waste emplacement will be completed within the first few years of the mine life. The Boggabri EA describes that the surface runoff from this southern batter will be captured by diversion drains, and this runoff will be incorporated into the Boggabri Coal Mine surface water management system.

Surface runoff from undisturbed areas between the southern extent of the waste emplacement and the CL 368 boundary will be captured by a 'clean water' diversion drain and directed off-site.

As described in the Tarrawonga EA, the existing Tarrawonga Northern Emplacement will be extended to the north and east, forming an integrated landform with the southern part of the Boggabri waste emplacement (Figure 1-2).

The extension of the Tarrawonga Northern Emplacement will occur within MLA 3 (to be the subject of a partial transfer from CL 368) (Figure 2-2) and will form part of the Tarrawonga Coal Mine (i.e. reducing the size of the Boggabri Coal Mine).

Surface water management within MLA 3, MLA 441 and ML 1579 will be the responsibility of the Tarrawonga Coal Mine, as described and assessed in the Tarrawonga EA.

TCPL's rehabilitation strategy and goals for the Tarrawonga Coal Mine were developed in consultation with Boggabri Coal, so that the rehabilitation of the Tarrawonga Northern Emplacement will be integrated with the Boggabri waste emplacement.

This integrated rehabilitation strategy is consistent with the intent of Condition 40 of Schedule 3 of Project Approval (09_0182), which requires the development of the Leard State Forest Regional Biodiversity Strategy.

2.4 SURFACE WATER MANAGEMENT AND SUPPLY/DEMAND

Surface Water Management

The integration of Boggabri and Tarrawonga waste emplacements and changes to the Boggabri Infrastructure Facilities area (i.e. extension of ROM coal stockpiles) will result in the following changes to the Boggabri surface water management system:

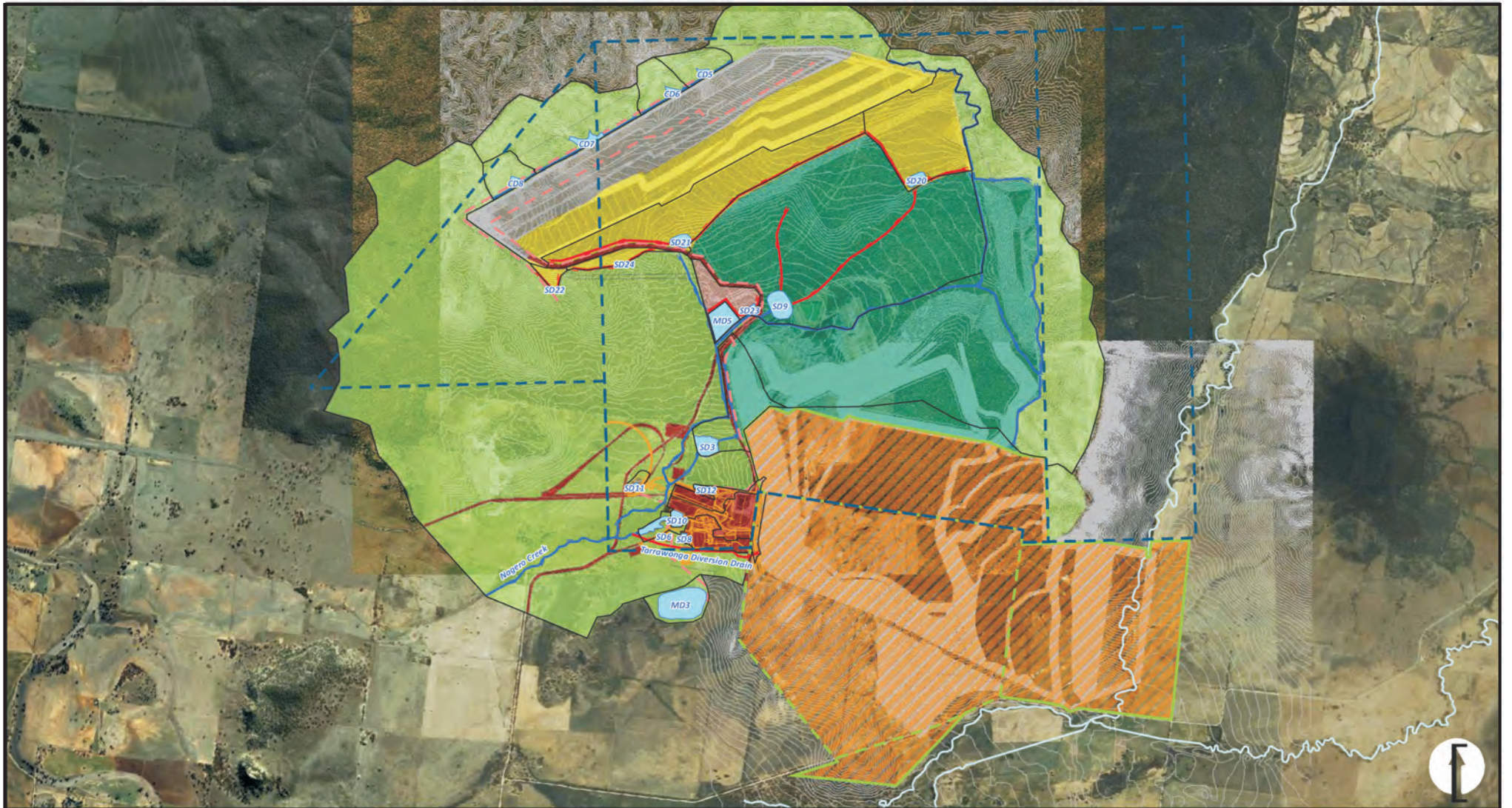
- There will be no change to the location of sediment dams capturing runoff from mine landforms and undisturbed areas. However, the amount of surface runoff from the Boggabri waste emplacement draining to dirty water sediment dams SD3 and SD7 will be reduced due to the integration of the Boggabri and Tarrawonga waste emplacements.
- The combined capacity of water sediment dams SD10 and SD12 will need to be increased by approximately 76 ML in order to accommodate the increased size of the Boggabri Infrastructure Facilities area and to provide additional storage for the CHPP water demand.
- The capacity of dirty water sediment dam SD8 will need to be increased by approximately 6 ML in order to accommodate the increased size of the Boggabri Infrastructure Facilities area, and to capture runoff previously directed to SD5 which will be removed to accommodate the expanded coal stockpiles.

