Tarrawonga Coal Project

Environmental Assessment

EXECUTIVE SUMMARY

Resource Strategies

Tarrawonga Coal Pty Ltd

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ES1 OVERVIEW

The Tarrawonga Coal Mine is an open cut mining operation located approximately 15 kilometres north-east of Boggabri and 42 kilometres north-northwest of Gunnedah in New South Wales (Figure ES-1).

The mine is owned and operated by Tarrawonga Coal Pty Ltd (TCPL), which is a joint venture between Whitehaven Coal Mining Pty Ltd (Whitehaven) and Boggabri Coal Pty Limited.

The Tarrawonga Coal Mine commenced operations in 2006 and currently employs 86 people and produces up to approximately 2 million tonnes per annum of run-of-mine (ROM) coal via conventional open cut mining methods.

Sized coal produced on-site is transported via road to the Whitehaven coal handling and preparation plant located to the north of Gunnedah (Figure ES-1) prior to being railed to the port of Newcastle via the Werris Creek Mungindi Railway.

This document is an Environmental Assessment for the Tarrawonga Coal Project (the Project). This Environmental Assessment has been prepared to address the Director-General's Environmental Assessment Requirements issued by the New South Wales Department of Planning and Infrastructure and will be assessed in accordance with Part 3A of the New South Wales *Environmental Planning and Assessment Act, 1979.*

Project Environmental Studies

The specialist studies completed for the Project are comprehensive and build on the previous studies completed for the Tarrawonga Coal Mine. In addition, the environmental studies conducted for the adjacent Boggabri Coal Mine and Maules Creek Coal Project have been considered. The Project environmental studies included iterative analysis of potential cumulative and Project-only impacts and development of suitable mitigation measures.

Nature of the Project

The Project provides for continuation and extension of operations at the Tarrawonga Coal Mine. The Project has a 17 year life, would increase production to 3 million tonnes per annum of ROM coal and would increase the operational mine workforce to 120 people.

While the Project involves an increase in coal production and employment levels, the nature and scale of the Project would remain very similar to the existing Tarrawonga Coal Mine.

Open cut extensions to the north and east and associated modifications to approved mine landforms would be generally consistent with the existing mining operations and mine landforms of the Tarrawonga Coal Mine (Figure ES-2).

Key Features of the Project

One of the key components of the Project is the construction and use of a services corridor (including a haul road) linking it to the Boggabri Coal Mine Infrastructure Facilities (Figure ES-2).

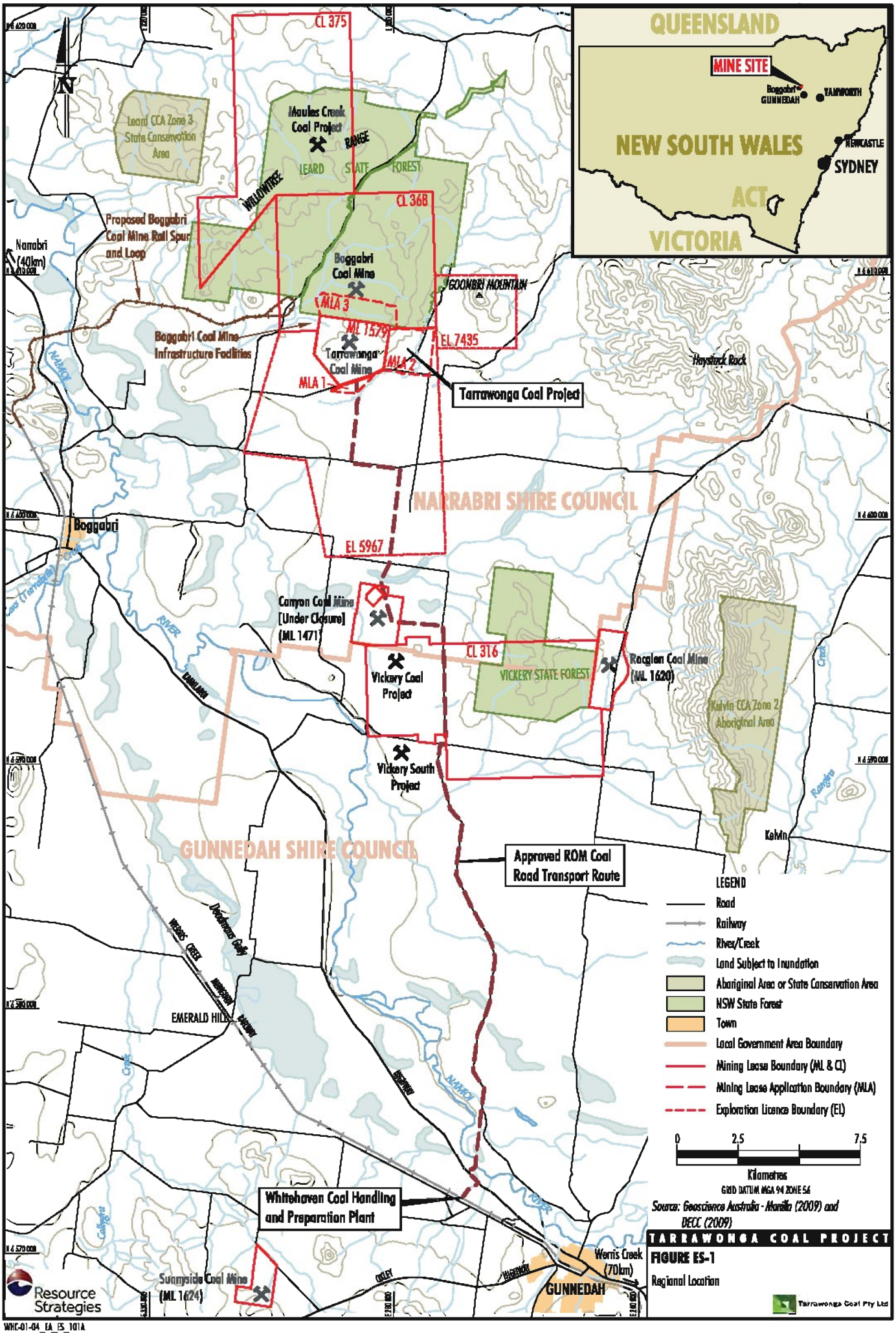
Once suitable approvals and upgrades are in place, the Project coal trucks would use the services corridor to access the upgraded Boggabri Coal Mine Infrastructure Facilities. At these facilities, Project coal would be processed and loaded onto trains for off-site transport. The shared use of transport infrastructure is more efficient and has fewer environmental impacts than two independently operated projects.

The Project open cut would intersect a local ephemeral creek (Goonbri Creek). In order to minimise potential impacts on surface water and groundwater, the Project includes a permanent Goonbri Creek alignment and associated flood bund and an engineered low permeability barrier. These structures would be built to permanently divert the creek around the open pit, prevent flood events entering the pit, and minimise groundwater inflows.

The Project is located in a relatively sparsely populated rural area with a State Forest on its northern boundary. Whitehaven has purchased a number of nearby properties to the south and south-east that would otherwise have been adversely affected by noise or air quality emissions. These purchases limit the number of private receivers affected by Project noise and air quality emissions. Best practice management strategies would be used during the Project life to reduce amenity impacts on the remaining privately-owned properties in the local area.

