



WAMBO

SOUTH WAMBO UNDERGROUND MINE MODIFICATION

MODIFICATION DESCRIPTION AND PRELIMINARY ENVIRONMENTAL ASSESSMENT

September 2012



WAMBO COAL MINE
SOUTH WAMBO UNDERGROUND MINE MODIFICATION
MODIFICATION DESCRIPTION AND PRELIMINARY ENVIRONMENTAL
ASSESSMENT

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1 INTRODUCTION

1.1 PURPOSE AND STRUCTURE OF THIS DOCUMENT

Wambo Coal Pty Limited (WCPL) requests a modification of the Wambo Coal Mine Development Consent DA 305-7-2003 for the realignment and extension/relocation of the Arrowfield and Bowfield Seam Underground Mines (herein referred to as the South Wambo Underground Mine Modification [the Modification]). The modified Arrowfield and Bowfield Underground Mines are collectively referred to as the South Wambo Underground Mine.

The feasibility studies and environmental studies for the Modification will also consider the potential for mining in the Woodlands Hill Seam as part of the South Wambo Underground Mine.

This document has been prepared to provide the New South Wales (NSW) Department of Planning and Infrastructure (DP&I) with a summary description of the Modification, an overview of the environmental studies that are proposed to support an Environmental Assessment (EA) and to initiate the preparation of Director-General's Requirements (DGRs) under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act).

The remainder of this document is structured as follows:

- Section 1 Introduction – provides a background to the Wambo Coal Mine and an overview of the proposed Modification activities.
- Section 2 Local and Regional Context – summarises the local and regional context of the Wambo Coal Mine (including surrounding development).
- Section 3 Modification Description and Justification – provides a clear and concise description of the Modification, indicates the types of activities that will be undertaken, includes a justification for the Modification and summarises alternatives considered.
- Section 4 Planning Considerations – describes the applicable statutory planning instruments and strategic planning documents.

Section 5 Preliminary Environmental Assessment – identifies key environmental issues of particular relevance to the Modification, provides an analysis of the likely nature and extent of potential impacts, and identifies the level and scope of environmental impact assessment to be undertaken for the EA.

Section 6 Stakeholder Consultation – outlines consultation (with the community, local councils and Government agencies) already undertaken and proposed to be carried out for the Modification.

Section 7 References – Lists documents referenced in Sections 1 to 6.