Notwithstanding the above changes, the objectives and design criteria for the surface water management system will not change as a result of the Modification and will be consistent with the Boggabri Coal Project. Figure 2-4 shows the conceptual surface water management system for Year 21 of the Boggabri Coal Mine as modified.

Site Water Balance

A Surface Water Assessment (Parsons Brinckerhoff, 2010a) was conducted as part of the Boggabri EA and describes the site water balance for the Boggabri Coal Project.

A review of the potential impacts of the proposed Modification on the previous site water balance was conducted by Parsons Brinckerhoff (2013) (Appendix A). The review concluded that the annual water demand for the Boggabri Coal Mine will increase by up to approximately 700 ML as a result of the Modification. The review also assessed the estimated volume of external water required to meet this demand under various climatic scenarios. These results are summarised in Section 3.3 and described in detail in Appendix A.



- | | | | |
|--|---------------|--------------------------|----------------------|
| 2m Contours | River / Creek | Water Storages | Tarrawonga Coal Mine |
| Mine Infrastructure | Clean Water | Mining Void | Topsoil Stockpile |
| Boggabri Coal Mining Tenement | Dirty Water | Rehabilitated Spoil Dump | Undisturbed |
| Tarrawonga Mining Lease Boundary | Pump | Road / Industrial | Unshaped Spoil Dump |
| Tarrawonga Mining Lease Application Boundary | Catchments | | |

0 0.5 1 1.5 km

Source Parson Brinckerhoff, 2013

FIGURE 2-4
Water Management System for Year 21

3 ENVIRONMENTAL REVIEW

3.1 NOISE

A review of the potential noise impacts associated with the Modification was conducted by Wilkinson Murray (2013) (Appendix B).

3.1.1 Summary of Previous Assessments and Approved Operations

Boggabri Coal Project

Operational noise modelling for the Boggabri Coal Project was conducted in accordance with the *NSW Industrial Noise Policy* (INP) (NSW Environment Protection Authority [EPA], 2000) for years 1, 5, 10 and 21 (Bridges Acoustics, 2010).

The modelling indicated that over the 21 year mine life, some privately-owned receivers may experience operational noise levels above the relevant impact assessment criteria.

These impacts were assessed and approved by the PAC subject to the Boggabri Coal Project being managed in accordance with the relevant conditions of Schedule 3 of Project Approval (09_0182). These conditions include:

- the right to request mitigation measures (e.g. double glazed windows) or property acquisition for all privately-owned receivers predicted to experience operational noise levels above 35 A-weighted decibels (dBA) due to the Boggabri Coal Project only (Condition 3);
- operational noise assessment criteria (i.e. 35 dBA 15 minute equivalent continuous noise level [$L_{Aeq(15 \text{ minute})}$] for day, evening and night) for all other for privately-owned receivers (Condition 5);
- cumulative noise criteria for operational noise from the Boggabri Coal Project and other mines (Condition 7);
- the right to request mitigation measures or property acquisition for all privately-owned receivers experiencing sustained exceedances of the operational noise or cumulative noise criteria (Conditions 6 and 8);
- a requirement to ensure that all new plant are commissioned as noise suppressed (or attenuated) units (Condition 9); and
- operating conditions, including the implementation of best practice management practices and the installation of a predictive meteorological system and real-time noise monitoring network (Condition 12).

A Noise Management Plan (NMP) has been prepared for the Boggabri Coal Project in accordance with Condition 13 of Schedule 3 of Project Approval (09_0182).

The NMP includes a monitoring program that uses a combination of real-time and attended monitoring to evaluate the effectiveness of the noise management measures.

The NMP also includes a protocol for identifying noise enhancing meteorological conditions, and responding accordingly (i.e. by implementing additional mitigation measures).

The monitoring network for the Boggabri Coal Project will form part of a shared monitoring network in collaboration with the Tarrawonga Coal Project and Maules Creek Coal Project.

Tarrawonga Coal Project

Operational noise modelling for the Tarrawonga Coal Project was conducted in accordance with the INP for years 2, 4, 6 and 16 (Wilkinson Murray, 2011).

The noise modelling included assessment of potential impacts from the processing and dispatch of Tarrawonga coal at the Boggabri Infrastructure Facilities (i.e. the activities associated with the Modification).

The results of the assessment indicated that three privately-owned receivers (i.e. receivers 86 [Crosby], 52 [Suey] and 54 [McGregor]) were predicted to experience noise levels above the relevant noise criteria due to the Project-only. Exceedances of the relevant noise criteria at these receivers were also predicted due to noise from the Boggabri Coal Project.

Cumulative noise levels from the Tarrawonga Coal Project (including those activities associated with the Modification), Boggabri Coal Project and Maules Creek Coal Project were predicted to exceed the cumulative noise criteria at receivers 52 and 54.

These impacts were assessed and approved by the PAC subject to the Tarrawonga Coal Project being managed in accordance with the relevant noise conditions of Schedule 3 of Project Approval (11_0047).

Relevant receiver locations are shown on the land ownership figure provided in Attachment 1, as per the figure provided in Appendix 4 of Project Approval (09_0182).

Noise management measures are currently implemented at the Tarrawonga Coal Mine in accordance with the existing Tarrawonga NMP.

In accordance with Project Approval (11_0047), the existing Tarrawonga NMP will be updated to include details of the proposed real-time monitoring network, which will form part of the shared monitoring network required under Condition 13 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project.

Wilkinson Murray (2011) also assessed the potential noise impacts associated with rail transportation of Tarrawonga coal from the Boggabri Infrastructure Facilities. The assessment concluded that potential increases in rail noise on the Werris Creek Mungindi Railway (between the Boggabri rail spur and Werris Creek) will be minor (i.e. less than 2 dBA), and that the distance from the rail line at which the relevant ARTC and NSW Office of Environment and Heritage (OEH) rail noise criteria are met will increase by a negligible 2 m.

3.1.2 Relevant Changes due to the Modification

Generally, the Boggabri Infrastructure Facilities area, as approved for the Boggabri Coal Project, will have sufficient capacity to accommodate processing up to 3 Mtpa ROM coal from the Tarrawonga Coal Mine, including up to 1.5 Mtpa through the CHPP (Sections 2.1.1 and 2.1.2).