A significant biodiversity offset area, comprising approximately 1,660 hectares (ha) of freehold land adjoining Mount Kaputar National Park, is a key feature of the Project. It is anticipated that the biodiversity offset area would be added to the adjoining National Park.

The Socio-Economic assessment indicates the Project would provide a net benefit of approximately $790 million and would provide significant economic stimulus to the regional and New South Wales economies.



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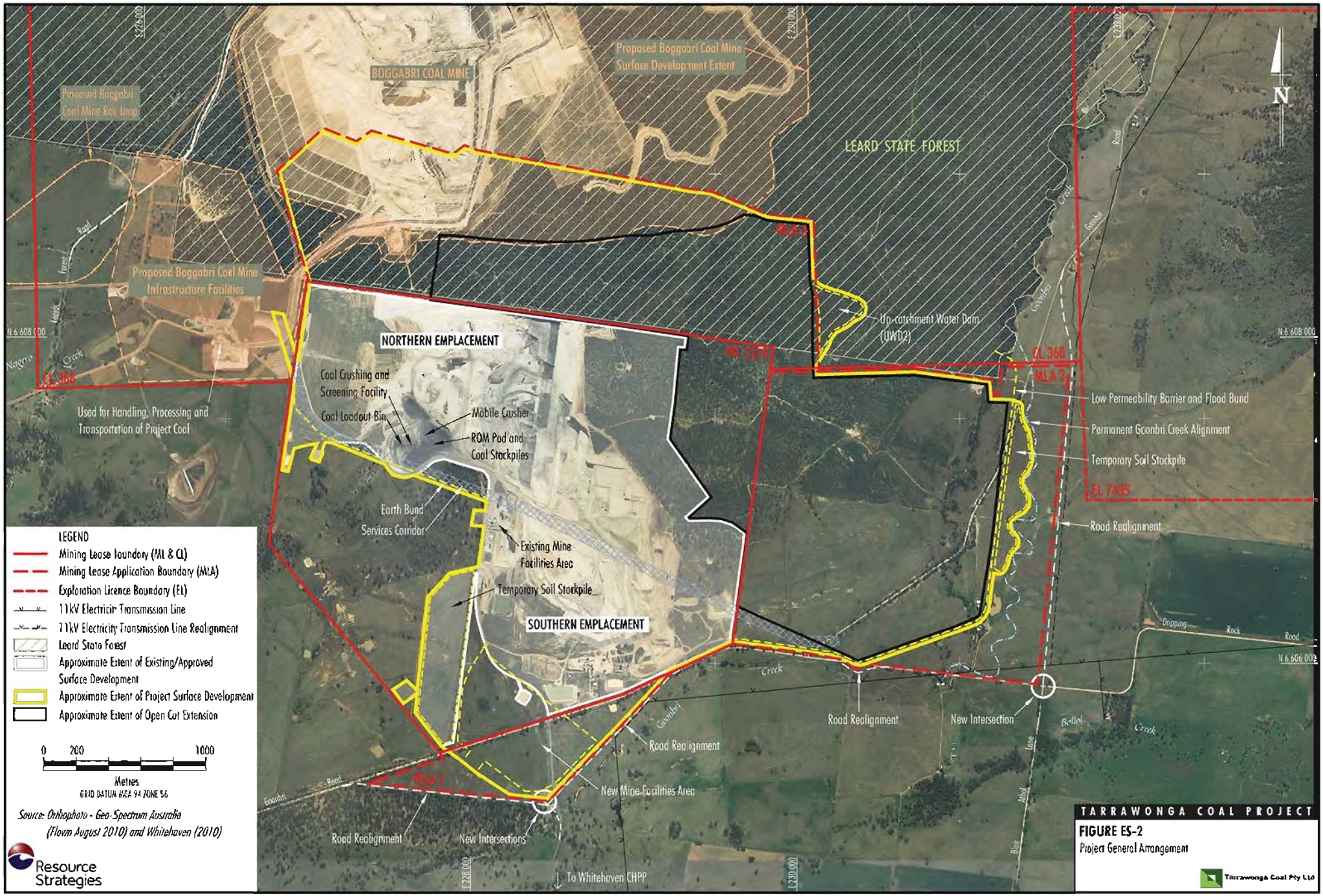
Proposed Boggabri Coal Mine Rail Loop
BOGGABRI COAL MINE
Proposed Boggabri Coal Mine Surface Development Extent
LEARD STATE FOREST
Proposed Boggabri Coal Mine Infrastructure Facilities
NORTHERN EMPLACEMENT
Up-catchment Water Dam (UWD2)
Coal Crushing and Screening Facility
Coal Loadout Bin
Mobile Crusher
ROM Pad and Coal Stockpiles
Used for Handling, Processing and Transportation of Project Coal
Earth Bund
Services Corridor
Existing Mine Facilities Area
Temporary Soil Stockpile
SOUTHERN EMPLACEMENT
Low Permeability Barrier and Flood Bund
Permanent Goonbri Creek Alignment
Temporary Soil Stockpile
Road Realignment
Road Realignment
New Intersection
Road Realignment
New Mine Facilities Area
Road Realignment
New Intersections
To Whitehaven CHPP
EL 368
EL 7435
MLA 2
MLA 1
N 6 608 000
N 6 606 000
E 228 000
E 230 000
E 232 000
N
LEGEND
Mining Lease boundary (ML & CL)
Mining Lease Application Boundary (MLA)
Exploration Licence Boundary (EL)
11kV Electricity Transmission Line
11kV Electricity Transmission Line Realignment
Leard State Forest
Approximate Extent of Existing/Approved Surface Development
Approximate Extent of Project Surface Development
Approximate Extent of Open Cut Extension
0
200
1000
Metres
GRID DATUM MGA 94 ZONE 56
Source: Orthophoto - Geo-Spectrum Australia (Flown August 2010) and Whitehaven (2010)
Resource Strategies
TARRAWONGA COAL PROJECT
FIGURE ES-2
Project General Arrangement
Tarrawonga Coal Pty Ltd
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ES2 CONSULTATION

The Project consultation program has been comprehensive and has assisted with the identification of issues that are of concern or interest to stakeholders.

Key New South Wales Government agencies were consulted during the preparation of this Environmental Assessment, including presentation of various refinements to the Project, key findings of the Environmental Assessment studies and design considerations for Project environmental mitigation measures.

A number of meetings were held with representatives of Narrabri Shire Council and Gunnedah Shire Council during the development of this Environmental Assessment. Discussions included potential impacts on the road network and potential financial contributions.

The Project was declared to be a 'controlled action' for the purposes of the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*. Various presentations and discussions were held with the Commonwealth Department of Sustainability, Environment, Water, Population and Communities during preparation of this Environmental Assessment, including key findings of the flora and fauna assessments and a description of the proposed Project biodiversity offset.

A Project community information day was held in October 2011, and TCPL has consulted with the local community through the Tarrawonga Coal Mine Community Consultative Committee. In addition, TCPL has consulted with local landholders who participated in the Project bore census and landholders in the immediate vicinity of the mine with regard to noise/air quality management and potential property acquisitions. TCPL also discussed the Project with Maules Creek Community Council representatives at the community information day.