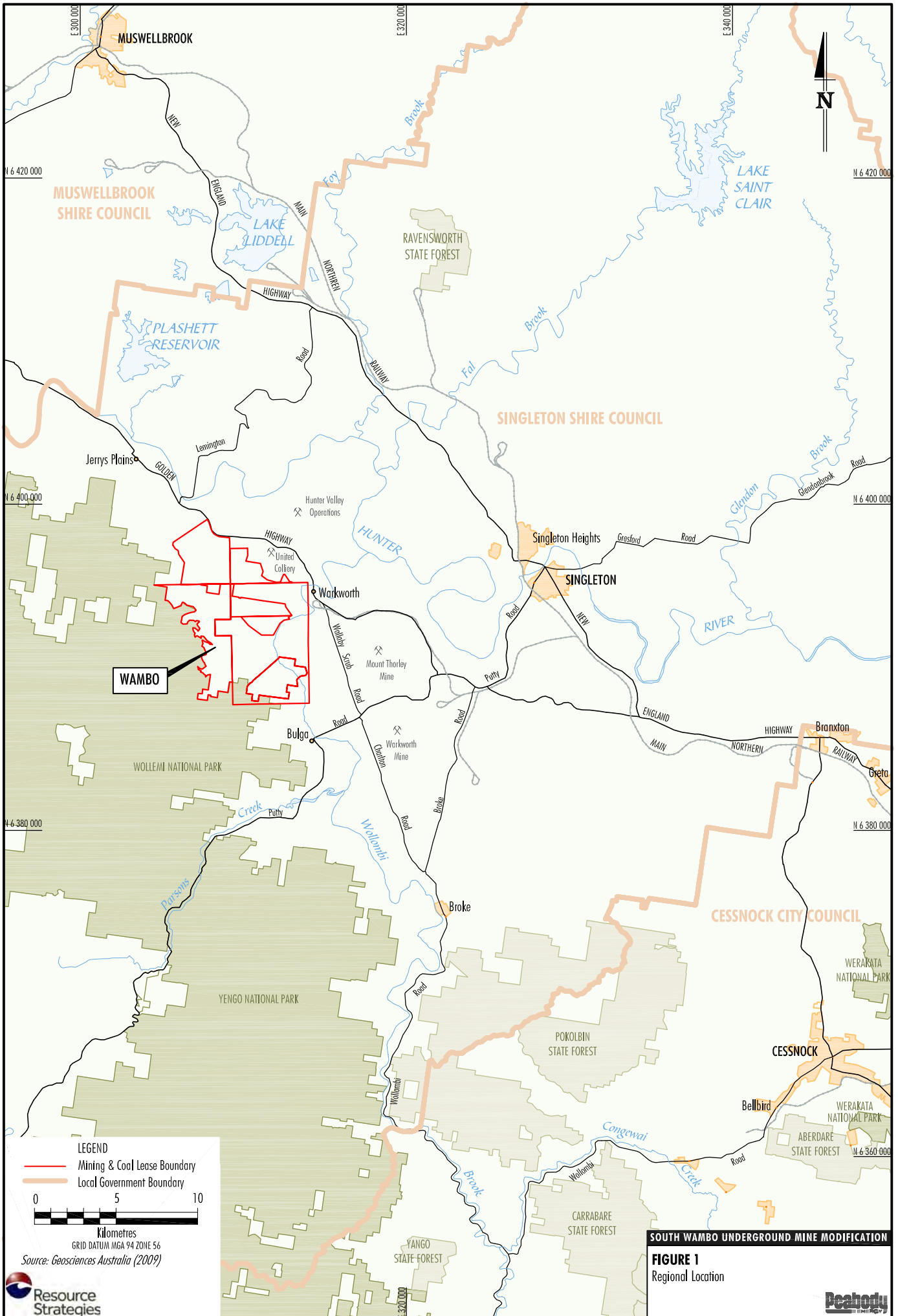
1.2 BACKGROUND

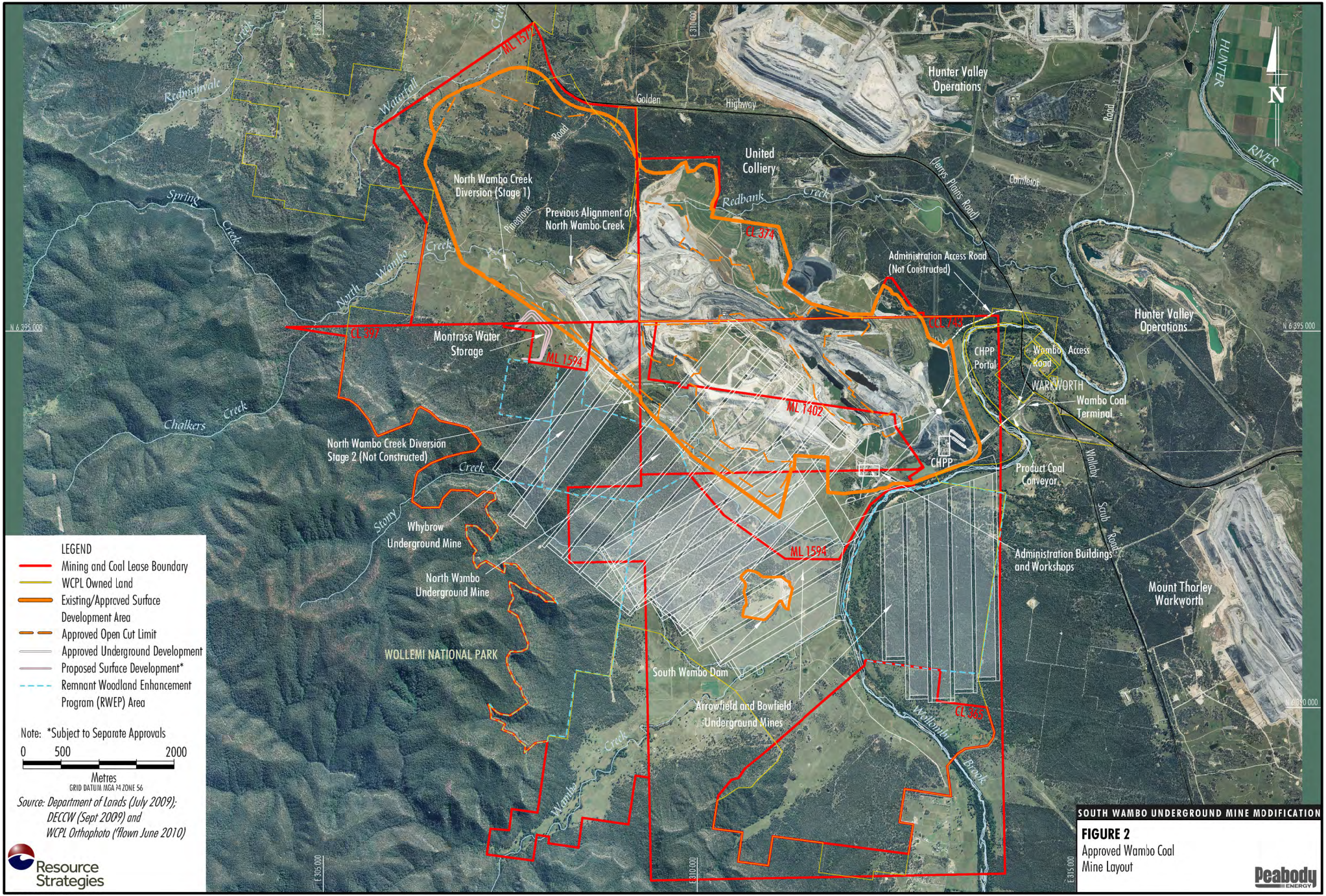
The Wambo Coal Mine is an open cut and underground coal mining operation located approximately 15 kilometres (km) west of Singleton, near the village of Warkworth, NSW (Figure 1). The Wambo Coal Mine is owned and operated by WCPL, a subsidiary of Peabody Energy Australia Pty Limited (75%).

The potential environmental impacts of the existing Wambo Coal Mine were assessed in the *Wambo Development Project Environmental Impact Statement* (EIS) (WCPL, 2003).

Development Consent DA 305-7-2003 for the Wambo Coal Mine was granted on 4 February 2004 by the then NSW Minister for Urban Affairs and Planning under Part 4 of the EP&A Act. The Wambo Coal Mine Development Consent DA 305-7-2003 has been modified on nine occasions: 2004; May 2005; January 2006; April 2006; October 2006; January 2007; June 2009; August 2009; and February 2011.

On 29 June 2012, WCPL submitted a modification application for the development of the Montrose Water Storage, a “turkey’s nest” style dam with a nominal capacity of approximately 1,500 million litres (DA 305-7-2003 MOD 11). The layout of the proposed Montrose Water Storage is shown on Figure 2. The Montrose Water Storage Modification has not yet been determined.





- LEGEND**
- Mining and Coal Lease Boundary
 - WCPL Owned Land
 - Existing/Approved Surface Development Area
 - Approved Open Cut Limit
 - Approved Underground Development
 - Proposed Surface Development*
 - - - Remnant Woodland Enhancement Program (RWEP) Area

Note: *Subject to Separate Approvals

0 500 2000

Metres

GRID DATUM: MGA 74 ZONE 56

Source: Department of Lands (July 2009);
 DECCW (Sept 2009) and
 WCPL Orthophoto (flown June 2010)



SOUTH WAMBO UNDERGROUND MINE MODIFICATION

FIGURE 2
 Approved Wambo Coal Mine Layout



In accordance with Development Consent DA 305-7-2003, the Wambo Coal Mine is approved to extract up to 14.7 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal, over a mine life of approximately 21 years (i.e. until 4 February 2025). Approximately 202 million tonnes (Mt) of ROM coal is expected to be extracted during the approved mine life, including an estimated 98 Mt open cut ROM coal reserve and 104 Mt underground ROM coal reserve.

The approved operations at the Wambo Coal Mine include, amongst other things:

- Open cut mining operations (commenced under DA 305-7-2003 in 2005) involving extraction of coal from the Whybrow, Redbank Creek, Wambo and Whynot Seams within Mining Lease (ML) 1402, ML 1572, ML 1594, Coal Lease (CL) 374, CL 397 and Consolidated Coal Lease (CCL) 743.
- Underground mining operations including:
 - The North Wambo Underground Mine (commenced 2005) which involves extraction of coal by the longwall mining method from the Wambo Seam within ML 1402, ML 1594, CL 397, CCL 743.
 - The Whybrow Underground Mine (not yet commenced) which involves extraction of coal by the longwall mining method from the Whybrow Seam within ML 1594 and CL 397.
 - The Arrowfield Underground Mine (not yet commenced) which involves extraction of coal by the longwall mining method from the Arrowfield Seam within ML 1402, ML 1594, CL 365, CL 397, and CCL 743.
 - The Bowfield Underground Mine (not yet commenced) which involves extraction of coal by the longwall mining method from the Bowfield Seam within ML 1402, ML 1594, CL 365, CL 397, and CCL 743.
- Handling and processing of coal at the Wambo Coal Handling and Preparation Plant (CHPP).
- Rail load-out of coal at the Wambo Coal Terminal.
- Disposal of waste rock within open cut voids or waste rock emplacements. The open cut operations are expected to produce approximately 640 million bank cubic metres (Mbcm), while only a limited amount of waste rock will be produced from the underground operations.
- Selective handling of coarse reject material and co-disposal with waste rock in open cut voids.
- Disposal of tailings within open cut voids which are covered with coarse rejects and/or waste rock material using a combination of encapsulation and incorporation.
- Infrastructure and services (e.g. administration building, access roads, haul roads and electricity supply) located within the surface development area.
- A water management system which includes both permanent structures (i.e. structures that will continue to operate post-closure) and temporary structures (i.e. structures that will only be required until the completion of rehabilitation works).
- Ongoing rehabilitation including progressive rehabilitation of open cut areas and monitoring, rehabilitation and remediation of subsidence impacts associated with underground mining.