As described in the Tarrawonga EA Noise Assessment, noise from additional plant required at the Boggabri Infrastructure Facilities area for the handling, processing and transport of Tarrawonga coal has been assessed. The additional plant modelled in the Tarrawonga EA is as follows:

- 1 x loader (Komatsu WA900 or equivalent);
- 1 x dozer (D10R or equivalent);
- 2 x trucks (Cat 777 or equivalent);
- 1 x primary crusher; and
- 1 x idling coal train (including three locomotive engines of the same train).

In addition, the Modification will result in additional rail movements along the private Boggabri rail spur and the public railway.

The addition of these plant at the Boggabri Coal Mine Infrastructure area and the increased train movements will have the potential to alter the operational, cumulative and rail (on the public railway) noise impacts predicted in the Boggabri EA.

3.1.3 Potential Impacts

Operational Noise Impacts

Wilkinson Murray (2013) conducted noise modelling of the additional plant required for the handling, processing and transport of Tarrawonga coal at the Boggabri Infrastructure Facilities area.

The Modification is predicted to result in a maximum increase in noise levels of 0.2 dBA at any privately-owned receiver comparative to the noise impacts predicted in the Boggabri EA (Appendix B).

This represents a negligible increase, and as such the Modification will not result in any change to the results and conclusions regarding potential operational noise impacts presented in the Boggabri EA.

Cumulative Noise Impacts

Wilkinson Murray (2013) concluded that the cumulative impacts associated with the Modification will be consistent (i.e. no change) with the results of the cumulative impact assessment presented in the Tarrawonga EA.

Cumulative noise impacts in the Tarrawonga EA are predicted to exceed the cumulative noise criteria at receivers 52 (Suey) and 54 (McGregor).

Noise at these receivers is predicted to exceed the intrusive noise criteria of 35 dBA in the Boggabri EA due to noise from Boggabri only, and as such, in accordance Condition 3 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project, the relevant landowners have the right to request noise mitigation measures or property acquisition.

Rail Noise (Public Railway)

The Modification will result in up to an additional 10 to 11 coal trains per week leaving the Boggabri Coal Mine onto the public railway (i.e. Werris Creek Mungindi Railway) due to the transportation of Tarrawonga coal.

The potential noise impacts associated with the transportation of 2.8 Mtpa of Tarrawonga coal (i.e. an average of 10 trains dispatched per week) on the Werris Creek Mungindi Railway were assessed by Wilkinson Murray (2011) for the Tarrawonga EA.

Potential rail noise impacts were predicted to be minor (i.e. an increase of less than 2 dBA) (Section 3.1.1). Should the amount of Tarrawonga coal transported by rail increase to 3 Mtpa (i.e. 11 trains dispatched per week) this will not materially change the predicted rail noise impacts presented in the Tarrawonga EA (i.e. potential impacts would still be minor).

Rail Noise (Private Boggabri Rail Spur)

Noise generated by all trains travelling along the private Boggabri rail spur will be considered part of the operational noise for the Boggabri Coal Project (i.e. regardless of whether they are transporting Boggabri or Tarrawonga coal).

The relevant operational noise criterion for the Boggabri Coal Project is 35 dBA $L_{Aeq(15 \text{ minute})}$ at privately-owned receivers. Noise from the additional 10 to 11 trains per week transporting Tarrawonga coal will be managed to comply with the operational noise criteria.

These management measures will include ensuring that noise levels from locomotives are compliant with limits specified in the ARTC's EPL (3142), minimising the total number of trains travelling on the private Boggabri rail spur in any 15-minute period, and limiting the time that trains spend passing a receiver (e.g. not idling on the private Boggabri rail spur).

All train noise from the private Boggabri rail spur will be mitigated in accordance with the requirements of Condition 11 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project, which state that the private Boggabri rail spur must be constructed in consideration of acoustic design, including the implementation of reasonable and feasible mitigation measures.

3.1.4 Mitigation and Management

The real-time and predictive noise monitoring and management system required by Condition 13 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project is considered suitable for the Modification and does not require additional monitoring points, control measures or changes to the specific criteria.

3.2 AIR QUALITY

A review of the potential air quality impacts associated with the Modification was conducted by Pacific Environment Limited (2013) (Appendix C).

3.2.1 Previous Assessment and Approved Operations

Boggabri Coal Project

Air quality dispersion modelling for the Boggabri Coal Project was conducted in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) (NSW Department of Environment and Conservation, 2005) for Years 1, 5, 10 and 21 (PAEHolmes, 2010).

The modelling indicated that over the 21 year mine life, some privately-owned receivers may experience particulate matter concentrations above the relevant impact assessment criteria.

These impacts were assessed and approved by the PAC subject to the Boggabri Coal Project being managed in accordance with the relevant conditions of Schedule 3 of Project Approval (09_0182). These conditions include:

- property acquisition upon request rights for one landowner (receiver 54 [McGregor]) (Condition 25);
- the right to request air quality mitigation measures (e.g. air filters and/or air conditioning) for two landowners (receivers 52 [Suey] and 86 [Crosby]) (Condition 26);
- air quality assessment criteria, consistent with those detailed in the Approved Methods and PAEHolmes (2010) (Condition 27);
- air quality acquisition criteria (Condition 29); and
- operating conditions, including the implementation of best practice management practices and the installation of a predictive meteorological and air dispersion modelling system (Condition 30).

An Air Quality and Greenhouse Gas Management Plan for the Boggabri Coal Project, in accordance with Condition 31 of Schedule 3 of Project Approval (09_0182) has been submitted to the DP&I.

The Air Quality and Greenhouse Gas Management Plan includes a network of real-time monitors to extend the existing monitoring network, as well as a protocol for determining any potential exceedances of the air quality assessment criteria, and responding accordingly (i.e. by implementing additional mitigation measures).

The monitoring network for the Boggabri Coal Project will form part of a shared monitoring network in collaboration with the Tarrawonga Coal Project and Maules Creek Coal Project.

Tarrawonga Coal Project

Air quality dispersion modelling for the Tarrawonga Coal Project was conducted in accordance with the Approved Methods for Years 2, 4, 6 and 16 (PAEHolmes, 2012).

