



MT PENNY COAL PTY LIMITED

# Mt Penny Coal Project

## PRELIMINARY ENVIRONMENTAL ASSESSMENT

Prepared by  
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FEBRUARY 2011



## PRELIMINARY ENVIRONMENTAL ASSESSMENT

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**APPENDICES**

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**ABBREVIATIONS**

A	Authorisation
AHD	Australian Height Datum
DECCW	Department of Environment and Climate Change
DII	Department of Industry and Investment
DoP	Department of Planning
EA	Environmental Assessment Report
EARs	Environmental Assessment Requirements
EL	Exploration Licence
EP&A Act 1979	<i>Environmental Planning &amp; Assessment Act, 1979</i>
<i>FM Act 1994</i>	<i>Fisheries Management Act 1994</i>
kV	Kilovolt - 1,000 volts
LPMA	Land and Property Management Authority
m	metre
ML	Mega Litre - 1,000,000 litres
MPC	Mt Penny Coal Pty Ltd
MPCP	Mt Penny Coal Project
Mt	Million tonne
Mtpa	Million tonnes per annum
MVA	Mega Volt Ampere - 1,000,000 Volt Ampere
NSW	New South Wales
PEA	Preliminary Environmental Assessment
ROM	run of mine
SEPP	State Environmental Planning Policy
<i>TSC Act 1995</i>	<i>Threatened Species Conservation Act 1995</i>



## 1 INTRODUCTION

The Mt Penny Coal Project (MPCP) is located in a visually discrete valley approximately 3km north west of the village of Bylong, within the Mid Western Regional Council local government area. The MPCP is approximately 60 kilometres (km) north east of Mudgee and about 55km north of Rylstone, as shown by **Figure 1**.

The proponent for the MPCP is Mt Penny Coal Pty Ltd (MPC), a wholly owned subsidiary of Cascade Coal Pty Ltd (Cascade). Exploration Licence No. 7406 (EL 7406) was granted to Mt Penny Coal Pty Ltd by the New South Wales (NSW) Department of Industry and Investment (DII) on 21 October, 2009.

The grant of EL 7406 to MPC arose out of the participation by Cascade, in a competitive tender process in early 2009 whereby eleven new coal release areas were put up for tender by the DII and which were targeted specifically at small to medium sized participants in the coal sector.

Cascade submitted an Expression of Interest (EOI) for the Mt Penny Coal Release Area. In June 2009 Cascade was advised that it was the successful applicant for the Mt Penny Coal Release Area and in October 2009 EL 7406 was granted to MPC a wholly owned subsidiary of Cascade. MPC has undertaken an accelerated exploration program involving 3,950 metres of exploration drilling from 65 bore holes including 2,600 metres of coring. These investigations have confirmed the presence of a substantial coal resource that is preserved under a relatively shallow cover which is suitable for open cut development in the central eastern part of EL 7406.

The MPCP is the product of exploration activities and involves the development of a 5 million tonne per annum (Mtpa) run-of-mine (ROM) open cut coal mine and associated facilities within EL 7406. The MPCP is located south of the Goulburn River National Park and the Goulburn River and west of Bylong River in the "Coggan Valley" with its own distinct water and visual catchments. The MPCP is surrounded by topography that serves as a natural buffer for noise, dust and visual impacts. The MPCP has good access to Wollar Road and the Sandy Hollow - Ulan Railway. It should be noted that the environment in the "Coggan Valley" is distinctly different from the conditions that are present within the neighbouring Bylong Valley.

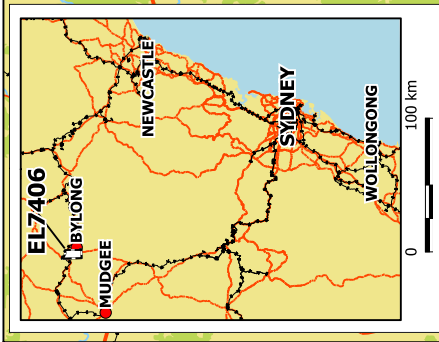
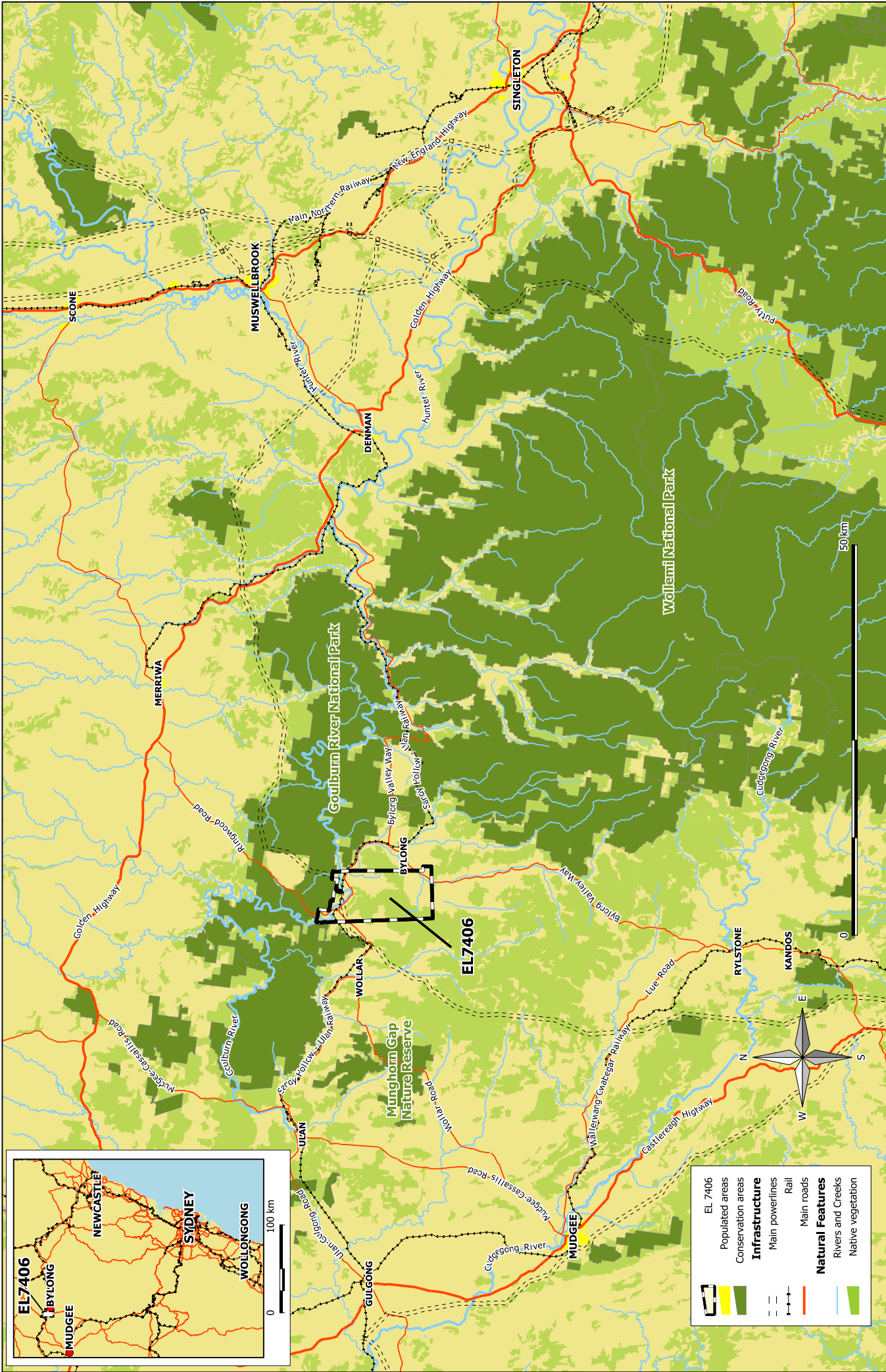
The MPCP is a "Major Development" as defined within State Environmental Planning Policy (SEPP) Major Development 2005 and requires approval of the NSW Minister for Planning to proceed under Part 3A of the *Environmental Planning & Assessment Act, 1979 (EP&A Act 1979)*.