A general arrangement of the existing/approved operations at the Wambo Coal Mine is shown on Figure 2, including the existing/approved surface development area, existing/approved open cut limit and existing/approved underground mine layouts (i.e. North Wambo, Whybrow, Arrowfield and Bowfield Underground Mines).

1.3 MODIFICATION OVERVIEW

The proposed Modification to the Wambo Coal Mine would involve the realignment and extension/relocation of the approved Arrowfield and Bowfield Underground Mine longwall panels within the existing tenements (i.e. ML 1594, CL 365, CL 397 and CCL 743). The modified Arrowfield and Bowfield Underground Mine longwall panels would include areas previously not approved for underground mining.

The Modification would also include an extension of the approved mine life from 2025 to 2031 (i.e. an additional six year mine life).

The Modification would not involve changes to any aspects of the approved open cut mine, North Wambo Underground Mine or Whybrow Underground Mine.

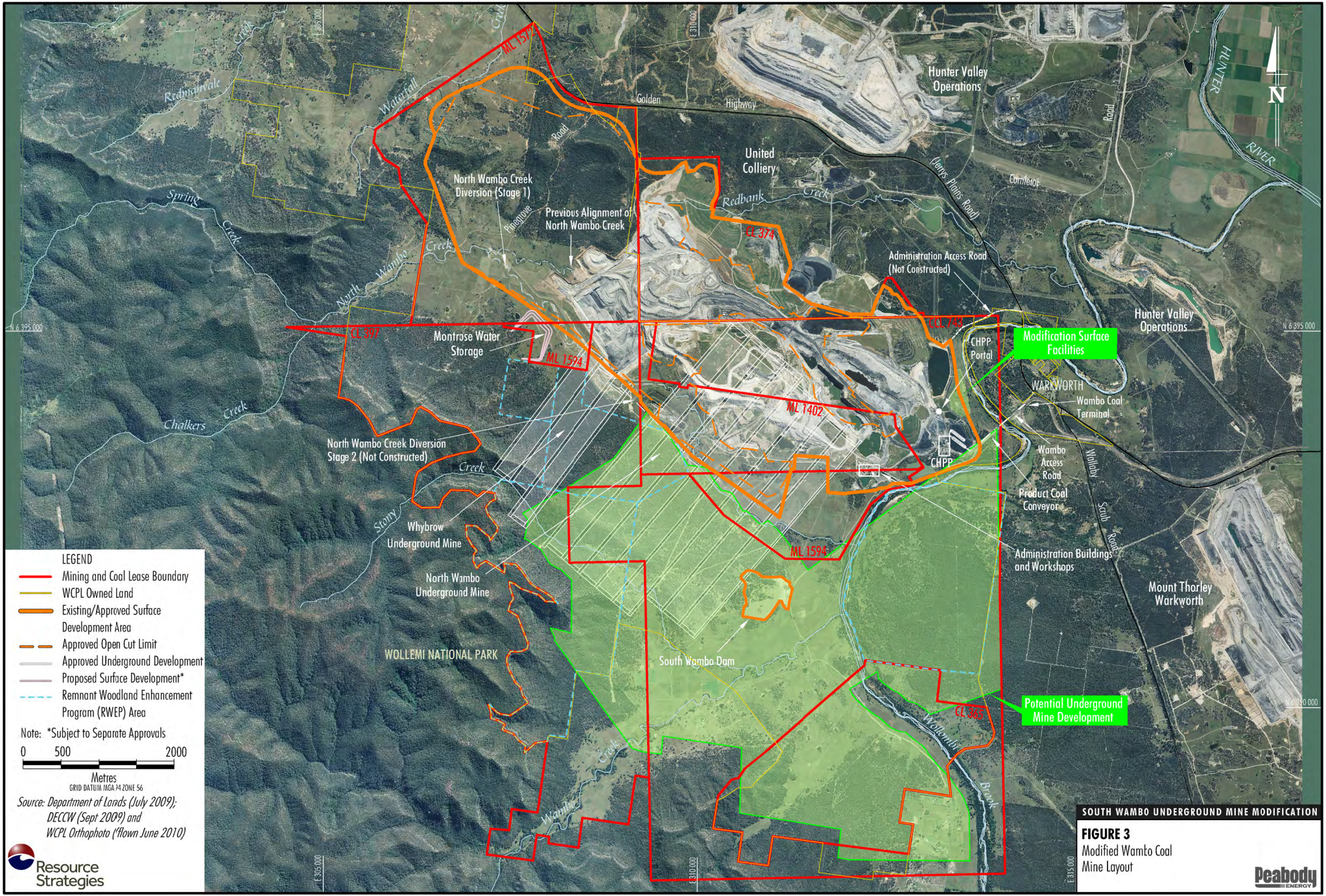
The key components of the proposed Modification are summarised below:

- Realignment and extension/relocation of the approved Arrowfield and Bowfield Underground Mine longwall panels (including areas previously not approved for underground mining).
- Minor relocation of the approved Arrowfield and Bowfield Underground Mine box cut and drift to reflect the Modification.
- Development of the modified mine layout to meet the existing approved subsidence management commitments.
- An extension of the mine life by approximately six years.
- Construction and operation of additional surface infrastructure required (e.g. ventilation shafts and gas drainage wells).
- Construction of a portion of the surface facilities outside of the approved surface development area.

The modified Arrowfield and Bowfield Underground Mine layouts would be located within the Potential Underground Mine Development area shown in Figure 3. Based on geotechnical exploration undertaken to date it is expected that the extent of the modified Bowfield Underground Mine would be less than the Potential Underground Mine Development area shown in Figure 3.

The feasibility studies and environmental studies for the Modification will also consider the potential for mining in the Woodlands Hill Seam as part of the South Wambo Underground Mine. Any mine layout in the Woodlands Hill Seam would be contained within the Potential Underground Mine Development area shown in Figure 3.