The air quality modelling included assessment of potential impacts from the processing and dispatch of 3 Mtpa of Tarrawonga coal at the Boggabri Infrastructure Facilities (i.e. the activities associated with the Modification).

The results of the assessment indicated that no privately-owned receivers were predicted to experience air quality impacts above the relevant air quality impact assessment criteria due to the Project-only (PAEHolmes, 2012).

Two privately-owned receivers (54 and 86) were predicted to exceed the 24-hour criterion for suspended particulate matter with a diameter of less than 10 micrometres (PM₁₀), and one residence (54) was predicted to exceed the annual PM₁₀ criterion, due to the cumulative emissions from the Tarrawonga Coal Project, Boggabri Coal Project, Maules Creek Coal Project and background levels.

These impacts were assessed and approved by the PAC subject to the Tarrawonga Coal Project being managed in accordance with the relevant conditions of Schedule 3 of Project Approval (11_0047).

Air quality management measures are currently implemented at the Tarrawonga Coal Mine in accordance with the existing Tarrawonga Air Quality and Greenhouse Gas Management Plan.

In accordance with Project Approval (11_0047), the existing Air Quality and Greenhouse Gas Management Plan will be updated to include details of the proposed real-time monitoring network, which will form part of the shared monitoring network required under Condition 31 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project.

PAEHolmes (2012) also assessed potential air quality impacts associated with the transportation by rail of Tarrawonga coal from the Boggabri Infrastructure Facilities. It was concluded that:

... the potential for exceedance of OEH air quality criteria caused by the increased coal train movements from the Project is likely to be low, in terms of health and amenity impacts, beyond distances of approximately 15 m from the rail lines.

3.2.2 Relevant Changes due to the Modification

The Modification will potentially result in increased dust emissions at the Boggabri Coal Mine, due to the following activities:

- unloading and loading Tarrawonga coal at the Boggabri Infrastructure Facility area;
- processing (e.g. screening, crushing and beneficiation) Tarrawonga coal at the Boggabri CHPP; and
- maintenance (e.g. bulldozing) of stockpiles of Tarrawonga coal at the Boggabri Infrastructure Facility area.

As described above, the emissions associated with these activities were assessed by PAEHolmes (2012) in the Tarrawonga EA.

Additionally, emissions associated with the development of the integrated waste emplacement were assessed by PAEHolmes (2012) in the Tarrawonga EA. The emissions do not require assessment for the Modification as the integrated waste emplacement forms part of the Tarrawonga Coal Project.

3.2.3 Potential Impacts

Pacific Environment Limited (2013) predicted particulate matter concentrations and dust deposition levels associated with emissions from the Modification and the Boggabri Coal Project (i.e. total impacts associated with the Boggabri Coal Mine, as modified).

Annual average PM₁₀ concentrations, total suspended particulates (TSP) concentrations and dust deposition levels were predicted to comply with the relevant impact assessment criteria at privately-owned receivers due to emissions from the Modification and the Boggabri Coal Project.

An exceedance of the 24-hour PM₁₀ criteria (50 micrograms per cubic metre [$\mu\text{g}/\text{m}^3$]) was predicted at one privately-owned receiver (receiver 54) due to the maximum impact from the Modification and the Boggabri Coal Project.

Exceedances at this receiver were predicted in the Boggabri EA, and accordingly, the landowner (McGregor) has air quality acquisition rights in accordance with Condition 25 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project.

For consistency with previously approved assessment, the potential impacts from the Modification (i.e. handling and process of Tarrawonga coal at Boggabri) presented in Appendix C are based on emissions estimates for these activities as presented in the Tarrawonga EA.

These emissions estimates for the Modification activities are now considered to be conservative as they do not incorporate additional control measures to be implemented at the Boggabri CHPP (i.e. watering of coal stockpiles and stockpile wind breaks) identified in Boggabri Coal's *Assessment of Coal Mine Particulate Matter Control Best Practice Pollution Reduction Program* in June 2012.

Therefore, the maximum incremental increase in 24-hour PM₁₀ concentration of 15.5 $\mu\text{g}/\text{m}^3$ associated with the Modification (Appendix C) at receiver 54 is also considered to be conservative.

Notwithstanding the above, Boggabri Coal and TCPL will manage cumulative impacts from the Boggabri and Tarrawonga Coal mines such that the 24-hour PM₁₀ criterion of 50 $\mu\text{g}/\text{m}^3$ is not exceeded at private receivers, including at receiver 54 so long as it remains privately-owned, in accordance with the requirements of Project Approvals 09_0182 (Boggabri) and 11_0047 (Tarrawonga).

This will be achieved by Boggabri Coal and TCPL through the implementation of the real-time and predictive dust management systems required in accordance with Project Approvals 09_0182 (Boggabri) and 11_0047 (Tarrawonga).

The real-time and predictive dust management systems will be used to determine the potential for elevated dust concentrations, allowing Boggabri Coal/TCPL to proactively respond accordingly (i.e. by implementing additional mitigation measures) to prevent exceedances of air quality assessment criteria.

The additional mitigation measures to be implemented will be determined in accordance with Boggabri/Tarrawonga trigger action response plans, and will include:

- additional watering of haul roads;
- additional watering of product coal, rejects and conveyor transfer points;
- reducing speed limits; and
- relocating mining equipment to less dust sensitive areas.

Cumulative impacts from the Tarrawonga Coal Project (including the Modification), Boggabri Coal Project, Maules Creek Coal Project and other sources were assessed by PAEHolmes (2012) in the Tarrawonga EA. The 24-hour and annual average PM₁₀ criteria were predicted to be exceeded at receiver 54, and the 24-hour PM₁₀ criteria were predicted to be exceeded at receiver 86.

As described above, in accordance with Project Approval (09_0182), the owner of receiver 54 already has air quality acquisition rights, and the owner of receiver 86 (Crosby) already has the right to request air quality mitigation measures.

The potential impacts described above were predicted based on 2.8 Mtpa of Tarrawonga product coal. Should the amount of product coal from Tarrawonga increase to 3 Mtpa (under an all bypass scenario) this will increase emissions associated with the approved Boggabri operations by less than 0.5%, and on this basis will result in a negligible increase in potential air quality impacts.

PAEHolmes (2012) also concluded that cumulative impacts may occur at other receivers when background dust levels are elevated, although this is difficult to precisely predict as background dust levels vary daily.