This document is a Preliminary Environmental Assessment (PEA) that describes the MPCP and summarises the anticipated key issues of the development. This document has been prepared by representatives of MPC and Wells Environmental Services.

The PEA supports MPC's Project Application that will act as a catalyst for the NSW Director General of Planning to assign Environmental Assessment Requirements (EARs) under the provisions of Part 3A of the *EP&A Act 1979* for the Project.

MPC is then required to prepare an Environmental Assessment (EA) for the project addressing the EARs that will be publicly exhibited and open to public submissions. On consideration of the EA and submissions, the NSW Minister for Planning may approve the Project.

The approval of the Project will permit the grant of a mining lease, licences and approvals by other government authorities over freehold and Crown land presently used for livestock grazing and in parts small scale cropping. The approval will facilitate the use of the land for mining to recover the in-situ valuable State owned coal resource.



Rev.	Drawn	Description	Approved

<b>MT PENNY COAL PTY LTD</b>		<b>Wells Environmental Services</b>	
File Name: 2010111_PEN_fig_Location		Projection: Australia MGA94 (56)	
Date: Thursday, 18 November 2010		Scale: 1:45000@A3	
Drawn: PB		Revision: 1	
<p style="text-align: center;"><b>Mt Penny Coal Project</b> Location Plan</p>			
FIGURE NO: <b>1</b>		SHEET SIZE: <b>A3</b>	

## 1.1 Land Ownership and Land Use

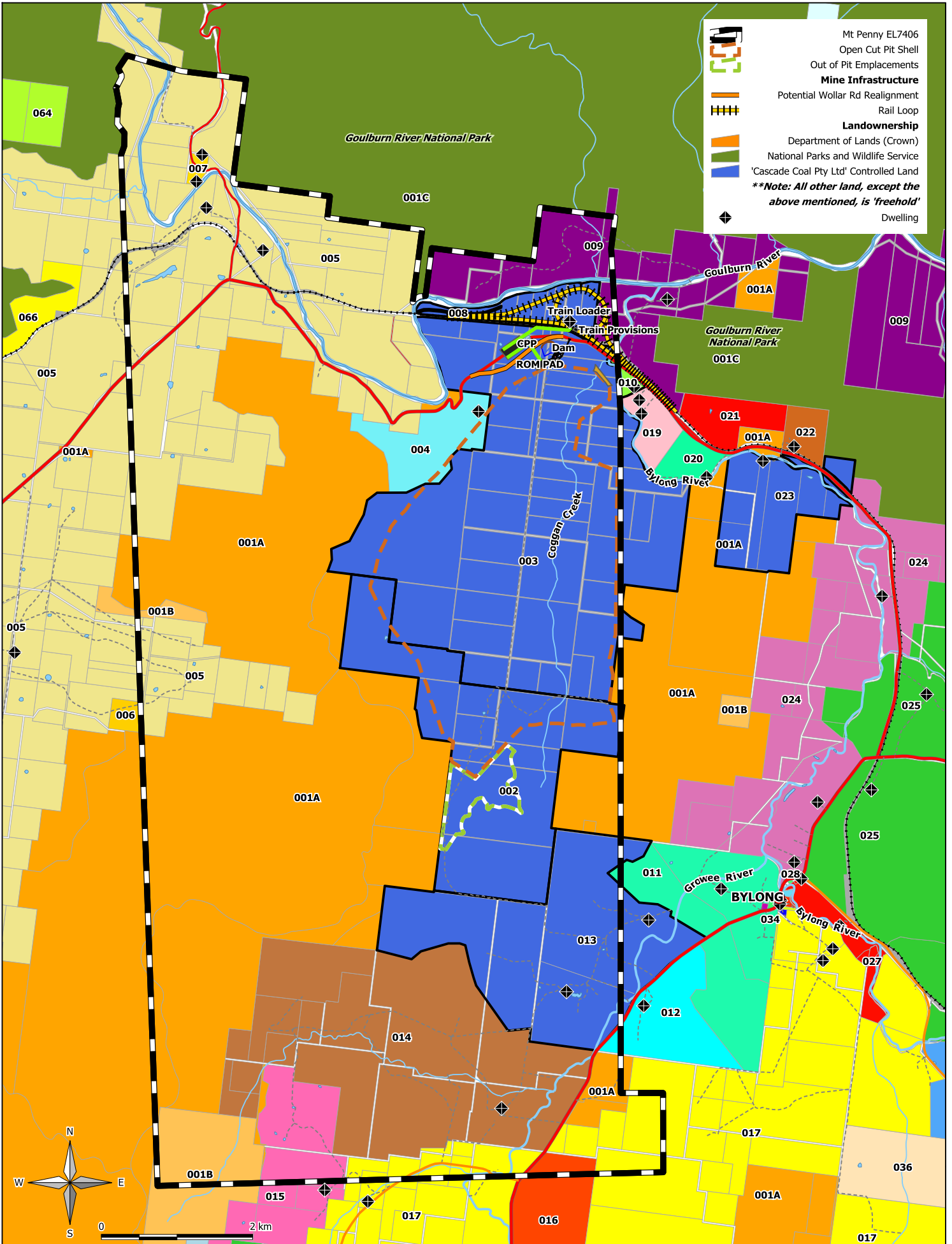
EL 7406 comprises freehold lands, Crown lands, public roads, unformed Crown roads and the Sandy Hollow - Ulan Railway. Land ownership of EL 7406 is shown by **Figure 2** and **Table 1.1**. **Appendix 1** contains a schedule of titles expected to form part of the Project. Cascade through its wholly owned subsidiary Mt Penny Properties Pty Ltd (MPP) has the rights to acquire the key properties associated with the MPCP including the Water Access Licences associated with those properties. Accordingly Land Access Agreements are in place between MPCP and all relevant properties for geological and environmental investigations.