Aboriginal community consultation was undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. Nine registrations of interest were received from Aboriginal stakeholders and these stakeholders were invited to participate in the Project Aboriginal Cultural Heritage Assessment.

Where relevant to the Project, the issues raised by the parties above during the consultation program have been considered during the preparation of this Environmental Assessment.

ES3 KEY FEATURES OF THE PROJECT

Project Description

The main activities associated with the development of the Project would include:

- continued development of mining operations in the Maules Creek Formation to facilitate a Project ROM coal production rate of up to 3 million tonnes per annum, including open cut extensions;
- ongoing exploration activities;
- construction and use of a services corridor (including haul road link) directly from the Project open cut mining operation to the upgraded Boggabri Coal Mine Infrastructure Facilities[1];
- use of upgraded Boggabri Coal Mine Infrastructure Facilities for the handling and processing of Project coal and the loading of Project product coal to trains for transport on the Boggabri Coal Mine private rail spur to the Werris Creek Mungindi Railway[1];
- construction and use of a new mine facilities area including relocation of existing mine facilities infrastructure and service facilities;
- use of an existing on-site mobile crusher for coal crushing and screening of up to 150,000 tonnes of domestic specification coal per annum for direct collection by customers at the mine site;
- use an existing on-site mobile crusher to produce up to approximately 90,000 cubic metres of gravel materials per annum for direct collection by customers at the mine site;
- progressive backfilling of the mine void behind the advancing open cut mining operation with waste rock and minor quantities of coarse reject material;
- continued and expanded placement of waste rock in the Northern Emplacement (including integration with the Boggabri Coal Mine emplacement) and Southern Emplacement, as mining develops;
- progressive development of new haul roads and internal roads, as mining develops;
- re-alignment of sections of Goonbri Road and construction of new intersections;

[1] Subject to approvals and upgrades being in place for the transfer of Project ROM coal to the Boggabri Coal Mine Infrastructure Facilities.

- construction of an engineered low permeability barrier to the east and south-east of the open cut to reduce the potential for local drainage of alluvial groundwater into the open cut (Figure ES-3);
- removal of a section of Goonbri Creek within the Project open cut and the establishment of a permanent Goonbri Creek alignment and associated flood bund to the east and south-east of the open cut (Figure ES-4);
- progressive development of sediment basins and storage dams, pumps, pipelines and other water management equipment and structures;
- continued development of soil stockpiles, laydown areas and gravel/borrow areas;
- ongoing monitoring and rehabilitation; and
- other associated minor infrastructure, plant, equipment and activities.

Approximately 50.5 million tonnes of ROM coal would be mined from the open cut during the life of the Project.

In Project Year 1 only, or until approvals and upgrades are in place for the transfer of Project ROM coal to the Boggabri Coal Mine Infrastructure Facilities, the Project would make continued use of the existing on-site ROM handling areas, coal crushing, screening and loadout facilities.

Road transport of sized ROM coal to the Whitehaven coal handling and preparation plant would also continue in this initial period (with no increase in the current maximum off-site coal trucking rate).

Interaction with the Boggabri Coal Mine

Boggabri Coal Pty Limited owns the existing Boggabri Coal Mine, which is an open cut coal mine located immediately to the north of the Tarrawonga Coal Mine (Figures ES-1 and ES-2).

In October 2009, Boggabri Coal Pty Limited submitted a Project Application to the Department of Planning and Infrastructure for the Continuation of Boggabri Coal Mine.

As part of the Continuation of Boggabri Coal Mine, Boggabri Coal Pty Limited is seeking approval for construction of a coal handling and preparation plant and bypass crusher and construction of a 17 kilometre private rail spur, rail loop and rail loadout facility.

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

Under this agreement Boggabri Coal Pty Limited would handle and process Project ROM coal at the upgraded Boggabri Coal Mine Infrastructure Facilities on a campaign basis.

Project product coal would also be separately loaded to trains for transportation to the Port of Newcastle via the Boggabri Coal Mine private rail spur and Werris Creek Mungindi Railway.

In addition, the Project Northern Emplacement would be integrated with the southern extent of the Boggabri Coal Mine waste rock emplacement. This would facilitate an integrated waste emplacement landform, avoiding the formation of a new valley between the two mine landforms and reducing the Project disturbance area.

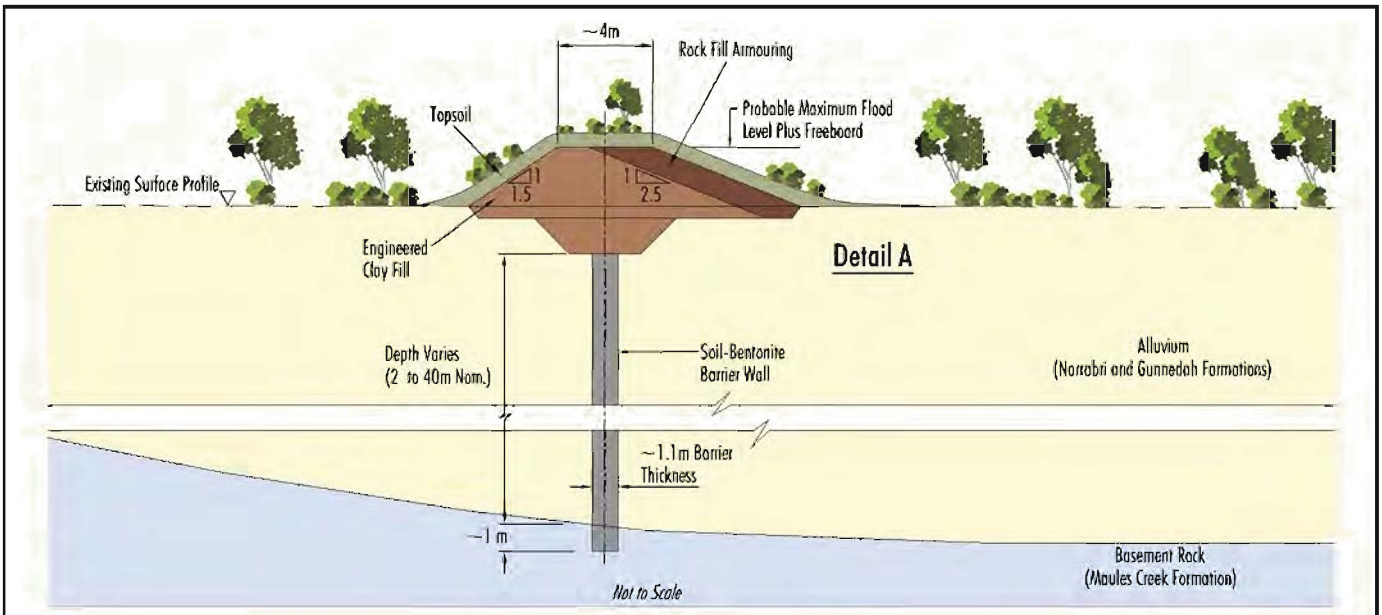
Benefits of the Project

The Project would provide for continuation of the Tarrawonga Coal Mine and direct employment of 20 construction and 120 operational personnel.