Additional detail on each component of the Modification is provided in Section 3.



- LEGEND**
- Mining and Coal Lease Boundary
 - WCPL Owned Land
 - Existing/Approved Surface Development Area
 - Approved Open Cut Limit
 - Approved Underground Development
 - Proposed Surface Development*
 - - - Remnant Woodland Enhancement Program (RWEPP) Area

Note: *Subject to Separate Approvals

0 500 2000

Metres

GRID DATUM: MGA 74 ZONE 56

Source: Department of Lands (July 2009);
 DECCW (Sept 2009) and
 WCPL Orthophoto (flown June 2010)



SOUTH WAMBO UNDERGROUND MINE MODIFICATION

FIGURE 3
 Modified Wambo Coal
 Mine Layout



2 LOCAL AND REGIONAL CONTEXT

2.1 LOCATION AND MINING TENEMENTS

The Wambo Coal Mine is located approximately 15 km west of Singleton, near the village of Warkworth, within existing mining tenements: ML 1402; ML 1594; ML 1572; CL 365; CL 374; CL 397; and CCL 743.

The existing mining tenements are shown on Figures 1, 2 and 3. The Modification would not extend outside the existing mining tenements.

The Wambo Coal Mine is wholly located within the Singleton Local Government Area (LGA) (Figure 1).

2.2 LAND USE AND BUILT FEATURES

Land use in the vicinity of the Wambo Coal Mine is characterised by a combination of coal mining operations, agricultural land uses and the village of Warkworth. WCPL-owned lands that are not subject to mining operations are utilised for the agistment of stock (WCPL, 2003). Land use in the Modification longwall panel area includes areas of cleared grazing land and patches of remnant native vegetation. While the majority of the Modification longwall panel area is within WCPL-owned land, some privately-owned land also occurs within the Modification longwall panel area (Figure 3).

No significant built features exist within the Modification underground mining area. Minor built features occurring in the Modification underground mining area include:

- private dwellings;
- public local road;
- transmission lines;
- the South Wambo Dam (and associated pipelines);
- farm land and facilities (i.e. agricultural improvements, farm buildings, sheds, tanks and farm dams);
- fencing on both WCPL-owned and privately owned properties;
- survey control marks; and
- other mine related infrastructure (e.g. minor roads owned and managed by WCPL).

2.3 TOPOGRAPHY, WATER RESOURCES AND VEGETATION

The Wambo Coal Mine is located in the Upper Hunter Valley region where landforms are characterised by gently sloping flood plains associated with the Hunter River and the undulating foothills, ridges and escarpments of the Mount Royal Range and Great Dividing Range. Elevations in the vicinity of the Wambo Coal Mine range from approximately 60 metre (m) Australian Height Datum (AHD) at Wollombi Brook to approximately 650 m AHD at Mount Wambo within the Wollemi National Park to the west of the Wambo Coal Mine (WCPL, 2003). Elevations in the Modification underground mining area range from approximately 60 m AHD near Wollombi Brook to approximately 220 m AHD near the base of the Wollemi National Park escarpment.

The Wambo Coal Mine is situated adjacent to the Wollombi Brook, south-west of its confluence with the Hunter River (Figure 1). Wollombi Brook drains an area of approximately 1,950 square kilometres and joins the Hunter River some 5 km north-east of the Wambo Coal Mine. The Wollombi Brook sub-catchment is bound by the Myall Range to the south-east, Doyles Range to the west, the Hunter Range to the south-west and Broken Back Range to the north-east (Hunter Catchment Management Trust, 2002).

The majority of lands within WCPL mining tenements drain via Wambo, Stony, North Wambo and Redbank Creeks to Wollombi Brook, while Waterfall Creek drains directly to the Hunter River (Figure 2). The majority of lands within the Modification underground mining area drain via Wambo, Stony and North Wambo Creeks to Wollombi Brook. These watercourses are generally characterised by ephemeral and semi-perennial flow regimes (Gilbert and Associates, 2003). Runoff in the area is a relatively low proportion of rainfall and generally follows the pattern of average rainfall with higher runoff occurring in late summer and autumn and lower runoff occurring in spring and winter (Gilbert and Associates, 2003).

The hydrogeological regime of the Wambo Coal Mine area and surrounds comprises two main systems (Heritage Computing, 2011):

- a Quaternary alluvial aquifer system of channel fill deposits associated with Wollombi Brook, North Wambo Creek, Wambo Creek and Stony Creek; and
- underlying Permian strata of hydrogeologically “tight” and hence very low yielding to essentially dry sandstone and lesser siltstone and low to moderately permeable coal seams which are the prime water bearing strata within the Permian measures.

Surface water associated with the principal drainage features will tend to be connected with the associated alluvium, and groundwater within the alluvium will discharge to the stream channels in some areas (Heritage Computing, 2011). However, connectivity with the wider geological environment is thought to be very limited due to the low vertical permeability of the underlying strata (Heritage Computing, 2011).

Remnant native vegetation in WCPL mining tenements occurs largely along Wollombi Brook and on the steeper parts of the topography due to extensive historical clearing associated with agriculture. Large areas of remnant native vegetation are managed as Remnant Woodland Enhancement Programme areas in accordance with the Flora and Fauna Management Plan (WCPL, 2010b). The following threatened flora (listed under the *New South Wales Threatened Species Conservation Act 1995*) have been found within WCPL mining tenements and immediate surrounds (Orchid Research, 2003 and FloraSearch, 2012):

- *Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions* Endangered Ecological Community.
- *Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions* Endangered Ecological Community.
- *Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions* Endangered Ecological Community.
- *Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions* Endangered Ecological Community.
- *Warkworth Sands Woodland in the Sydney Basin Bioregion* Endangered Ecological Community.
- *Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion* Vulnerable Ecological Community.

- *Cymbidium canaliculatum* Endangered Population in the Hunter Catchment
- *Eucalyptus camaldulensis* Endangered Population in the Hunter Catchment.

3 MODIFICATION DESCRIPTION AND JUSTIFICATION

3.1 PROPONENT

WCPL (ACN 000 668 057), a subsidiary of Peabody Energy Australia Pty Limited, is the proponent for the Modification. The contact details for WCPL are:

Wambo Coal Pty Limited
Level 13, BOQ Building
259 Queen Street
BRISBANE QLD 4000
Telephone: (02) 6570 2200

Further information on the proponent and its coal mining operations can be found at:

www.peabodyenergy.com

3.2 MODIFICATION DESCRIPTION

The proposed Modification to the Wambo Coal Mine would involve the realignment and extension/relocation of the approved Arrowfield and Bowfield Underground Mine longwall panels within the existing tenements (i.e. ML 1594, CL 365, CL 397 and CCL 743). The modified Arrowfield and Bowfield Underground Mine longwall panels would include areas previously not approved for underground mining.