The area within and surrounding EL 7406 is a rural area with isolated scattered dwellings.

The area is characterised by cleared valley floors utilized for livestock grazing and cropping with elevated vegetated slopes and ridges. The Coggan Valley area has traditionally been overgrazed resulting in a degradation of the valley floor and reduced agricultural productivity. Topographic relief ranges from approximately 220m Australian Height Datum (AHD) near the Goulburn River to 602m AHD at Mount Penny.

**Table 1.1: Landownership within EL7406 and surrounds, see Figure 2.**

Landowner No.	Landowner	Landowner No.	Landowner
001A	The State Of New South Wales	19	Fieldsend, Neil Alan
001B	Department Of Lands (Crown)	20	Kelleher, Peter James
001C	National Parks And Wildlife Service	21	Zappa, William
2	Geble Pty Limited	22	Evans, William David
3	Justin Kennedy Lewis Pty Limited	23	Stanmore, Michael Gerard
4	Grech, Raymond Michael	24	Accomac Holdings Pty Ltd
5	Fisk, Diane Elizabeth	25	Fuller, Gregory Francis
6	Sroczyński, Carol Joy	27	Wright, Robin Nancy Kelman
7	Smiles, Beverley	28	Metsouth Energy
8	White, Henry Charles Hunter	29	George, David
9	Dunn, Anthony Lloyd	30	Watson, Jayne Bethany
10	O'brien, Josephine Alexandra	31	Mead, Anne Philomena
11	Jarvet Pty. Limited	32	Anglican Church Property Trust Diocese Of Bathurst
12	Mead, John	33	Power, Paul Francis
13	Locaway Pty Ltd	34	Dalton, Edward John
14	Icelink Pty Limited	53	Hunt, Raymond William
15	Perry, Maria Judith	64	Pierce, Nikolai Anton Brian
17	Wallings Pastoral Co Pty Ltd	66	Reid, Robert William
18	State Rail Authority Of New South Wales		



Mt Penny EL7406  
 Open Cut Pit Shell  
 Out of Pit Emplacements  
**Mine Infrastructure**  
 Potential Wollar Rd Realignment  
 Rail Loop  
**Landownership**  
 Department of Lands (Crown)  
 National Parks and Wildlife Service  
 'Cascade Coal Pty Ltd' Controlled Land  
 \*\*Note: All other land, except the above mentioned, is 'freehold'  
 Dwelling

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	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

File Name: 20110127\_PEA\_Fig2\_Landownership\_REVA  
 Wells Environmental Services

**Mt Penny Coal Project**  
 Land Ownership / General Arrangement

Projection: Australia MGA94 (56)  
 Date: 31/01/2011  
 Drawn: PB  
 Scale: 1:45000 @A3

FIGURE NO: **2**

REVISION: A  
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## 2 TENEMENTS, EXPLORATION AND GEOLOGY

### 2.1 Mining Tenements

EL 7406 comprises a surface area of about 8,370 hectares, or 84km<sup>2</sup>, and was granted to Mt Penny Coal Pty Ltd on 21 October, 2009 following an EOI Process run by NSW DII for the allocation of numerous coal release areas. EL 7406 was granted to Cascade's 100% wholly owned subsidiary MPC on the basis that Cascade commit to an accelerated exploration and development program should a coal resource be identified. The license embraces the land surface to a depth of 900m, and has been granted for a term of five (5) years.

Authorisation 287 (A287) was granted to Anglo Coal (Bylong) Pty Ltd in 1982 and adjoins the eastern boundary of EL7406 (see Figure 2). A287 forms part of the larger Bylong Proposal (including A342), however no project application to the Department of Planning has been made for the Proposal.

To the west and south of EL7406 is EL6676. EL6676 is a departmental license held by the Department of Industry and Investment on behalf of the Crown.

**Figure 3** illustrates the boundaries of EL 7406 and the neighbouring titles.

### 2.2 Exploration

During the period November 2009 to August 2010, MPC has implemented a program of site investigations comprising 3950m of exploration drilling from 65 bore holes (refer to Figure 3), including approximately 2600m of coring.

These investigations have confirmed the presence of a substantial coal resource that is preserved under relatively shallow cover in the "Coggan Valley". The "Coggan Valley" has its own distinct visual and water catchment, as well as being surrounded by a topography that serves as a natural buffer for noise, dust and visual impacts.