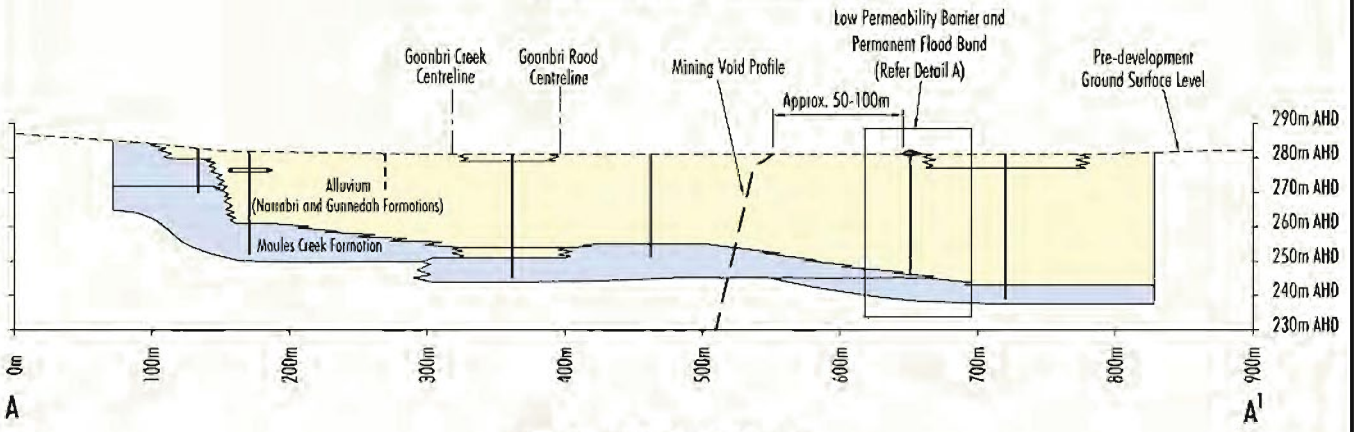
The Project would involve the production of up to 3 million tonnes per annum of ROM coal over a mine life of 17 years. The Project would produce a combination of thermal and semi-soft coking coal that would be sold domestically or exported for electricity generation and steel production overseas.

Project coal production would contribute to New South Wales export income, royalties and State and Commonwealth tax revenue, as well as contributing to manufacturing and electricity supply in countries that purchase Project coal. The Project would also provide a reliable supply of coal for a number of manufacturing and other commercial industries in Australia.

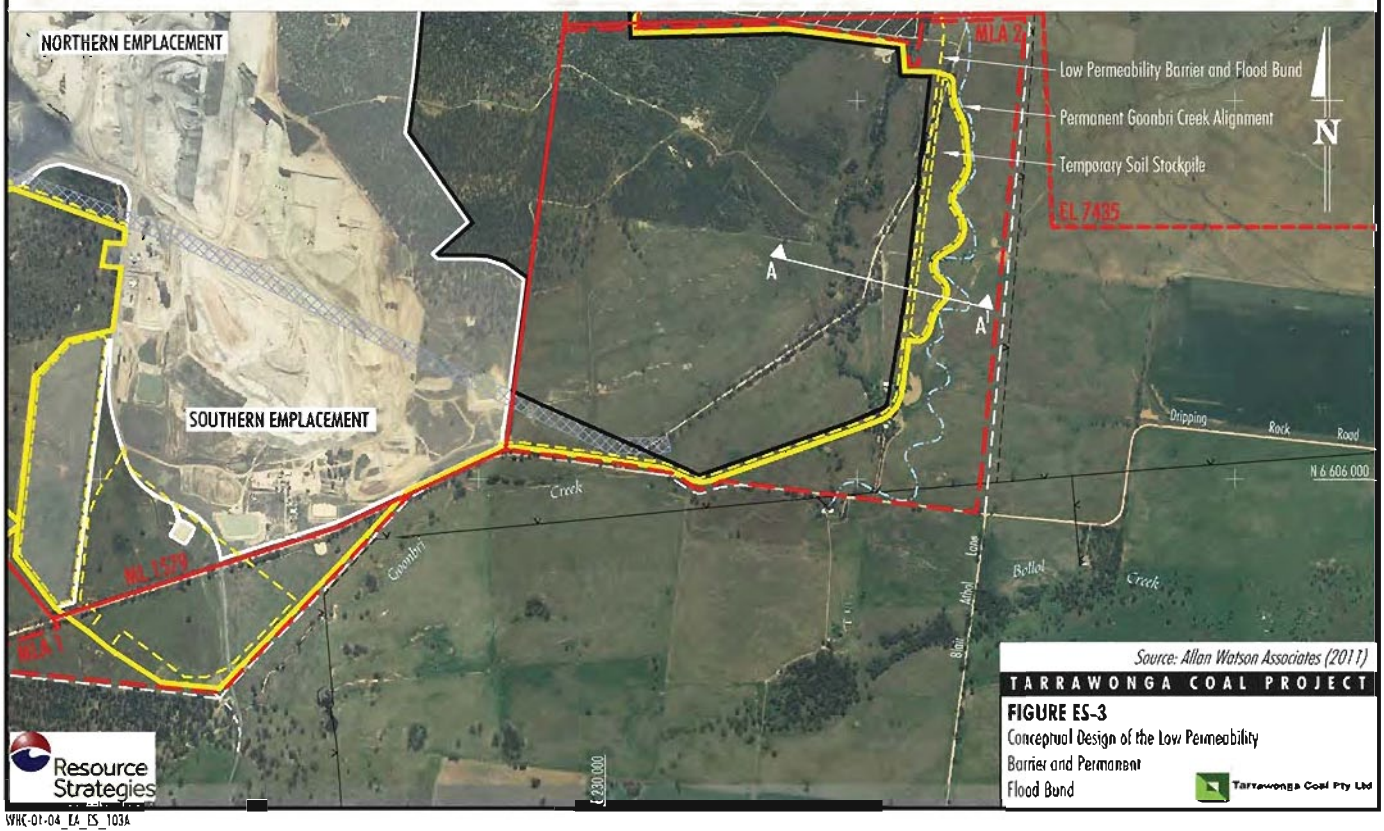
In addition, the Project would involve the production of gravel for use as construction material. Gravel production at the mine site is a beneficial use of waste rock to be generated by the Project.