The feasibility studies and environmental studies for the Modification will also consider the potential for mining in the Woodlands Hill Seam as part of the South Wambo Underground Mine.

The Modification would also include an extension of the approved mine life from 2025 to 2031 (i.e. an additional six years mine life).

Table 1 provides a summary comparison of activities associated with the approved Wambo Coal Mine and the Modification. Additional details of each of the main Modification features are discussed below.

Arrowfield Underground Mine

The Arrowfield Underground Mine is a longwall mining operation approved to mine within ML 1594, CL 365, CL 397 and CCL 743 in the Arrowfield Seam. The approved layout of the Arrowfield Underground Mine is shown on Figure 2.

Arrowfield Underground Mine approved operations include:

- formation of main roadways; and
- extraction of longwall mining panels.

The Modification would involve the realignment and extension/relocation of the approved Arrowfield Underground Mine longwall panels. The modified Arrowfield Underground Mine layout would be located within the Potential Underground Mine Development area shown in Figure 3.

Bowfield Underground Mine

The Bowfield Underground Mine is a longwall mining operation approved to mine within ML 1594, CL 365, CL 397 and CCL 743 in the Bowfield Seam. The approved layout of the Bowfield Underground Mine is shown on Figure 2.

Bowfield Underground Mine approved operations include:

- formation of main roadways; and
- extraction of longwall mining panels.

The Modification would involve the realignment and extension/relocation of the approved Bowfield Underground Mine longwall panels. The modified Bowfield Underground Mine layout would be located within the Potential Underground Mine Development area shown in Figure 3. Based on geotechnical exploration undertaken to date it is expected that the extent of the modified Bowfield Underground Mine would be less than the Potential Underground Mine Development area shown in Figure 3.

Subsidence Commitments

The mine layouts for the Modification would be developed to meet the natural and man-made features subsidence impact performance measures included in Tables 2 and 3.

**Table 1
Overview of the Approved Wambo Coal Mine and the Modification**

Development Component	Approved Wambo Coal Mine¹	Proposed Modification
Tenement	<ul style="list-style-type: none"> Mining operations conducted within ML 1402, ML 1594, ML 1572, CL 397, CL 374, CL 743 and CL 365. 	<ul style="list-style-type: none"> No change.
Life of Mine	<ul style="list-style-type: none"> Mine approval period of 21 years. 	<ul style="list-style-type: none"> An extension of approximately 6 years (i.e. until 2031).
Open Cut Mining	<ul style="list-style-type: none"> Open cut mining at a rate of up to 8 Mtpa of ROM coal from the Whybrow, Redbank Creek, Wambo and Whynot Seams. An estimated total open cut ROM coal reserve of 98 Mt. Open cut mining operations until 2017. 	<ul style="list-style-type: none"> No change.
Underground Mining	<ul style="list-style-type: none"> Underground mining of up to 7.5 Mtpa of ROM coal from the Whybrow, Wambo, Arrowfield and Bowfield Seams. Underground ROM coal reserves are estimated at 104 Mt (including 78 Mt from the Arrowfield and Bowfield Seams). Arrowfield and Bowfield Underground Mine area of approximately 1,098 hectares. 	<ul style="list-style-type: none"> Consideration of mining in the Woodlands Hill Seam. No change to the maximum ROM coal production rate. No change to the approved mining method. No material change to underground ROM coal reserves. Realignment and extension/relocation of the approved Arrowfield and Bowfield Underground Mine longwall panels (including areas previously not approved for underground mining).
Subsidence commitments and management	<ul style="list-style-type: none"> The subsidence performance measures listed in Conditions 22 and 22A of the Development Consent DA 305-7-2003. 	<ul style="list-style-type: none"> No change².
Arrowfield and Bowfield Underground Mine box cut and drift	<ul style="list-style-type: none"> Box cut and drift located adjacent to the CHPP. 	<ul style="list-style-type: none"> Minor relocation of the box cut and drift to reflect the Modification.
Arrowfield and Bowfield Underground Mine ventilation and gas drainage wells	<ul style="list-style-type: none"> Up to four gas drainage wells may be installed for each longwall panel. An upcast fan system and ventilation shaft installed south of the extent of the Project open cut. 	<ul style="list-style-type: none"> Minor change in the approved gas drainage well layout to reflect the Modification. Construction and operation of additional gas drainage wells and ventilation shafts required for the Modification.
ROM Coal Production Rate	<ul style="list-style-type: none"> Up to 14.7 Mtpa of ROM coal. 	<ul style="list-style-type: none"> No change.
Total ROM Coal Mined	<ul style="list-style-type: none"> 202 Mt. 	<ul style="list-style-type: none"> No material change.
Waste Rock Management	<ul style="list-style-type: none"> Waste rock deposited in open cut voids and in waste rock emplacements adjacent open cut operations. 	<ul style="list-style-type: none"> No change.
Total Waste Rock	<ul style="list-style-type: none"> 640 Mbcm. 	<ul style="list-style-type: none"> No change.
Coal Washing	<ul style="list-style-type: none"> CHPP capable of processing approximately 1,800 tonnes per hour. 	<ul style="list-style-type: none"> No change.
Product Coal	<ul style="list-style-type: none"> Production of up to 11.3 Mtpa of thermal coal predominately for export. 	<ul style="list-style-type: none"> No change.

**Table 1 (Continued)
Overview of the Approved Wambo Coal Mine and the Modification**

Development Component	Approved Wambo Coal Mine ¹	Proposed Modification
CHPP Reject Management	<ul style="list-style-type: none"> Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids in accordance with existing the Wambo Coal Mine management practices. 	<ul style="list-style-type: none"> No change.
Total CHPP Rejects	<ul style="list-style-type: none"> Approximately 27 Mt of coarse rejects and approximately 18 Mt of tailings. 	<ul style="list-style-type: none"> No change.
Water Supply	<ul style="list-style-type: none"> Make-up water demand to be met from runoff recovered from tailings storage areas, operational areas, dewatering, licensed extraction from Wollombi Brook and Hunter River. 	<ul style="list-style-type: none"> No change.
North Wambo Creek Diversion ³	<ul style="list-style-type: none"> The North Wambo Creek Diversion will be constructed in two stages (Stage 1 has been constructed). 	<ul style="list-style-type: none"> No change.
Surface Facilities	<ul style="list-style-type: none"> Construction of surface facilities within the approved surface development area. 	<ul style="list-style-type: none"> Construction of a portion of the surface facilities outside of the approved surface development area.

¹ Development Consent DA 305-7-2003 (as modified).

² With the exception of modifying the subsidence impact performance measure for Wollemi National Park to "negligible impact" for consistency with recent determinations by the Planning Assessment Commission.