### 2.3 Geology

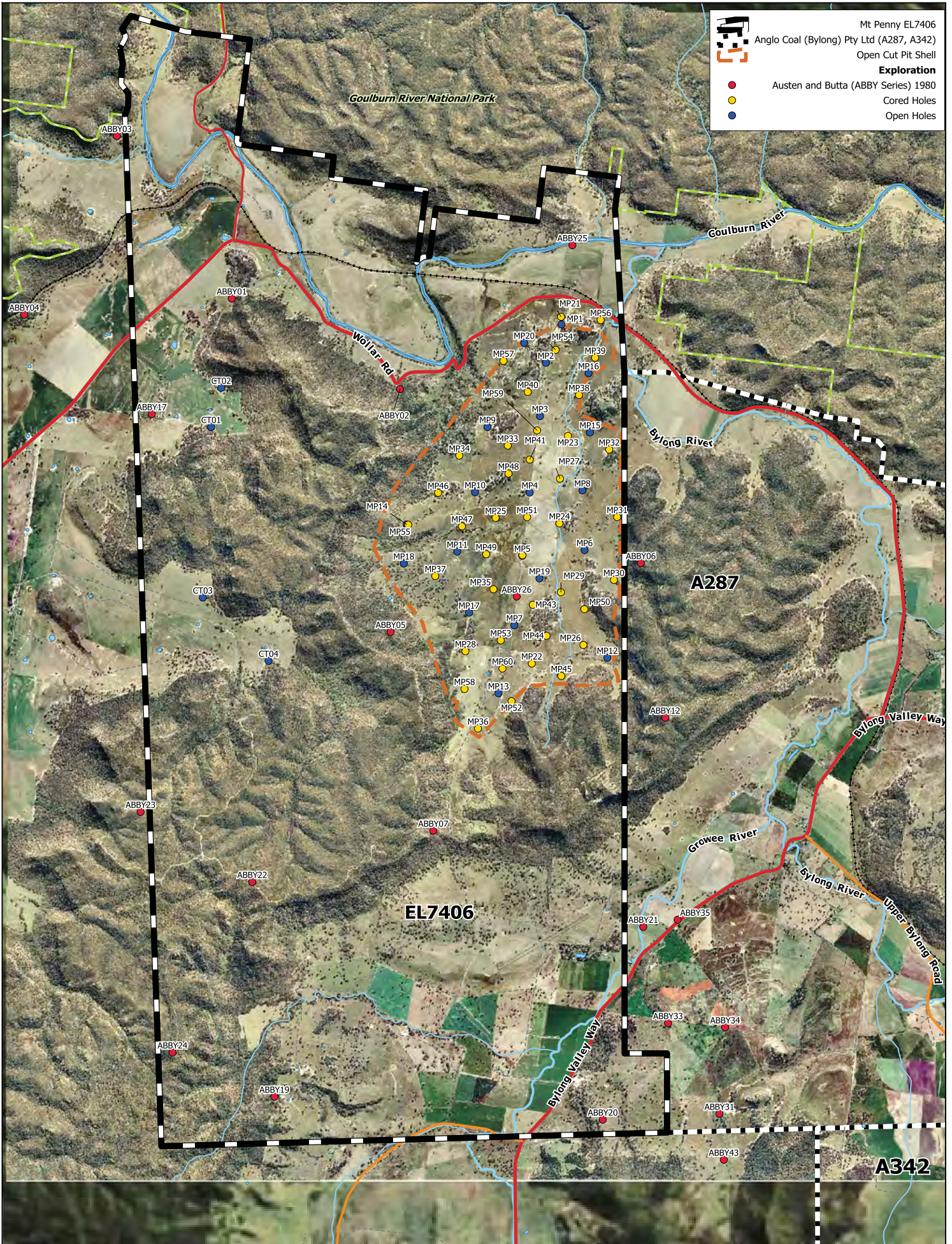
#### 2.3.1 Regional Setting

EL 7406 lies within the Western Coalfields of NSW, an administrative district occupying the northwest margin of the Sydney-Gunnedah-Bowen Basin. The area contains the Illawarra Coal Measures, from the mid to late Permian age.

Triassic sandstones and conglomerates of the Narrabeen Group overlie the coal measures, which in turn overlie the Late Permian marine sediments of the Shoalhaven Group.

#### 2.3.2 Stratigraphy

Four (4) main geological units are present in the license area. The Early Permian Shoalhaven group forms sedimentary basement and is overlain by Permian Illawarra Coal Measures (ICM). The coal measures contain 4 groups of seams, which are distributed over an interval of approximately 50m. The lowest freshwater ash member is locally known as the Coggan seam which occurs at the base of the coal measures. The Ulan Coal occurs in two sections- Lower and Upper parts which are separated by between 10 and 20m of interburden. The uppermost freshwater members are known as the Goulburn River Seams.



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A	PB	Contours Removed	JB

**MT PENNY COAL PTY LTD**

File Name: 20101115\_PEA\_Fig3\_Exploration REVA

Wells Environmental Services

**Mt Penny Coal Project**  
Exploration

Projection: Australia MGA94 (56)

Date: 26/11/2010

Drawn: PB

Scale: 1:45000@A3

FIGURE NO: **3**

REVISION: A

SHEET SIZE: A3

In the southern, eastern and western parts of the license area, the Illawarra Coal Measures, are generally 150 to 180m thick and are preserved by up to 80m of Triassic sandstone. Within the central part of the license and surrounding areas erosion has largely removed the Triassic cover, resulting in substantial exposures of Late Permian coal measure sediments, as shown in **Figure 4**.

Younger Tertiary intrusives and extrusive are present within the strata, and unconsolidated recent Cainozoic sediments and soils overlie the older rocks in low-lying areas.

Figure 4 and **Figure 5** show the surface geology and cross sections of the MPCP area.

## 2.4 Coal Resource

Exploration drilling has confirmed a substantial coal resource comprising:

- 95.3 Million tonnes ("Mt") of Measured Resources.
- 22.3 Mt of Indicated Resources.

Current mine planning suggests a resource to reserve recovery of 90%, or 101Mt.