Section A-A^1
Idealised Geological Section



Location of Geological Section



TARRAWONGA COAL PROJECT

FIGURE ES-3

Conceptual Design of the Low Permeability Barrier and Permanent Flood Bund

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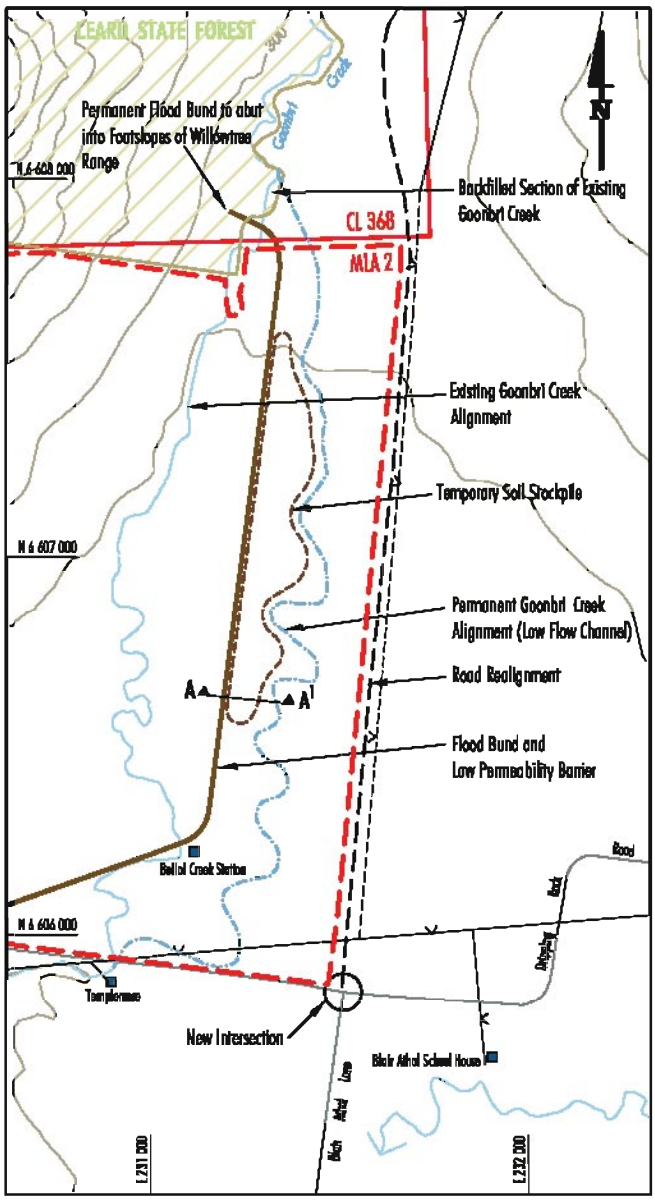


LEGEND

- Mining Lease (CL & ML)
- Mining Lease Application Boundary (MLA)
- 11kV Electricity Transmission Line
- 11kV Electricity Transmission Line Realignment
- Leard State Forest
- Stream ≥ 3rd Order
- Mine-owned Dwelling

0 500

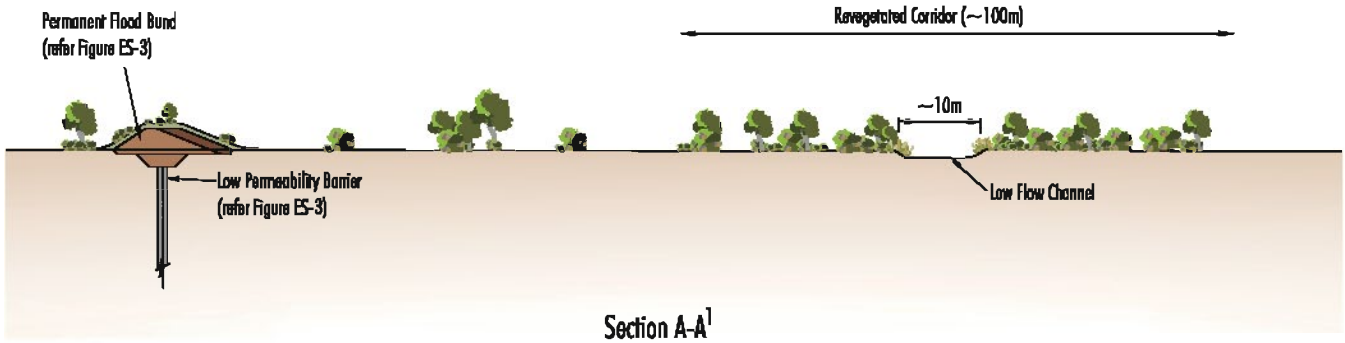
Metres

GRID DATUM MGA 94 ZONE 56

Source: Department of Lands (2010); Gilbert & Associates (2011) and Allan Watson Associates (2011)

Plan

Permanent Goonbri Creek Alignment



Section A-A1

Not to Scale

TARRAWONGA COAL PROJECT

FIGURE ES-4

Permanent Goonbri Creek Alignment and Associated Flood Bund

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The Socio-Economic Assessment indicates that operation of the Project is predicted to have the following positive impacts on the regional economy (the statistical local areas of Narrabri and Gunnedah):

- $490 million in annual direct and indirect regional output or business turnover;
- $246 million in annual direct and indirect regional value-added;
- $27 million in annual household income; and
- 300 direct and indirect jobs.

The Project would have even more pronounced positive impacts on the New South Wales economy, comprising:

- $901 million in annual direct and indirect output or business turnover;
- $442 million in annual direct and indirect value-added;
- $147 million in annual household income; and
- 1,772 direct and indirect jobs.

The Socio-Economic Assessment indicates a net benefit of approximately $790 million would be forgone if the Project is not implemented.

ES4 KEY ENVIRONMENTAL ASSESSMENT ISSUES AND MANAGEMENT

Land Resources

An Agricultural Resource Assessment was undertaken for the Project area by McKenzie Soil Management.

No Class 1 or Class 2 agricultural suitability lands have been identified within the Project area. Agricultural suitability classes identified across the Project site ranged from Class 3 to Class 5.

Approximately 210 ha of Class 3 agricultural suitability lands would be disturbed by the Project. However, the Project revegetation strategy would include the reinstatement of an equivalent area of Class 3 agricultural suitability land. As a result, there would be no long-term change in the area of Class 3 lands on the Project site.

Groundwater

A Groundwater Assessment for the Project was undertaken by Heritage Computing and was reviewed by Dr Frans Kalf.

The Groundwater Assessment has evaluated the potential impacts of the Project on groundwater resources using a numerical regional groundwater model.

The model covers an area of approximately 1,518 square kilometres. It incorporates the Boggabri Coal Mine and Maules Creek Coal Project in the north, and Rocglen Mine in the south, as well as relevant data and information from the mine plans and groundwater models developed for these projects.

A transient calibration of the numerical regional groundwater model was conducted and the model was then used to simulate the potential effects of the Project on the local and regional aquifer systems and groundwater users.

The two relevant groundwater systems are:

- Porous Rock groundwater system – including the coal measures of the Maules Creek Formation; and
- Alluvial groundwater system – associated with the low-lying floodplains of the Upper Namoi.

The model was also used to estimate the potential magnitude of annual groundwater inflows to the open cut over the life of the Project (and post-mining) from these two systems for the purposes of water licensing and water management planning.

Alluvial sediments associated with the Bollol Creek, Goonbri Creek and Nagero Creek surface drainages exist to the east, south and west of the Project area.

A low permeability barrier would be constructed using a soil-bentonite mixture in the alluvial sediments (Figure ES-3) to meet the following design objectives:

- minimise the potential for local drainage of alluvial groundwater into the open cut during operations and post-mining;
- minimise the potential for future instability of the open cut batters formed in the alluvium;
- maintain the hydraulic character of Goonbri Creek by minimising the potential loss of baseflow; and

- maintain the value of alluvial groundwater, by minimising potential interactions with the mine final void, post-mining.

The groundwater modelling confirmed that the low permeability barrier would reduce local drainage from the alluvial groundwater system into the open cut during operational and post-closure periods.

The low permeability barrier would also reduce the potential for impacts on the beneficial use of the regional groundwater resource in the long-term.