Potential impacts associated with daily varying background PM₁₀ concentrations will be managed by the real-time and predictive dust management system required in accordance with Condition 31 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project.

Product Coal Transport

The Modification will result in additional trains leaving the Boggabri Coal Mine onto the public railway (i.e. Werris Creek Mungindi Railway) due to the transportation of Tarrawonga coal.

As described in Section 3.2.2, potential air quality impacts associated with the rail transportation of Tarrawonga coal were assessed by PAEHolmes (2012) for the Tarrawonga EA. The assessment concluded that the potential for exceedance of the relevant criteria was low.

3.2.4 Mitigation and Management

The real-time and predictive dust management system required in accordance with Condition 31 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project is considered suitable for the Modification without revision. It includes detailed management and monitoring requirements and performance criteria for the Boggabri Coal Mine, which are also appropriate for the Modification.

3.3 SURFACE WATER

A revision of the site water balance for the Boggabri Coal Mine due to changes associated with the Modification, as well as review of potential surface water impacts, was conducted by Parsons Brinckerhoff (2013) (Appendix A).

3.3.1 Summary of Approved Operations and Previous Assessments

The surface water management system for the Boggabri Coal Mine has been designed to:

- segregate ‘clean’ runoff from undisturbed areas where practicable and feasible;
- manage ‘dirty’ runoff from disturbed areas (e.g. waste emplacement); and
- manage ‘contaminated’ runoff from coal stockpiles areas, and groundwater inflows to the open cut.

Clean water runoff from undisturbed catchments is diverted around the mine working area and into ‘Nagero Creek’ where possible.

Where diversion drains are not practical, highwall dams are used to capture clean runoff to minimise inflows to the mining void. Water captured in highwall dams is pumped out to ‘Nagero Creek’. However, overflow to the mining void can occur during large storm events.

Dirty water runoff is captured in sediment dams to allow settling of suspended solids.

Captured dirty water is either released to ‘Nagero Creek’ in accordance with EPL release conditions, or pumped to mine water dams for storage and re-use.

Contaminated water is captured in mine water dams for storage and re-use.

The water management system aims to re-use as much contaminated water as possible on-site, with the priorities being dust suppression and CHPP make-up water.

Parsons Brinckerhoff (2010a) prepared a site water balance as part of the Boggabri EA. It included the expected water demand for the Boggabri Coal Project (Table 3-1). The water balance assessment indicated that once the Boggabri CHPP became operational there will be a water deficit at the site during dry and median climatic conditions. This deficit was to be met through licensed groundwater and surface water from the Namoi River and associated alluvial aquifer.

**Table 3-1
Summary of Expected Water Demand
for the Boggabri Coal Project**

Demand (ML/yr)	Project Year			
	1	5	10	21
Vehicle washdown/ potable water	58	58	58	58
Dust suppression/ washery	162	1,251	1,006	1,017
Total	220	1,309	1,064	1,075

Source: Parsons Brinckerhoff (2010a).
ML/yr = megalitres per year.

The site water balance and surface water management system was assessed and approved by the PAC subject to the Boggabri Coal Project being managed in accordance with the relevant conditions of Schedule 3 of Project Approval (09_0182).

A Water Management Plan was prepared for the Boggabri Coal Project in accordance with Condition 38 of Schedule 3 of Project Approval (09_0182). The Plan includes the preparation of a:

- Site Water Balance detailing the sources and security of water supply (Condition 38[a]);
- Surface Water Management Plan detailing design and performance criteria for the water management system, as well as a program to monitor the effectiveness of the water management system (Condition 38[b]); and
- Leard Forest Mining Precinct Water Management Strategy, which includes a review of opportunities for water sharing/transfer between mines (Condition 38[d]).

Tarrawonga Coal Project

Gilbert & Associates (2011) prepared a detailed site water balance and surface water assessment as part of the Tarrawonga EA.

The site water balance included runoff from the integrated waste emplacement, and the surface water management system for the Tarrawonga Coal Project was designed to capture and manage this runoff.

Potential cumulative downstream impacts associated with the integrated waste emplacement were also assessed by Gilbert & Associates (2011).

3.3.2 Potential Impacts

Water Demand

Parsons Brinckerhoff's (2013) review of the site water balance concludes that the annual water demand for the Boggabri Coal Mine will increase by up to approximately 700 ML as a result of the Modification. Table 3-2 presents the revised water demand predictions for the modified Boggabri Coal Mine. The demand is predicted to increase due to the increase in coal processing at the CHPP (i.e. from 3 Mtpa to 3.5 Mtpa), as well as increased water usage estimates for the CHPP (identified through detailed engineering of the CHPP and the preparation of the Site Water Balance required in accordance with Condition 38 of Schedule 3 of Project Approval [09_0182]).

Table 3-2
Summary of Expected Water Demand for the Modified Boggabri Coal Mine

Demand	Project Year (ML/yr)			
	1	5	10	21
<i>Boggabri component</i>				
Construction water	380	0	0	0
Potable water	2.9	3.6	3.6	3.6
Dust suppression - haul roads	226	555	555	555
Dust suppression - rail loading facility west of site	12	0	0	0
Vehicle washdown	20	8.2	8.2	8.2
CHPP	0	679	679	679
<i>Subtotal</i>	<i>641</i>	<i>1,246</i>	<i>1,246</i>	<i>1,246</i>
<i>Tarrawonga component (i.e. water required to process and transport Tarrawonga coal)</i>				
CHPP and processing/loading activities	0	509	509	0
<i>Subtotal</i>	<i>0</i>	<i>509</i>	<i>509</i>	<i>0</i>
Total	641	1,755	1,755	1,246

Source: Appendix A.

Note: Totals may differ as numbers may be rounded.

Water supply (excluding potable water) to meet the predicted demand will be sourced using the following priority system (Appendix A):

1. Groundwater inflows to the open cut and associated dewatering.
2. Water storages containing runoff from active mining areas.
3. Water storages containing water from undisturbed areas.
4. Licensed surface water and groundwater extractions.

The estimated volumes of water required from external sources to make-up demands for the Modification under various climatic conditions were calculated by Parsons Brinckerhoff (2013) and are shown in Table 3-3.