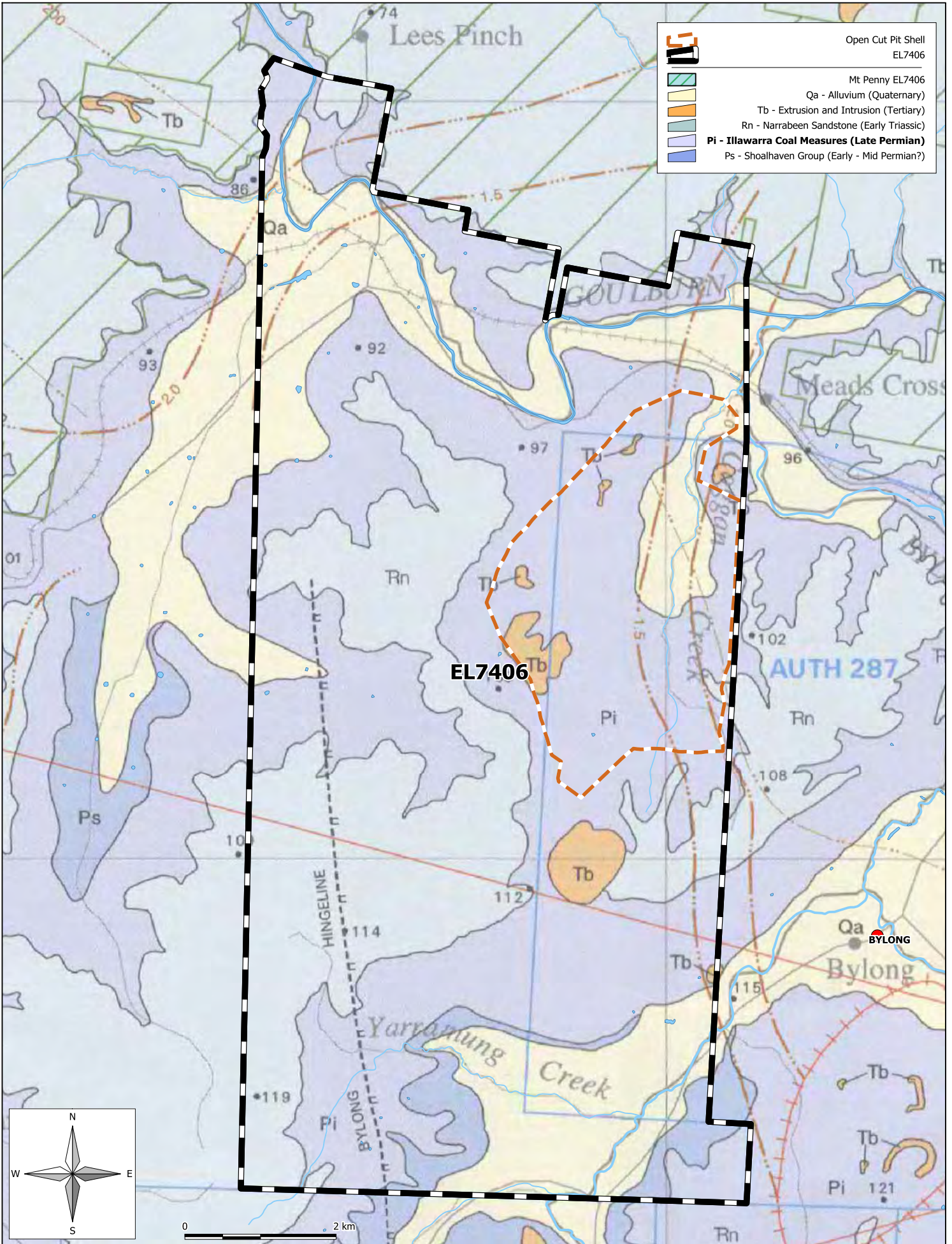
### 2.4.1 Coal Seams to be Mined


MPCP comprises a coal measure sequence that ranges from 20m to about 110m in depth. Targeted seams in ascending order include:



- Coggan Seam
  - 2 splits each, 0.5 to 2.2m thick, regionally correlated with Lithgow Seam.
- Ulan Lower
  - 4 splits each, 0.3 to 1.5m thick, regionally correlated with Lidsdale in south and Ulan Lower section in west.
- Ulan Upper
  - 5 splits each, 0.3 to 0.9m thick, regionally correlated with Ulan Upper section. Upper three splits carry modest swell-possible Irondale equivalents.
- Goulbourn River
  - 2 splits each 0.3 to 1.0m thick, regionally correlated with Moolarben Seam west.