³ Denoted as 'water control system' in the EIS (WCPL, 2003).

**Table 2
Natural Features Subsidence Impact Performance Measures**

Feature	Subsidence Impact Performance Measure
Wollombi Brook	Negligible impact. Controlled release of excess site water only in accordance with EPL requirements.
Wollemi National Park	Negligible impact ¹ .
Warkworth Sands Woodland Community	Minor cracking and ponding of the land surface or other impact. Negligible environmental consequences.
White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community	Minor cracking and ponding of the land surface or other impact. Negligible environmental consequences.
Wambo Homestead Complex	Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister.

Source: Condition 22, Schedule 4, Wambo Coal Mine Development Consent DA 305-7-2003.

¹ The Subsidence Impact Performance Measure is proposed to be modified from "nil impact" to "negligible impact" for consistency with recent determinations by the Planning Assessment Commission.

**Table 3
Man-made Features Subsidence Impact Performance Measures**

Feature	Subsidence Impact Performance Measure
All built features	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.
Public Safety	No additional risk.

Source: Condition 22A, Schedule 4, Wambo Coal Mine Development Consent DA 305-7-2003.

Surface Facilities

The Modification would include construction of surface facilities required to service the South Wambo Underground Mine. Development Consent DA 305-7-2003 includes construction of surface facilities within the approved surface development area. A portion of the surface facilities would be constructed outside of the approved surface development area (Figure 3). Construction of the surface facilities would require the relocation of existing services including 11 kilovolt (kV) and 66 kV transmission lines and communications cabling.

ROM Coal Handling, Processing and Transport

The Wambo Coal Mine is approved to produce up to 14.7 Mtpa ROM coal (including 8 Mtpa from open cut mining and 7.5 Mtpa from underground mining). ROM coal from the current mining operations is hauled to the Wambo CHPP for processing and product coal is loaded onto trains at the Wambo Coal Terminal for transport off-site.

The Modification would not result in a change to the approved maximum mining rates. Therefore the Modification would not result in an increase in ROM coal handling, processing or transport.

Employment

The Wambo Coal Mine workforce currently consists of approximately 842 employees and contractors (WCPL, 2011). While the level of employment is not expected to change significantly as a result of the Modification, the Modification would result in six years of additional employment of the Wambo Coal Mine workforce.

3.3 MODIFICATION JUSTIFICATION OVERVIEW

Alternatives Considered

Alternatives to the proposed location and scale of the Modification were considered by WCPL in the South Wambo Underground Mine Prefeasibility Study (PFS). The South Wambo Underground Mine PFS was undertaken to determine the requirements of the Modification and included detailed mine planning and optimisation.

An overview of the alternatives considered is provided in the points below:

- **Modification Location** – the Potential Underground Mine Development area was determined by the presence of significant natural features and coal seams able to be economically mined in the vicinity of the approved Arrowfield and Bowfield Underground Mines within WCPL-owned mining tenements.
- **Surface Facilities** – the location of the Modification surface facilities was determined by the infrastructure required to service the South Wambo Underground Mine, the space available for this infrastructure and a number of other design parameters considered in the South Wambo Underground Mine PFS (e.g. geotechnical and environmental factors).
- **Scale** – the Modification mining reserve is estimated at approximately 78 Mt of ROM coal within the Arrowfield, Bowfield and Woodlands Hill Seams. Resource definition, exploration drilling and detailed mine planning being conducted by WCPL indicates that this is the optimum scale for the South Wambo Underground Mine.
- **Mine Layout** – a number of alternative mine layouts were considered by WCPL. The mine layout described in Section 3.2 has been chosen to maximise resource recovery within the Arrowfield and Bowfield Seams, whilst maintaining previous commitments regarding the management and mitigation of potential impacts to the environment and private/public property.

Further consideration of alternatives to location, scale, methods and management will be undertaken as a component of the EA for the Modification.

4 PLANNING CONSIDERATIONS

4.1 APPLICABILITY OF SECTION 75W OF ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

The Wambo Coal Mine was approved under Part 4 of the EP&A Act in February 2004.

Clause 12 of Schedule 6A of the EP&A Act provides that section 75W of Part 3A of the EP&A Act continues to apply to modifications of development consents referred to in clause 8J(8) of the *Environmental Planning and Assessment Regulation, 2000* (EP&A Regulation) following the repeal of Part 3A.

The Wambo Coal Mine was approved under Part 4 of the EP&A Act in February 2004 and was a development consent under Division 4 of Part 4 of the Act (relating to State significant development). Therefore Development Consent DA 305-7-2003 is a development consent that falls within clause 8J(8)(c) of the EP&A Regulation. That is, section 75W of the EP&A Act continues to apply to modifications to the Wambo Development Consent DA 305-7-2003, notwithstanding its repeal.^[1]

Approval for the Modification will be sought as a modification to the Development Consent DA 305-7-2003 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.*

...

The Modification would include (Table 1):

- No material change to the estimated total underground ROM coal resource of 104 Mt.
- No change to the estimated total open cut ROM coal reserve of 98 Mt.
- No change to the ROM coal production rate of up to 14.7 Mtpa of ROM coal.
- Increase of the mine approval period of 6 years from 21 years to 27 years (i.e. from 2025 to 2031).
- Increase in the Arrowfield and Bowfield Underground Mine area.
- Consideration of mining in the Woodlands Hill Seam.
- No proposed change to the Subsidence Impact Performance Measures in Condition 22, Schedule 4, of DA-305-7-2003 (refer to Table 2).^[2] Therefore, no proposed change to the potential subsidence impacts to significant natural features of the site and surrounds.

In consideration of the above, WCPL is of the opinion that the nature and scale of the development as modified could not be considered to constitute a substantial change of the development already approved. It is considered that approval for the Modification can be sought as a modification to the Development Consent DA 305-7-2003 under section 75W of the EP&A Act.

This document is in support of a request for the NSW Minister for Planning and Infrastructure's approval for the Modification, such that the Director-General can provide environmental assessment requirements pursuant to section 75W(3) of the EP&A Act.

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

^[2] With the exception of modifying the Subsidence Impact Performance Measure for Wollemi National Park to "negligible impact" for consistency with recent determinations by the Planning Assessment Commission.

4.2 PLANNING PROVISIONS

State Environmental Planning Policies

The following State Environmental Planning Policies (SEPPs) may be potentially relevant to the Modification:

- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP);*
- *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);* and
- *Hunter Regional Environmental Plan 1989 (Heritage).*

Relevant provisions and objectives of the above SEPPs would be considered in the preparation of the EA.

Local Environmental Plans

The Wambo Coal Mine is wholly within the Singleton LGA (Figure 1).