No measurable changes in the quality of groundwater are predicted to occur as a consequence of mining. As a result, there would be negligible impact on surface water quality in local creeks due to the interaction of surface water flows and groundwater.

In addition, there is expected to be negligible loss of groundwater yield to/from surface stream systems (i.e. Bollol Creek, Goonbri Creek, Nagero Creek and the Namoi River) based on the numerical modelling completed for the Groundwater Assessment. The low permeability barrier would allow the hydrological character of the Goonbri Creek system to be maintained.

The performance of the low permeability barrier would be assessed during the life of the Project and the existing Surface Water and Groundwater Response Plan would be reviewed and revised to incorporate the Project. The plan would describe the contingent mitigation/compensation/offset options that would be enacted in the event that the low permeability barrier does not perform to specification.

TCPL proposes to establish, in co-operation with the adjoining Boggabri Coal Mine and the Maules Creek Coal Project, a regional monitoring program for groundwater resources. The existing Groundwater Monitoring Program would be updated to incorporate the Project.

The Groundwater Assessment included consideration of the potential cumulative impacts of the Project, Continuation of Boggabri Coal Mine, Maules Creek Coal Project and Rocglen Coal Mine. Heritage Computing concluded that the potential cumulative impact on the alluvial groundwater system or groundwater yield to privately-owned bores in the alluvial groundwater system is expected to be negligible.

Surface Water

A Surface Water Assessment for the Project was undertaken by Gilbert & Associates.

The Project would involve removal of a 3 kilometre section of Goonbri Creek within the Project open cut and the establishment of a permanent Goonbri Creek alignment and associated flood bund to the east and south-east of the open cut.

The design objectives for the permanent Goonbri Creek alignment comprise:

- installation of a low flow channel that approximates the existing section of Goonbri Creek upstream of the Project in terms of stream geometry, hydrology and geomorphology;
- creation of a low flow channel that mimics the meandering path of the existing alignment of Goonbri Creek;
- minimisation of disturbance to the upstream reaches of Goonbri Creek; and
- provision of a stable transition back to the existing creek alignment.

The permanent Goonbri Creek alignment (Figure ES-4) would be constructed in a manner so as to minimise any disruption to flows reporting to the downstream portions of Goonbri Creek.

A Goonbri Creek Management Plan would be developed for the Project prior to the commencement of construction activities associated with the permanent Goonbri Creek alignment, low permeability barrier and flood bund. The plan would include the detailed design and specifications for the permanent alignment, including a program for the staging of construction works and their integration with the mining operations.

Potential impacts of the Project on surface water quality include the reduction in surface water quality due to uncontrolled site runoff, controlled licensed discharges and/or alteration of groundwater quality affecting baseflow in surface water resources.

The Project water management system would be designed to maintain separation between surface water runoff from undisturbed, rehabilitated and active mining areas, in order to:

- minimise the capture of surface water runoff from undisturbed areas, by optimising the diversion of up-catchment water to downstream receiving waters;

- provide controlled release for surface water runoff from rehabilitated mine areas through licensed discharge points in accordance with Environment Protection Licence conditions;
- capture, store and manage surface water runoff from partially rehabilitated mine areas and infrastructure areas, and provide controlled release of these waters through licensed discharge points in accordance with Environment Protection Licence conditions; and
- capture and store surface water runoff from active mining areas and mine-affected water, with no release off-site.

The Project would result in changes to flows in local creeks due to the progressive extension of the open cut and associated capture and re-use of drainage from operational disturbance areas and controlled releases from licensed discharge points.

Lower sections of the Project site would be protected from extreme flooding events from Bollol/Goonbri Creeks by both temporary and permanent flood bunds.

The existing Water Management Plan incorporating the Site Water Balance, Erosion and Sediment Control Plan, Surface Water Monitoring Program, Groundwater Monitoring Program, and the Surface Water and Groundwater Response Plan would be updated for the Project.

The existing Surface Water and Groundwater Response Plan would also be reviewed and revised to describe the measures/procedures that would be implemented over the life of the Project.

The Surface Water and Groundwater Response Plan would describe how TCPL would respond to any potential exceedances of surface water performance criteria, and it would describe the contingent mitigation/compensation/offset measures that would be implemented in the event that downstream surface water users or riparian vegetation are adversely affected by the Project.

The Surface Water Assessment included an evaluation of the cumulative impacts of the Project and the Continuation of Boggabri Coal Mine and Maules Creek Coal Project. The maximum cumulative reduction in contributing catchments to the Namoi River during the life of the Project would be 0.1%.

Noise and Blasting

A Noise and Blasting Impact Assessment for the Project was undertaken by Wilkinson Murray. The Project would operate 24 hours per day and seven days per week.

An acoustic model was developed by Wilkinson Murray that simulates the Project components and predicts noise levels at relevant receiver locations.

A number of iterative steps were undertaken to develop noise mitigation measures for the Project which resulted in adoption of the following controls:

- installation of an earth bund on the southern side of exposed sections of the ROM coal haul road to the Boggabri Coal Mine;
- modification of the alignment of haul routes to reduce their exposure relative to nearby receivers; and
- a reduction in the number of mobile fleet items operating during the evening and night-time periods.

In summary, with these measures in place, the operational noise assessment indicates:

- During the daytime, operational noise from the Project would comply with relevant criteria at all privately-owned residences.
- Operational noise from the Project would also comply with relevant criteria during periods of calm meteorological conditions at night.
- During evening and night-time periods with adverse meteorological conditions, operational noise would exceed the relevant criteria at three privately-owned receivers.

The Noise and Blasting Assessment also indicates that the Project would comply with relevant blasting criteria at all privately-owned residences.

Cumulative noise impacts resulting from the concurrent operation of the Project, Continuation of Boggabri Coal Mine and the Maules Creek Coal Project were also assessed. The assessment indicated that cumulative noise levels would comply with the night-time recommended maximum amenity criteria at all receivers, and with the night-time recommended acceptable amenity criteria for all but two privately-owned receivers.

TCPL proposes to establish, in co-operation with the adjoining Boggabri Coal Mine and the Maules Creek Coal Project, a cumulative noise monitoring program. The existing Noise Management and Blast Management Plans would also be revised to address the Project.

Air Quality

An Air Quality and Greenhouse Gas Assessment for the Project was undertaken by PAEHolmes. Modelling was used to assess potential air quality impacts associated with the Project.

Emission inventories were prepared for the Project in consideration of the anticipated mining activities including coal extraction, waste rock removal rates, haul road distances and routes, stockpile and pit areas and equipment operating hours. Best practice air quality management measures were considered by PAEHolmes in the development of the Project emission inventories.

The Air Quality and Greenhouse Gas Assessment indicates that no exceedance of the relevant criteria is predicted at any privately-owned residence for the Project-only particulate matter concentrations or dust deposition levels.

In addition, no exceedances of the relevant annual average criteria for particulate matter concentrations and dust deposition are predicted when accounting for background particulate concentrations and dust levels.

The Air Quality and Greenhouse Gas Assessment also included a cumulative assessment considering emissions from the Project and nearby mines. The results of the conservative cumulative assessment indicate that two private receivers would exceed relevant 24 hour particulate matter criteria. One of these receivers would exceed the criteria due to the Continuation of Boggabri Coal Mine alone.