### 2.4.2 Coal Quality

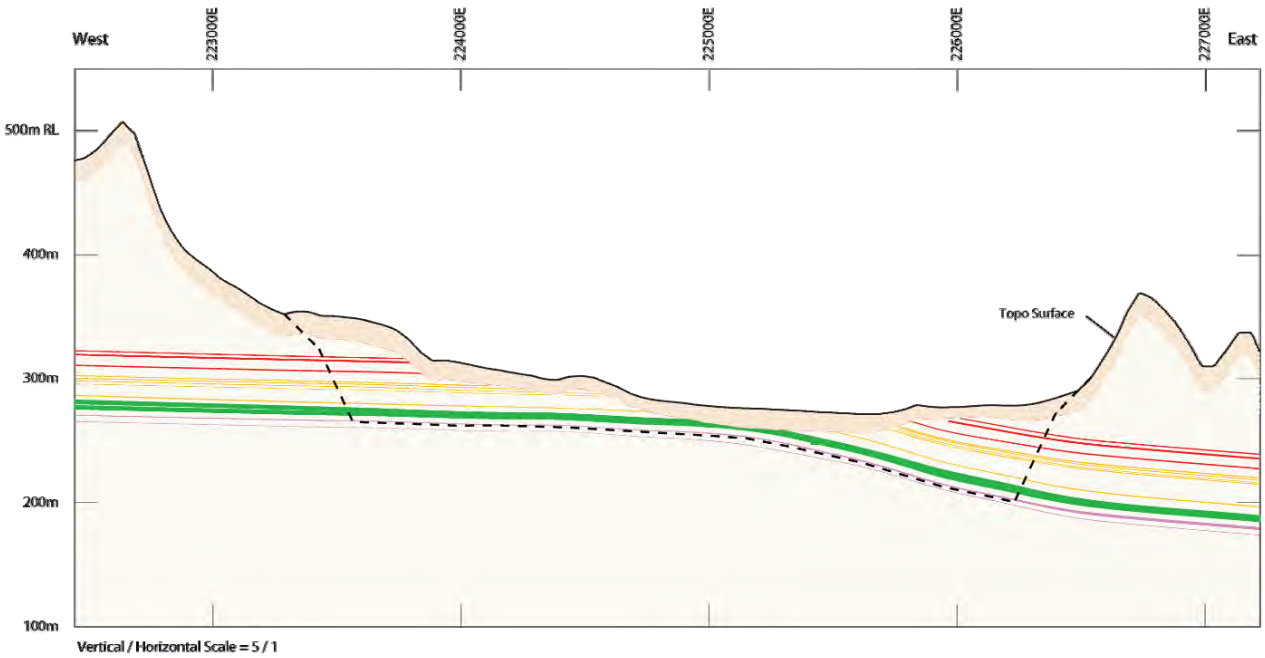
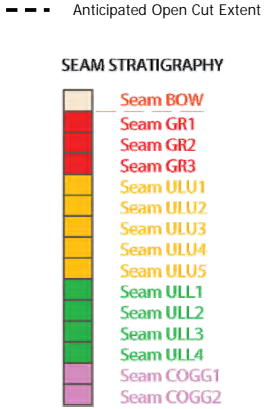
The Coggan seam and Goulbourn River seam present coal of low ash, whilst Ulan seams present higher average ash content. In order to maximise resource recovery, coal consisting of low ash will be blended with higher ash coal, to achieve a target ash content of in the range of 17-20%.



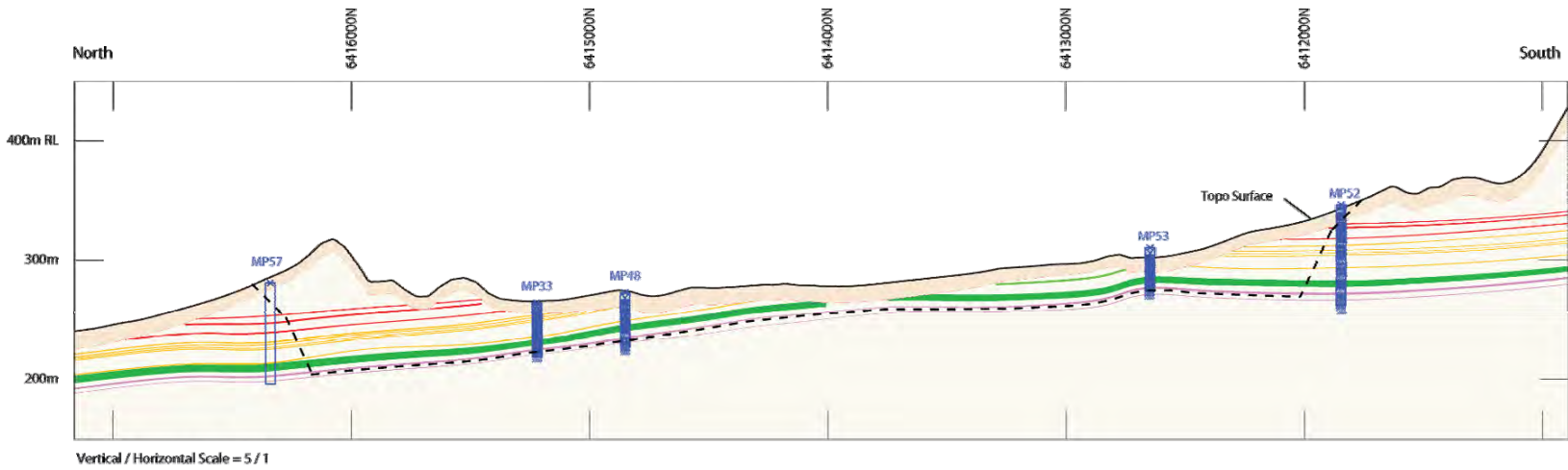
 Open Cut Pit Shell  
 EL7406  
 Mt Penny EL7406  
 Qa - Alluvium (Quaternary)  
 Tb - Extrusion and Intrusion (Tertiary)  
 Rn - Narrabeen Sandstone (Early Triassic)  
**Pi - Illawarra Coal Measures (Late Permian)**  
 Ps - Shoalhaven Group (Early - Mid Permian?)

Rev.	Drawn.	Description.	Approved	 <b>Mt Penny Coal Project</b> Surface Geology of EL7406			FIGURE NO:		
							<b>4</b>		
				<small>File Name:</small> 20101110_PEA_Fig4_Surface Geology <small>Source:</small> 1:100,000 Western Coal Field (North) Regional Geology Plan 	<small>Projection:</small> Australia MGA94 (55)	<small>Date:</small> 18/11/2010	<small>Drawn:</small> PB	<small>Scale:</small> 1:45000@A3	<small>REVISION:</small> <small>SHEET SIZE:</small> A3

### East-West Cross Section



### North-South Cross Section



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**MT PENNY COAL PTY LTD**

File Name: 20101119\_PEA\_Fig5\_Cross Sections

**Mt Penny Coal Project**  
Geological Cross Sections

Projection:      Date: 26/11/2010      Drawn: PB      Scale:

FIGURE NO: **5**

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### 3 PROJECT DESCRIPTION

Results of the exploration drilling program and preliminary mine planning has confirmed a substantial coal reserve of approximately 101 Mt preserved under relatively shallow cover which is amenable to open cut mining. A conceptual project development plan has been compiled to mine, process and load the coal for transport by rail to export and domestic markets.