The Wambo Coal Mine is located wholly within land covered by the *Singleton Local Environmental Plan 1996* (Singleton LEP). The Singleton LEP is discussed further in Section 4.3.

Commonwealth Environment Protection and Biodiversity Conservation Act, 1999

The Modification would be referred to the Commonwealth Minister for the Environment for consideration as to whether the Modification is a 'Controlled Action' and requires approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*.

4.3 PERMISSIBILITY OF THE PROJECT

The Wambo Coal Mine lies within land zoned "Rural Zone" (Zone 1[a]) in the Singleton LEP.

Under the Singleton LEP "coal mining" is permissible on lands in the Rural Zone with development consent as coal mining is not listed as being a prohibited use in the zoning table.

5 PRELIMINARY ENVIRONMENTAL ASSESSMENT

The following Preliminary Environmental Assessment has been prepared to identify the key potential environmental issues associated with the construction and operation of the Modification. This information has been prepared to assist the DP&I with the issuing of the DGRs for the Modification pursuant to section 75W(3) of the EP&A Act.

This Preliminary Environmental Assessment has drawn on:

- the outcomes of the preliminary environmental risk assessment undertaken as part of the South Wambo PFS broad brush risk assessment which included members of the PFS team (e.g. WCPL representatives and environmental specialists);
- experience from key environmental management and impact assessment issues at the Wambo Coal Mine; and
- understanding of the local and regional context (Section 2) and the Modification (Section 3).

The key environmental issues identified by the preliminary risk assessment are provided in Table 4, along with a preliminary list of study requirements to address these issues. Specialist environmental consultants will be commissioned to conduct the studies outlined in Table 4, and independent peer reviews will be conducted for key studies.

In addition to the study requirements outlined in Table 4, the subsidence assessment will demonstrate that the Modification will not cause any exceedance of the performance measures listed in Tables 2 and 3. The subsidence assessment will be comprehensive and undertaken by a recognised expert and will consider potential cumulative impacts to natural and man-made features associated with the Modification.

Assessment of the key potential environmental issues outlined in Table 4 would include consideration of:

- existing environment using sufficient baseline data;
- potential impacts of all stages of the Modification, including any cumulative impacts and comparison with approved potential impacts of the South Wambo Underground Mine;
- measures that could be implemented to avoid, mitigate, rehabilitate/remediate, monitor and/or offset the potential impacts of the Modification; and
- contingency plans and/or adaptive management for managing any potentially significant residual risks to the environment.

The assessments of potential impacts would consider relevant policies, guidelines and plans included in contemporary DGRs for mining projects. Therefore, these policies, guidelines and plans have not been repeated within this document.

Table 4
Key Potential Environmental Issues and Proposed Level and Scope of Environmental Assessment

Key Potential Environmental Issue	Likely Extent and Nature of Potential Impacts	Proposed Level and Scope of Environmental Assessment
<p>Surface water impacts associated with changes in predicted subsidence impacts and underground mining.</p>	<ul style="list-style-type: none"> • Potential impacts to surface water flows in the Wollombi Brook, Wambo Creek, North Wambo Creek and Stony Creek due to connective cracking (hydraulic connection) and/or general depressurisation of baseflow contributions to these watercourses and associated alluvial deposits. • Potential increase in ponding, erosion and sedimentation along water courses and drainage lines due to subsidence impacts. • Potential changes in water storage requirements requiring alterations to the site water management system. • Potential impacts to downstream water quality. • Surface Water impacts are expected to be generally consistent with those already approved. 	<ul style="list-style-type: none"> • A comprehensive subsidence assessment, undertaken by a recognised expert, to assess the potential changes in subsidence effects associated with the modified mining layout. • A comprehensive surface water assessment, undertaken by a recognised expert, including: <ul style="list-style-type: none"> – a review of the site water balance which incorporates alterations to the site water management system resulting from the Modification; – assessment of potential surface water related impacts to stream flows, erosion and sedimentation resulting from the Modification; and – consideration of surface water groundwater interaction. • Comprehensive mapping to define the lateral extent of the Wollombi Brook alluvium. • Design of mine plan and environmental management measures to achieve Performance Measures in Tables 2 and 3.
<p>Groundwater impacts associated with changes in predicted subsidence impacts and underground mining.</p>	<ul style="list-style-type: none"> • Potential reduction in baseflow contributions to the Wollombi Brook, Wambo Creek, North Wambo Creek and Stony Creek due to connective cracking (hydraulic connection) to these watercourses and associated alluvial deposits and/or general depressurisation of adjoining aquifer systems. • Incremental depressurisation of the Permian coal measures. • Groundwater impacts are expected to be generally consistent with those already approved. 	<ul style="list-style-type: none"> • A comprehensive subsidence assessment, undertaken by a recognised expert, to assess the potential changes in subsidence effects associated with the modified mining layout. • A comprehensive groundwater assessment, undertaken by a recognised expert, including: <ul style="list-style-type: none"> – the development of a numerical three-dimensional groundwater model in accordance with the <i>Australian Groundwater Modelling Guidelines</i> (National Water Commission, 2012); and – assessment of potential impacts on groundwater users and baseflow contribution to local watercourses. • Comprehensive mapping to define the lateral extent of the Wollombi Brook alluvium. • Design of mine plan and environmental management measures to achieve Performance Measures in Tables 2 and 3.

Table 4 (Continued)
Key Potential Environmental Issues and Proposed Level and Scope of Environmental Assessment

Key Potential Environmental Issue	Likely Extent and Nature of Potential Impacts	Proposed Level and Scope of Environmental Assessment
<p>Impacts to flora and fauna associated with changes in predicted subsidence impacts.</p>	<ul style="list-style-type: none"> • Potential impacts associated with subsidence impacts. • Subsidence impacts are expected to be generally consistent with those already approved. 	<ul style="list-style-type: none"> • A comprehensive subsidence assessment, undertaken by a recognised expert, to assess the potential changes in subsidence effects associated with the modified mining layout. • Comprehensive flora and fauna impact assessments, undertaken by recognised experts, prepared in accordance with the <i>Draft Guidelines for Threatened Species Assessment</i> (NSW Department of Environment and Conservation [DEC] and DPI, 2005) and the <i>Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities</i> (DEC, 2004). • Conduct refined cliff line/steep slope mapping of the Wollemi National Park boundary (i.e. escarpment). • Design of mine plan and environmental management measures to achieve Performance Measures in Tables 2 and 3.
<p>Impacts to Aboriginal heritage associated with changes in predicted subsidence impacts.</p>	<ul style="list-style-type: none"> • Potential impacts associated with subsidence impacts. 	<ul style="list-style-type: none"> • A comprehensive subsidence assessment, undertaken by a recognised expert, to assess the potential changes in subsidence effects associated with the modified mining layout. • A comprehensive Aboriginal heritage assessment, undertaken by a recognised expert, prepared in accordance with the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> (NSW Department of Environment, Climate Change and Water [DECCW], 2010a) and the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010b). • Application for an Aboriginal Heritage Impact Permit (under Section 90 of the <i>NSW National Parks and Wildlife Act, 1974</i>) for any known or unknown Aboriginal sites likely to be impacted by the Modification.
<p>Impacts to land resources associated with changes in predicted subsidence.</p>	<ul style="list-style-type: none"> • Potential impacts associated with subsidence impacts. 	<ul style="list-style-type: none"> • A comprehensive subsidence assessment, undertaken by a recognised expert, to assess the potential changes in subsidence effects associated with the modified mining layout. • A comprehensive agricultural impact statement, undertaken by a recognised expert, prepared in accordance with the <i>Guideline for agricultural impact statements</i> (DP&I, 2012). The assessment would address the requirements of the <i>Draft Upper Hunter Strategic Regional Land Use Plan</i> given the presence of mapped Viticulture Critical Industry Cluster within the Modification underground mining area. • Conduct refined cliff line/steep slope mapping of the Wollemi National Park boundary (i.e. escarpment).