The external water requirements provided in Table 3-3 do not account for the supply of water from water entitlements currently held by Boggabri Coal or Whitehaven/TCPL.

Boggabri Coal and Whitehaven/TCPL will use surface water and groundwater licences to meet external make-up water supply requirements, with Whitehaven licences used to account for the water required to process Tarrawonga coal (i.e. approximately 509 ML per annum).

Table 3-3
Estimated Volume of Water Required from External Sources to Make-up Demands

Landform	External water requirement (ML/yr)					
	5 th percentile (very wet)	10 th percentile (wet)	50 th percentile (median)	90 th percentile (dry)	95 th percentile (very dry)	Greatest result (driest)
Year 1	47	48	61	151	160	177
Year 5	221	314	1,020	1,376	1,412	1,475
Year 10	215	237	804	1,226	1,289	1,368
Year 21	213	213	223	542	636	744

Source: Appendix A.

Boggabri Coal currently holds general security and supplementary water access licences for the Lower Namoi Regulated River Water Source and water access licences for the Lower Namoi Groundwater Source and the Upper Namoi Zone 4 Groundwater Source.

In addition, Whitehaven on behalf of TCPL currently hold high security, general security and supplementary water access licences for the Lower Namoi Regulated River Water Source and water access licences for the Upper Namoi Zone 4 Groundwater Source.

As described in the Boggabri EA, a pipeline will transfer licensed water extracted from the Namoi River to the Boggabri Infrastructure Facilities area.

In the event that the existing water entitlements held by Boggabri Coal and Whitehaven/TCPL are not adequate to meet external water demands under drier conditions, additional licences could be obtained through the open water trading market (either temporarily or permanently) (Appendix A).

Alternatively, and consistent with the requirements of Project Approvals 09_0182 (Boggabri) and 11_0047 (Tarrawonga), Boggabri Coal and/or TCPL will adjust the scale of mining operations as necessary to match the available water supply.

Further details of the licence numbers, types and amounts held by Boggabri Coal and Whitehaven/TCPL are provided in Appendix A.

Downstream Impacts

The integrated waste emplacement will result in a relatively small decrease in catchment area reporting to 'Nagero Creek' at the Boggabri Coal Mine, which is predicted to result in small reductions in runoff volumes and peak flow rates to 'Nagero Creek' downstream of the Boggabri Coal Mine (Appendix A).

The effect of the integrated waste emplacement on the contributing catchment of 'Nagero Creek' was assessed in the Tarrawonga EA. It was predicted that the Tarrawonga Coal Project (including the integrated waste emplacement) would potentially reduce the contributing catchment area of 'Nagero Creek' by a maximum of 6.9%. The potential maximum cumulative reduction in contributing catchment area of 'Nagero' was predicted in the Tarrawonga EA to be 28.8%, assuming the maximum reductions associated with the Boggabri Coal Project (21.1%), Tarrawonga Coal Project (6.9%) and Maules Creek Coal Project (0.8%) occurred at the same time.

The reduction in contributing catchment of 'Nagero Creek' has the potential to result in a reduction in environmental flow downstream of the site. The maximum reduction in median flows for the Boggabri Coal Mine (incorporating the integrated waste emplacement) is predicted to be experienced during Year 21 of the Boggabri Coal Project, when median stream flows can be expected to reduce from 1,803 ML/yr (Year 1) to 1,252 ML/yr (Year 21) at the point where 'Nagero Creek' meets the flood plain (Appendix A).

However, runoff from the rehabilitated Tarrawonga landform, including the integrated waste emplacement, will be directed to Bollol/Goonbri Creek. Since Bollol/Goonbri Creek and 'Nagero Creek' are tributaries of the Namoi River, the cumulative change to catchment area of the Namoi River associated with the Tarrawonga Coal Project and Boggabri Coal Mine will be negligible (i.e. the reduction in the Nagero catchment area will be negated by an equivalent increase in the Bollol/Goonbri Creek catchment area).

The Modification will not result in additional impacts to water quality comparative to the Boggabri Coal Project (Appendix A).

3.3.3 Mitigation and Management

The Modification will result in minor changes to the surface water management system for the Boggabri Coal Project (Section 2.4).

Water management for the Boggabri Coal Project will be conducted in accordance with the Water Management Plan, which is required under Schedule 3, Condition 38 of Project Approval (09_0182).

The Surface Water Management Plan (required as part of Water Management Plan) for the Boggabri Coal Project will be suitable for the Modification, with only minor adjustments required to accommodate the changes associated with the Modification.

The Site Water Balance (required as part of Water Management) for the Boggabri Coal Project will be revised to include the details of the sources and security of water supply associated with the increased water demand for the processing of Tarrawonga coal.

3.4 ROAD TRANSPORT

The Modification will reduce the vehicle kilometres travelled by coal trucks transporting sized ROM coal from the Tarrawonga Coal Project to the Whitehaven CHPP by approximately 3.6 million vehicle kilometres travelled per year.

This reduction in truck movements will improve the efficiency of the relevant roads for the remaining road users.

Potential cumulative road transport impacts associated with the Tarrawonga Coal Project (including those activities associated with the Modification), Boggabri Coal Project, Maules Creek Coal Project and other sources were described and assessed in the Tarrawonga EA. No significant impacts on the performance, capacity efficiency and safety of the local road network were expected.

3.5 SURFACE DISTURBANCE

The Modification will result in very minor additional surface disturbance (i.e. a total of approximately 6 hectares [ha]) at the Boggabri Coal Mine. This represents less than 0.5% of the approved disturbance area for the Boggabri Coal Project (i.e. approximately 1,384 ha).

Vegetation mapping was conducted for the Boggabri EA by Parson Brinckerhoff (2010b). Surveys within the Boggabri Coal Project area were conducted over five sessions covering all seasons to assess the extent and condition of vegetation communities (Parsons Brinckerhoff, 2010b).

The Boggabri Infrastructure Facilities area has been previously cleared for agricultural purposes and for the existing Boggabri Coal Mine (Parsons Brinckerhoff, 2010b).

Existing infrastructure at the Boggabri Infrastructure Facilities area associated with existing mining operations includes ROM coal stockpiles, administration facilities and carpark, roads and sediment dams. Additional disturbance associated with the construction of infrastructure for the Boggabri Coal Project, including product coal stockpiles, Boggabri CHPP and rail loop, is also approved.