The design of the MPCP will continue during the environmental assessment process changing to improve efficiencies and further reduce environmental impacts where feasible. The MPCP is presently expected to comprise:

- An open cut mine producing up to 5 Mtpa of ROM coal over 7 days up to 24 hours per day for 20 years.
- Construction of temporary out of pit and in pit overburden emplacement(s).
- ROM coal facilities to provide initial coal processing.
- Coal processing plant (CPP).
- A staged, bi-directional rail loop with associated train loading and provisioning facilities providing for transport east or west from the MPCP.
- Coal stockpiles, conveyors and associated coal and reject handling facilities.
- Workshops, bathhouses and administration buildings.
- Water supply infrastructure including borefields and dams.
- Construction of a 66kV power line from the Bylong substation to the site.
- Progressive rehabilitation of the mined landform.
- Development of a vegetation and habitat offset strategy.
- Upgrade of the local road network to cater for the project.
- The employment of 300 people during construction and 250 during operations.
- \$400 million in capital expenditure to establish the Project.

**Figure 6** illustrates the proposed general arrangement of the MPCP.

Pending the approval of the project, MPC would anticipate commencing construction in 2013.

#### 3.1 Construction

Construction of the MPCP will occur generally during daylight hours but may extend to a 24 hour operation where required. The construction will initially focus on the establishment of major infrastructure and the pre-stripping of the open cut and emplacement areas.

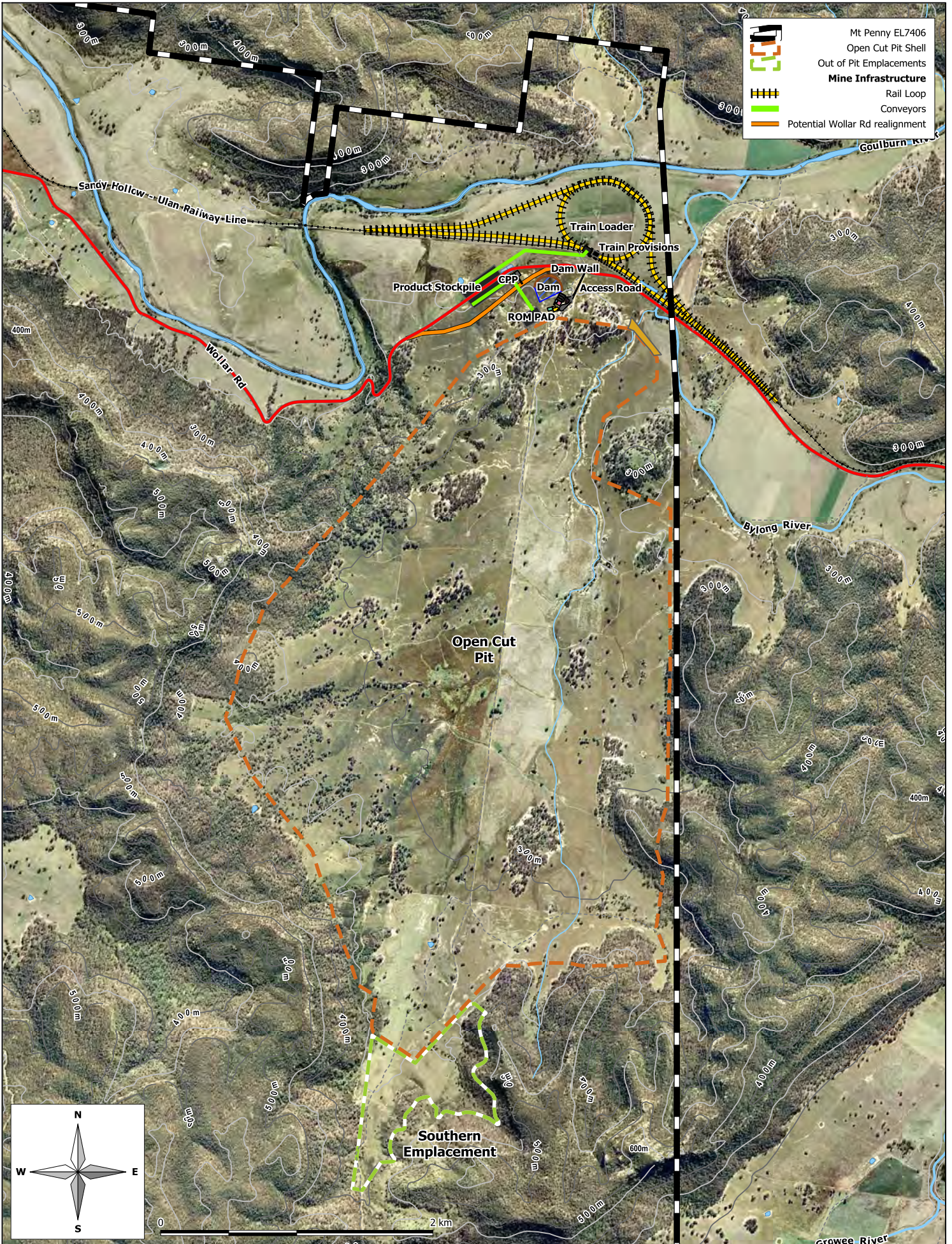
It is estimated that the construction of the Project will require the employment of 300 people and the take between 12 and 18 months to complete.

MPC is aware that at the Wilpinjong and Moolarben Coal Mines, construction of the mines was successfully carried out without on-site construction camps.

#### 3.2 Open Cut Mine

The open cut mine has been designed with consideration to the following geological, environmental, economic and engineering constraints:

- Quality and quantity of the coal resource.
- Mining limited to within the boundaries of EL 7406.
- Goulburn River, Sandy Hollow - Ulan Railway Line, and Wollar Road to the north.



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	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

File Name: 20110127\_PEA\_Fig6\_Minelayout\_REVA  
 Wells Environmental Services

**Mt Penny Coal Project**  
 General Arrangement

Projection: Australia MGA94 (56)  
 Date: 28/01/2011  
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 Scale: 1:25000@A3

FIGURE NO: **6**

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- Bylong River to the east.
- High ridge lines around the south, eastern and western sides.
- Incremental strip ratio increases to west and south.
- Proximity of steep slopes at pit limits.
- Availability of out of pit dump space.
- Visibility from Wollar Road.
- The presence of numerous thin coal seams.