The management measures in the existing Air Quality and Greenhouse Gas Management Plan would be revised and implemented during construction and operation of the Project. This would include additional water application and/or the application of chemical dust suppressants on haul roads and other best practice management strategies to reduce amenity impacts on privately-owned properties.

TCPL also proposes to establish, in co-operation with the adjoining Boggabri Coal Mine and the Maules Creek Coal Project, a cumulative particulate matter monitoring program that includes a particulate matter monitor to the south of the Project.

Blasting activities also have the potential to result in fugitive fume and particulate matter emissions. The existing Blast Management Plan would be revised to include measures for the minimisation of fume and particulate matter emissions from Project blasts.

Terrestrial Ecology

A Flora Assessment has been prepared for the Project by Dr. Colin Bower of FloraSearch. A Fauna Assessment has been prepared for the Project by Resource Strategies and Cenwest Environmental Services.

The Project is positioned on the foothills and slopes adjoining and in the southern boundary of Leard State Forest (Figures ES-1 and ES-2). Land use to the east, south and west is dominated by grazing and cereal/fodder cropping on the flatter and more fertile areas. Logging of Ironbark and White Cypress Pine has previously occurred in the Leard State Forest and on privately-owned land.

The Flora Assessment indicates the Project would require the progressive removal of approximately 397 ha of native vegetation. This includes approximately 145 ha of native vegetation in the Leard State Forest, and approximately 13 ha of Box-Gum Woodland, which is an endangered ecological community.

The Fauna Assessment indicates the Project would require the progressive removal of approximately 334 ha of woodland and forest habitat and approximately 223 ha of grassland habitat.

TCPL would prepare and implement a Biodiversity Management Plan for the Project to manage potential impacts on flora and fauna. The Project biodiversity offset addresses residual impacts of the Project on flora and fauna and maintenance of biodiversity values of the region in the medium to long-term.

Section ES5 provides a summary of rehabilitation and the biodiversity offset for the Project. The Project rehabilitation program would include the reinstatement of key agricultural and ecological values (Figures ES-5 and ES-6).

Other Assessments

An Environmental Risk Assessment was undertaken to identify key environmental issues that would require further assessment for the Project. The key issues identified are addressed in this Environmental Assessment.

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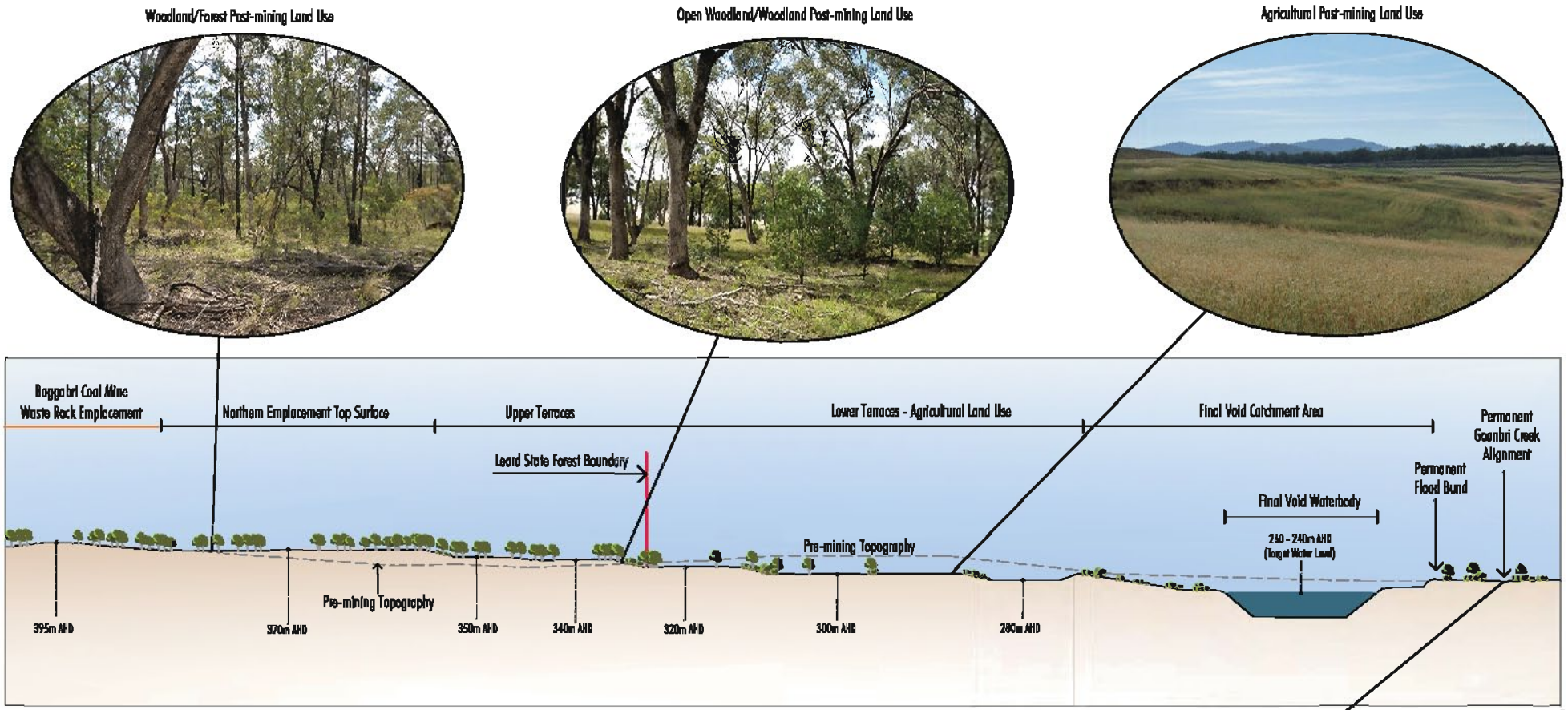

Section A-A[1]

(Refer Figure ES-5)

Permanent Goonbri Creek Alignment Low Flow Channel

Source: Whitehaven (2011); FloraSearch (2011) and Gilbert & Associates (2011)

TARRAWONGA COAL PROJECT

FIGURE ES-6

Cross-section of the Rehabilitated Project Mine Landform

Tarrawonga Coal Pty Ltd

Resource Strategies

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Other issues addressed in the Environmental Assessment studies include greenhouse gas emissions, road transport, visual impacts, Aboriginal and non-Aboriginal heritage, regional economics, community infrastructure demand and hazards and risks.

ES5 REHABILITATION AND BIODIVERSITY OFFSET

Final Landform and Rehabilitation

There would be no change to the existing maximum elevation of the Northern Emplacement. The Southern Emplacement maximum elevation would temporarily increase by some 20 metres prior to final mine landform reshaping.

The Project final landform and revegetation program would provide for a combination of approximately 752 ha of native woodland/forest and some 210 ha of Class 3 agricultural suitability land.

Revegetation of woodland/forest areas would include the planting of species characteristic of the local vegetation communities, including species from the Box-Gum Woodland endangered ecological community. The agricultural land would be capable of being used for pasture production for grazing and occasional cropping.

The Project would include a final void waterbody, located in the eastern portion of the Project open cut area. The final void waterbody is not predicted to spill under any simulated climatic sequences. An adaptive management approach to the final void design and mine closure planning would be adopted during the life of the Project.