Vegetation at the Boggabri Infrastructure Facilities area has been mapped by Parsons Brinckerhoff (2010b) as being predominantly derived native grassland or exotic grassland (Figure 3-1).

The extension of the product coal stockpile (Figure 3-1) will be located within an area that has been previously cleared for agricultural purposes or for the existing Boggabri Coal Mine (Parsons Brinckerhoff, 2010b). Notwithstanding, the extension of the product coal stockpile will involve the clearance of approximately 4 ha of derived native grassland, as well as approximately three trees.

The derived native grassland community is described by Parsons Brinckerhoff (2010b) as a disturbed vegetation community that is associated with areas of previous clearing for agricultural land uses and the existing Boggabri Coal Mine. The community is dominated by a variety of exotic and cultivated native pasture grasses and exotic herbs. The majority of the canopy and shrub layer within this community has been previously cleared, with isolated paddock trees scattered throughout the community (Parsons Brinckerhoff, 2010b).

The alignment of the additional product coal conveyor (Figure 3-1) will be designed to limit disturbance, however, its construction will involve very limited clearance (i.e. less than approximately 0.05 ha) of the *Yellow Box – Blakely's Red Gum Grassy Woodland* vegetation community.

The extension of ROM coal stockpiles at the Boggabri Infrastructure Facilities area will extend onto a previously disturbed area (i.e. a haul road).

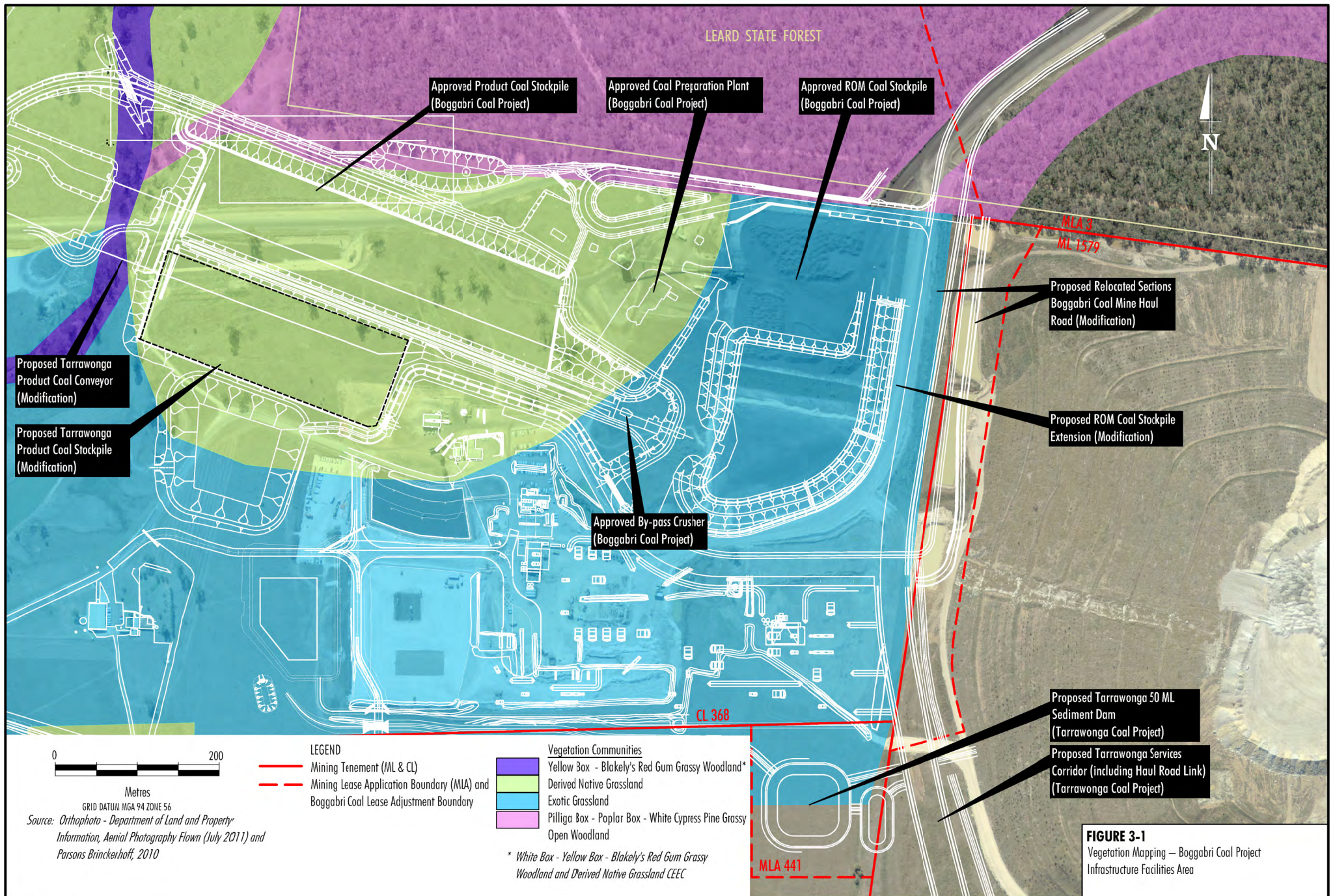


FIGURE 3-1
Vegetation Mapping – Boggabri Coal Project Infrastructure Facilities Area

Given the above, the Modification will result in a very minor change to the approved environmental impacts associated with surface disturbance at the Boggabri Coal Mine. These are:

- very minor additional potential ecological impacts associated with vegetation clearance, given the minor disturbance associated with Modification, and the low ecological value of the previously disturbed derived native grassland;
- very minor additional potential soil disturbance and land use impacts; and
- no change to potential impacts to Aboriginal archaeology and cultural heritage.

Potential surface disturbance impacts at the Boggabri Coal Mine will be managed in accordance with the following relevant management plans/strategies required as per Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project:

- soil management protocol (Condition 36);
- Leard Forest Mining Precinct Regional Biodiversity Strategy (Condition 40);
- Biodiversity Management Plan (Condition 49);
- Aboriginal Heritage Conservation Strategy (Condition 55);
- Heritage Management Plan (Condition 56); and
- Rehabilitation Management Plan (Condition 71).