Table 4 (Continued)
Key Potential Environmental Issues and Proposed Level and Scope of Environmental Assessment

Key Potential Environmental Issue	Likely Extent and Nature of Potential Impacts	Proposed Level and Scope of Environmental Assessment
Impacts to built features associated with changes in predicted subsidence impacts.	<ul style="list-style-type: none"> • Potential subsidence impacts on built features overlying the Modification underground mining area (e.g. private dwellings, and farm land and facilities). 	<ul style="list-style-type: none"> • An assessment of potential changes in subsidence effects associated with the modified mining methods and mining layout. • Assessment of potential subsidence impacts on built features (including quarries) in consultation with relevant infrastructure owners. • An iterative mine design process to avoid or minimise potential subsidence impacts in accordance with Performance Measures in Tables 2 and 3.
Noise and air quality impacts at nearby private receivers.	<ul style="list-style-type: none"> • No significant change in approved noise and air quality impacts at nearby private receivers is expected to result from the Modification. 	<ul style="list-style-type: none"> • Brief noise and blasting assessment, undertaken by a recognised expert, to show that the Modification would not cause a significant change in approved noise and blasting impacts to receivers. • Brief air quality assessment, undertaken by a recognised expert, to show that the Modification would not cause a significant change in approved air quality impacts to receivers.
Positive impacts on the regional and NSW economy.	<ul style="list-style-type: none"> • Continued employment of the Wambo workforce for an additional 6 years. • Flow-on effects to the regional and NSW economy. • Continued payment of royalties to the State and other tax payments. 	<ul style="list-style-type: none"> • Socio-Economic Assessment of potential impacts on the regional and NSW community and economy, including a cost-benefit analysis. • Project justification, including consideration of alternatives, principles of ecologically sustainable development and the objects of the EP&A Act.

6 STAKEHOLDER CONSULTATION

6.1 STAKEHOLDER CONSULTATION UNDERTAKEN TO DATE

WCPL presented the key components of, and justification for, the Modification to the DP&I during an initial briefing on 18 June 2012. The key environmental issues, proposed assessment methodologies and assessment pathway were discussed at this briefing.

Community consultation undertaken to date in relation to the Modification has included:

- Consultation with the Wambo Coal Mine Community Consultative Committee (CCC) regarding the Modification in August 2012.
- Consultation with landholders likely to be affected by the Modification in August 2012.
- Community information sessions conducted at Jerrys Plains community hall on the 7 August 2012, 11 August 2012 and 14 August 2012.
- Provision of Modification information on the Peabody Energy website.

6.2 STAKEHOLDER ENGAGEMENT PROGRAMME

A Stakeholder Engagement Strategy (SES) has been developed for the Modification. Key objectives of the SES are to:

- inform government, public and private stakeholders about the progress and nature of the Modification;
- recognise and respond to local interest or concerns regarding the Modification; and
- continue the ongoing dialogue between WCPL and stakeholders that has occurred over the life of the Wambo Coal Mine.

The programme includes the use of a variety of consultation mechanisms which in summary include:

- public exhibition of key documents (e.g. this document, the Wambo Development Project EIS and the EA for the Modification);
- continued consultation with the local community via:
 - information provided to the Wambo Coal Mine CCC;

- distribution of community information leaflets; and
- community information sessions;
- provision of information about the Modification on the Peabody Energy website;
- consultation with relevant infrastructure owners in the Modification underground mining area;
- consultation with the general community including Aboriginal groups, directly affected landowners and neighbouring developments (e.g. United Collieries and Coal & Allied); and
- meetings with relevant government agencies.

The consultation would include, but not necessarily be limited to, the following government agencies and authorities:

- DP&I;
- NSW Office of Environment and Heritage;
- NSW Environment Protection Authority;
- Department of Primary Industries (including the NSW Office of Water);
- NSW Division of Resources and Energy (within the Department of Trade and Investment, Regional Infrastructure and Services);
- Mine Subsidence Board;
- Singleton Shire Council;
- NSW Roads and Maritime Services; and
- Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

Comprehensive consultation with Aboriginal stakeholders would be conducted in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010a).

The issues raised and outcomes of the consultation program would be reported in the EA.

7 REFERENCES

- Department of Environment and Conservation
(2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities*.
- Department of Environment and Conservation and
Department of Primary Industries (2005) *Draft Guidelines for Threatened Species Assessment*.
- Department of Environment, Climate Change and
Water (2010a) *Aboriginal Cultural Heritage Consultation Requirements for Proponents*.
- Department of Environment, Climate Change and
Water (2010b) *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*.
- Department of Planning and Infrastructure (2012)
Strategic Regional Land Use Policy Delivery: Guideline for Agricultural Impact Statements.
- FloraSearch (2012) *South Wambo Coal Project – Significant Flora*.
- Gilbert and Associates (2003) *Wambo Development Project Surface Water Assessment*.
- Heritage Computing (2011) *Montrose East Underground Mine Modification Groundwater Review*.
- Hunter Catchment Management Trust (2002)
Integrated Catchment Management Plan for the Hunter Catchment 2002.
- National Water Commission (2012) *Australian Groundwater Modelling Guidelines*
- Orchid Research (2003) *Wambo Development Project Flora Assessment*.
- Wambo Coal Pty Limited (2003) *Wambo Development Project Environmental Impact Statement*.
- Wambo Coal Pty Limited (2010a) *Annual Environmental Management Report 2009 – 2010*.
- Wambo Coal Pty Limited (2010b) *Flora and Fauna Management Plan*.
- Wambo Coal Pty Limited (2011) *Wambo Coal Pty Ltd Annual Environmental Management Report 2010-20*.