A schematic cross-section of the rehabilitated Project landform, including the final void waterbody, is shown on Figure ES-6.

A Rehabilitation Management Plan would be developed and implemented for the Project, including a rehabilitation monitoring program designed to track the progress of rehabilitation and revegetation.

Biodiversity Offset

The biodiversity offset for the Project comprises approximately 1,660 ha of freehold land that has been purchased by Whitehaven. The offset is situated approximately 20 kilometres to the north-east of the Project and adjoins Mount Kaputar National Park (Figure ES-7).

The biodiversity offset area includes similar vegetation communities/fauna habitats and biodiversity values to the Project area, and has substantial areas of the Box-Gum Woodland endangered ecological community.

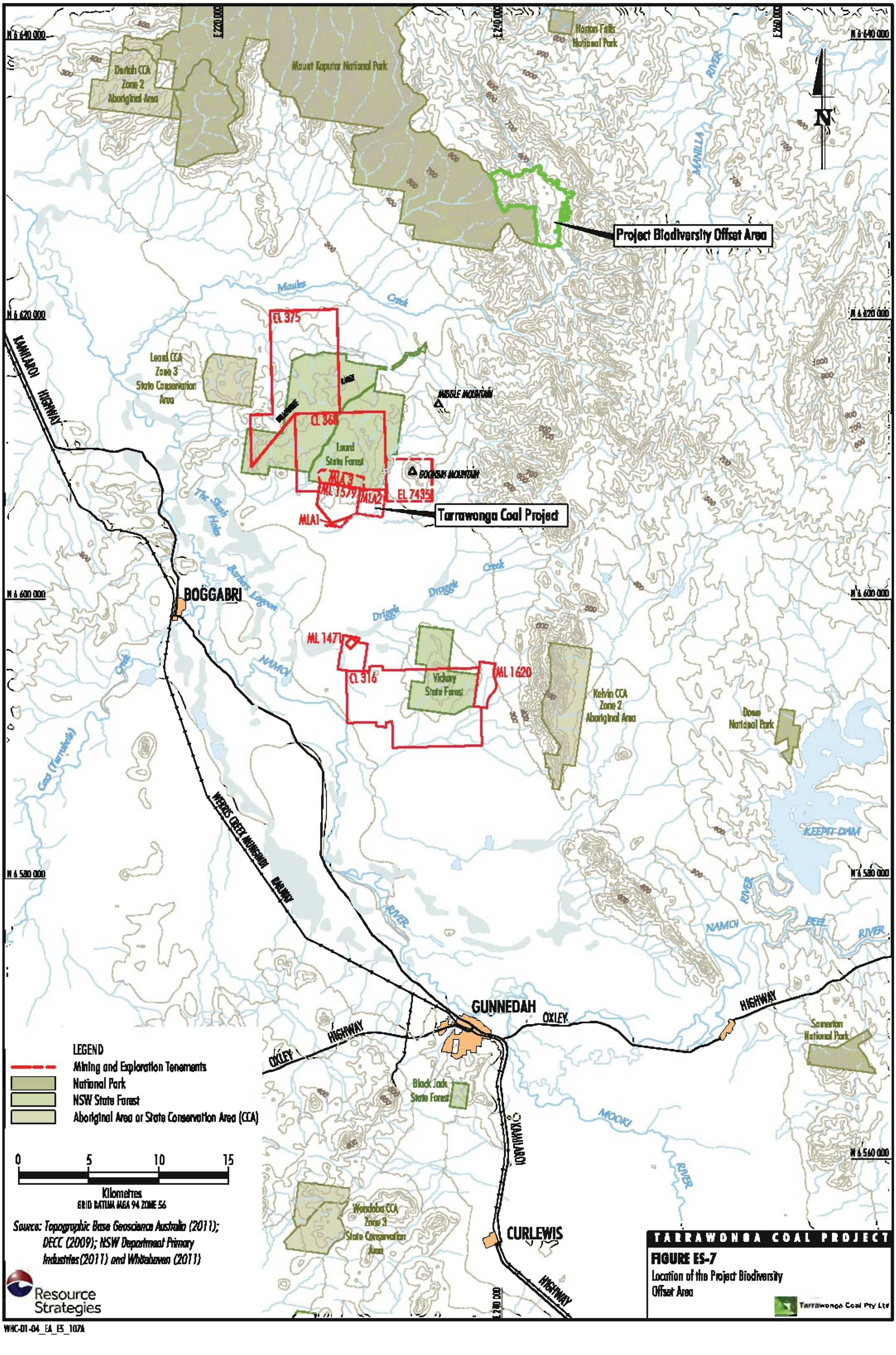
A number of management measures to enhance the offset area's flora and fauna values would be detailed in the Offset Area Management Plan to be prepared for the Project.

TCPL intends to reach an agreement with the New South Wales Government so that the biodiversity offset area can be permanently added to the adjoining Mount Kaputar National Park.

ES6 STATEMENT OF COMMITMENTS

Key environmental management and offset measures to be implemented for the Project include:

- design and construction of an engineered low permeability barrier to the east and south-east of the open cut;
- design, construction and implementation of a permanent Goonbri Creek alignment and associated flood bund;
- integration of key aspects of the Project with the adjoining Boggabri Coal Mine;
- cessation of sized ROM coal road transport to the Whitehaven coal handling and preparation plant (once suitable approvals and upgrades are in place);
- management and mitigation of operational noise;
- rehabilitation of Project disturbance areas, including the reinstatement of key agricultural and ecological values;
- provision of biodiversity offset measures for the Project;
- management of the Project final void to minimise potential long-term impacts on water resources; and
- participation in joint air quality, operational noise and regional groundwater monitoring schemes with the adjoining Boggabri Coal Mine and the Maules Creek Coal Project.



Project Biodiversity Offset Area
Mount Kaputar National Park
Deriah CCA Zone 2 Aboriginal Area
Horton Falls National Park
Leard CCA Zone 3 State Conservation Area
Leard State Forest
CL 375
CL 368
MLA 3
ML 1579
MLA 2
MLA 1
EL 7435
Tarrawonga Coal Project
BOGGABRI
ML 1471
CL 316
ML 1620
Vickery State Forest
Kelvin CCA Zone 2 Aboriginal Area
Dams National Park
KEEPIT DAM
GUNNEDAH
OXLEY HIGHWAY
KAMILAROI HIGHWAY
WERRIS CREEK MUNGINDI RAILWAY
Black Jack State Forest
Wondoba CCA Zone 3 State Conservation Area
CURLEWIS
Somerton National Park
NAMOI RIVER
PEEL RIVER
MOOKI RIVER
MANILLA RIVER
LEGEND
Mining and Exploration Tenements
National Park
NSW State Forest
Aboriginal Area or State Conservation Area (CCA)
0 5 10 15
Kilometres
GRID DATUM MGA 94 ZONE 56
Source: Topographic Base Geoscience Australia (2011); DECC (2009); NSW Department Primary Industries (2011) and Whitehaven (2011)
Resource Strategies
TARRAWONGA COAL PROJECT
FIGURE ES-7
Location of the Project Biodiversity Offset Area
Tarrawonga Coal Pty Ltd
WHC-01-04_EA_ES_107A