In addition, Boggabri Coal will implement the Biodiversity Offset Strategy for the Boggabri Coal Project, which includes a biodiversity offset area of at least 7,257 ha, in accordance with Condition 39 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project

The disturbance associated with the extension of the Northern Emplacement at the Tarrawonga Coal Mine forms part of the Tarrawonga Coal Project.

Potential impacts associated with this disturbance are described and assessed in the Tarrawonga EA.

3.6 VISUAL CHARACTER

The Modification will not result in any increase in the extent (i.e. elevation or horizontal width) of mining landforms at the Boggabri Coal Mine, comparative to the approved extents for the Boggabri Coal Project.

The extension of the ROM coal stockpiles at the Boggabri Infrastructure Facilities area will result in very minor changes to lighting at the site.

On this basis, the Modification will not cause any material changes to the approved visual impacts associated with the Boggabri Coal Project. In accordance with Conditions 65 and 66 of Schedule 3 of Project Approval (09_0182) for the Boggabri Coal Project, reasonable and feasible measures (e.g. progressive rehabilitation) will be implemented to minimise potential visual impacts associated with the Boggabri Coal Project. Should privately-owned receivers experience significant visual impacts, additional mitigation measures (e.g. vegetation screens) will be implemented at the affected property.

Potential visual impacts associated with the integrated waste emplacement were described and assessed in the Tarrawonga EA.

3.7 GROUNDWATER

Potential impacts to groundwater from the Boggabri Coal Project will primarily be the result of groundwater inflows to the open cut. A Groundwater Management Plan will be implemented for the Boggabri Coal Project to mitigate and manage potential groundwater impacts, in accordance with Condition 38(c) of Schedule 3 of Project Approval (09_0182).

Since no change to mining will occur at the Boggabri Coal Mine due to Modification, no additional impacts to groundwater are predicted.

Notwithstanding, the additional water demand for the Boggabri CHPP could be partially sourced from licensed groundwater extraction (Section 3.3.2).

Licensed extraction of groundwater will be undertaken in accordance with the access licence rules detailed in the Upper and Lower Namoi Groundwater Sharing Plan under the *Water Management Act, 2000*.

3.8 SOCIAL AND ECONOMICS

Project Approval (11_0047) for the Tarrawonga Coal Project limits ROM coal production to 2 Mtpa while ROM coal is transported by road to the Whitehaven CHPP in Gunnedah.

ROM coal production is approved to increase to 3 Mtpa if the coal (excluding domestic coal sales) is handled and processed at the Boggabri CHPP and transported from the site via the Boggabri private rail spur (i.e. the subject of the Modification). Therefore, approval of the Modification will enable increased ROM coal production at the Tarrawonga Coal Mine, which will have positive social and economic impacts, including:

- increased revenue associated with the increased ROM coal production rate, and associated flow-on effects to the regional and NSW economies;
- increased royalties paid to the NSW government associated with the increased ROM coal production rate;
- additional operational employees required to enable the increased ROM coal production rate;
- increased expenditure in the regional and NSW economies associated with construction activities; and
- construction employees required for the construction activities.

Approval of the Modification (and the commissioning of the Boggabri CHPP and private rail spur) will also enable cessation of ROM coal transport along public roads from the Tarrawonga Coal Mine to the Whitehaven CHPP.

3.9 REHABILITATION AND FINAL LANDFORM

In accordance with Condition 69 of Schedule 3 of Project Approval (09_0182), Boggabri Coal will rehabilitate the Boggabri Coal Mine in general accordance with the rehabilitation strategy described in the Boggabri EA, and to the satisfaction of the Executive Director Mineral Resources in the Department of Resources and Energy.

Rehabilitation at the Boggabri Coal Mine will be managed in accordance with the Rehabilitation Management Plan required under Condition 71 of Schedule 3 of Project Approval (09_0182). The Rehabilitation Management Plan will be integrated with the Biodiversity Management Plan for the Boggabri Coal Mine, and will address all aspects of rehabilitation, including progressive rehabilitation during the life of the mine, and rehabilitation for final closure of the mine.

Rehabilitation of areas within the Tarrawonga Coal Mine's ML and MLA areas (i.e. including relevant areas of the integrated waste emplacement) was described in the Tarrawonga EA.

TCPL's rehabilitation strategy and goals for the Tarrawonga Coal Mine were developed in consultation with Boggabri Coal, so that the rehabilitation of the Tarrawonga Northern Emplacement will be integrated with the Boggabri waste emplacement.

This integrated rehabilitation strategy is consistent with Condition 40 of Schedule 3 of Project Approval (09_0182) of the Boggabri Coal Project, which requires the development of the Leard State Forest Regional Biodiversity Strategy.

4 CONCLUSION

The Boggabri Coal Project is approved to extract up to 8.6 Mtpa of ROM coal and transport up to 7 Mtpa of product coal from the site until 31 December 2033 subject to the conditions of Project Approval (09_0182).

The proposed Modification to Project Approval (09_0182) for the Boggabri Coal Mine involves the processing of up to 3 Mtpa of ROM coal from the Tarrawonga Coal Project at the Boggabri Infrastructure Facilities in CL 368, and the associated transport of up to an additional 3 Mtpa of product coal along the private Boggabri rail spur and generation of reject material.

The Boggabri Infrastructure Facilities will be expanded in order to provide additional coal stockpiling areas and haul roads.

The processing of Tarrawonga coal will increase water demand at the Boggabri Coal Mine. Boggabri Coal and Whitehaven on behalf of TCPL will use their surface water and groundwater licences to meet external make-up water supply requirements at the Boggabri Coal Mine.

The Modification is not predicted to result in additional noise or air quality impacts at sensitive receivers, comparative to those impacts predicted for the Boggabri EA.

The noise and air quality monitoring and management systems required by Project Approval (09_0182) for the Boggabri Coal Project are considered to be suitable for the Modification.

The Modification is considered to be justified on environmental, social and economic grounds as the use of shared coal handling, processing and transport infrastructure is more efficient and has fewer environmental impacts than two independently operated mines. The Modification will also enable cessation of ROM coal transport along public roads from the Tarrawonga Coal Mine to the Whitehaven CHPP.

5 REFERENCES

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ATTACHMENT 1
LAND OWNERSHIP

APPENDIX 4: LAND OWNERSHIP