Preliminary mine planning has determined coal reserves in the open cut area of 101Mt of ROM coal. The proposed open cut pit would reach depths of approximately 100m and occupy an area of approximately 1,200ha, refer to Figure 6.

### **3.2.1 Mining Schedule Equipment Fleet**

The mine will commence in the north and will be developed to the south in a series of 100m wide east-west strips. As the pit develops, waste and reject will be dumped back into the mined-out void and this is expected to occur mid-way through the first production year. This will provide the advantages of reduced haul for the haul trucks, a reduced footprint of the mining operation and allow consistent release of mine waste dumps for shaping and rehabilitation.

**Figures 7 to 10** illustrate the conceptual mine progression.

The open cut will be mined at 5Mtpa of ROM coal, generating up to 4.25Mtpa of product coal over a 20 year period. To achieve the 5Mtpa ROM coal mining rate the expected major mining equipment is anticipated to include:

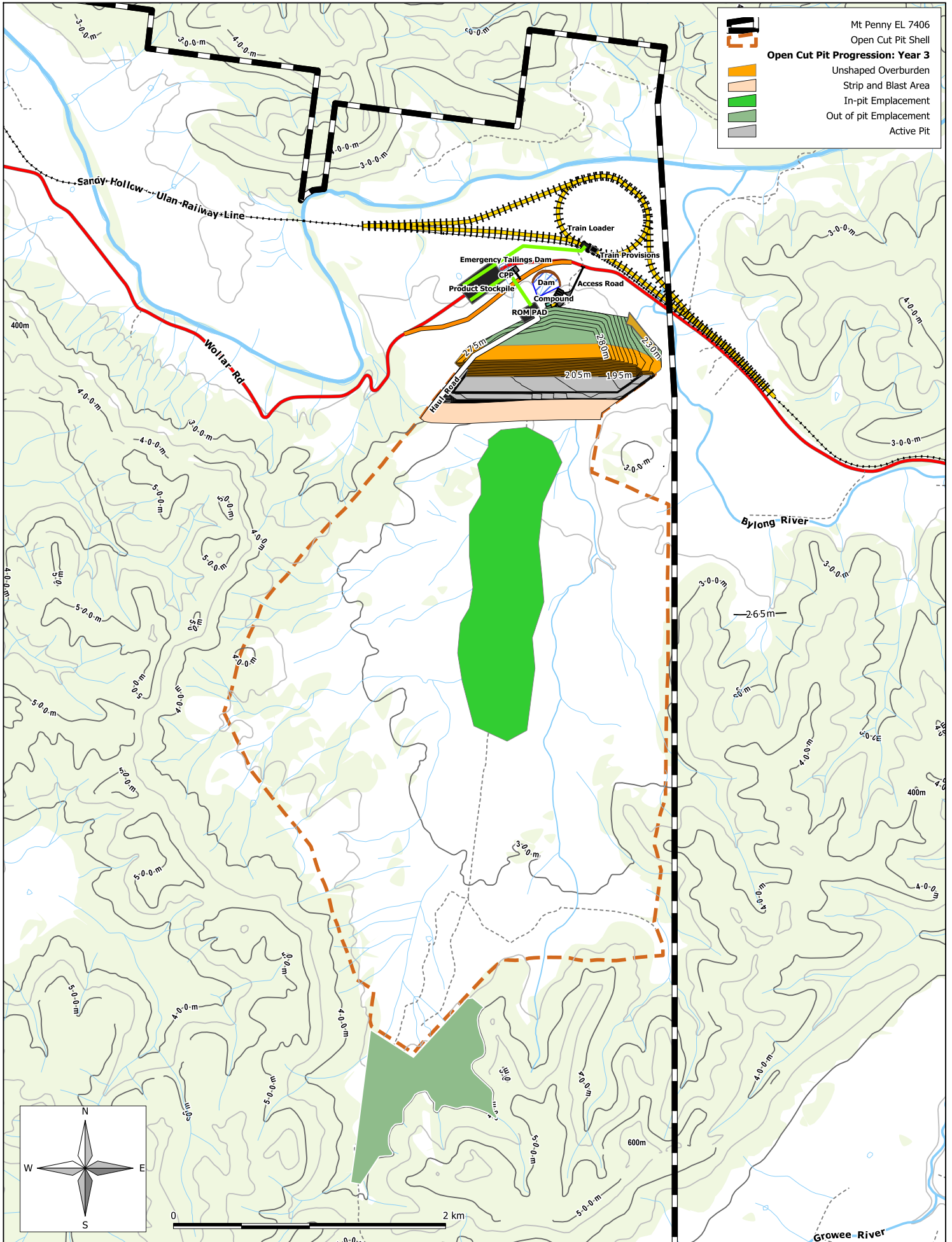
- Four (4) excavators.
- One (1) loader
- One (1) surface miner removing parting and coal.
- Twenty two (22) 240t trucks.

### **3.2.2 Temporary Overburden Emplacements**

At the commencement of mining approximately 15 million bench cubic metres (Mbcm) of material is required to be excavated and placed in pit but outside of the immediate mining area to provide sufficient area to extract coal before being able to commence backfilling of the open cut. Two temporary overburden emplacements are currently anticipated and these are described below:

- In-pit Emplacement - the initial overburden will be located within the footprint of the open cut in advance of the mining operation. This will require re-handling of the overburden, but will reduce the overall extent of disturbance. The shape, extent and location within the open cut area will be subject to further mine planning, vegetation and surface water considerations.
- Southern Emplacement Area - located south of the open cut adjacent to the final void. This emplacement will be required at the commencement of operations. The Southern Emplacement provides the opportunity to fill the final void at the completion of mining.

An external Eastern Emplacement Area was initially considered for the Project as it would deliver the most cost effective result for the MPCP with respect to re-handling and haulage costs associated with overburden. The external Eastern Emplacement Area was included in the Conceptual Project Development Plan (CPDP) presentation on 30 September, 2010. However, the external Eastern Emplacement was not supported by NSW DII and has been excluded from the Project.



Rev.	Drawn.	Description.	Approved.
	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

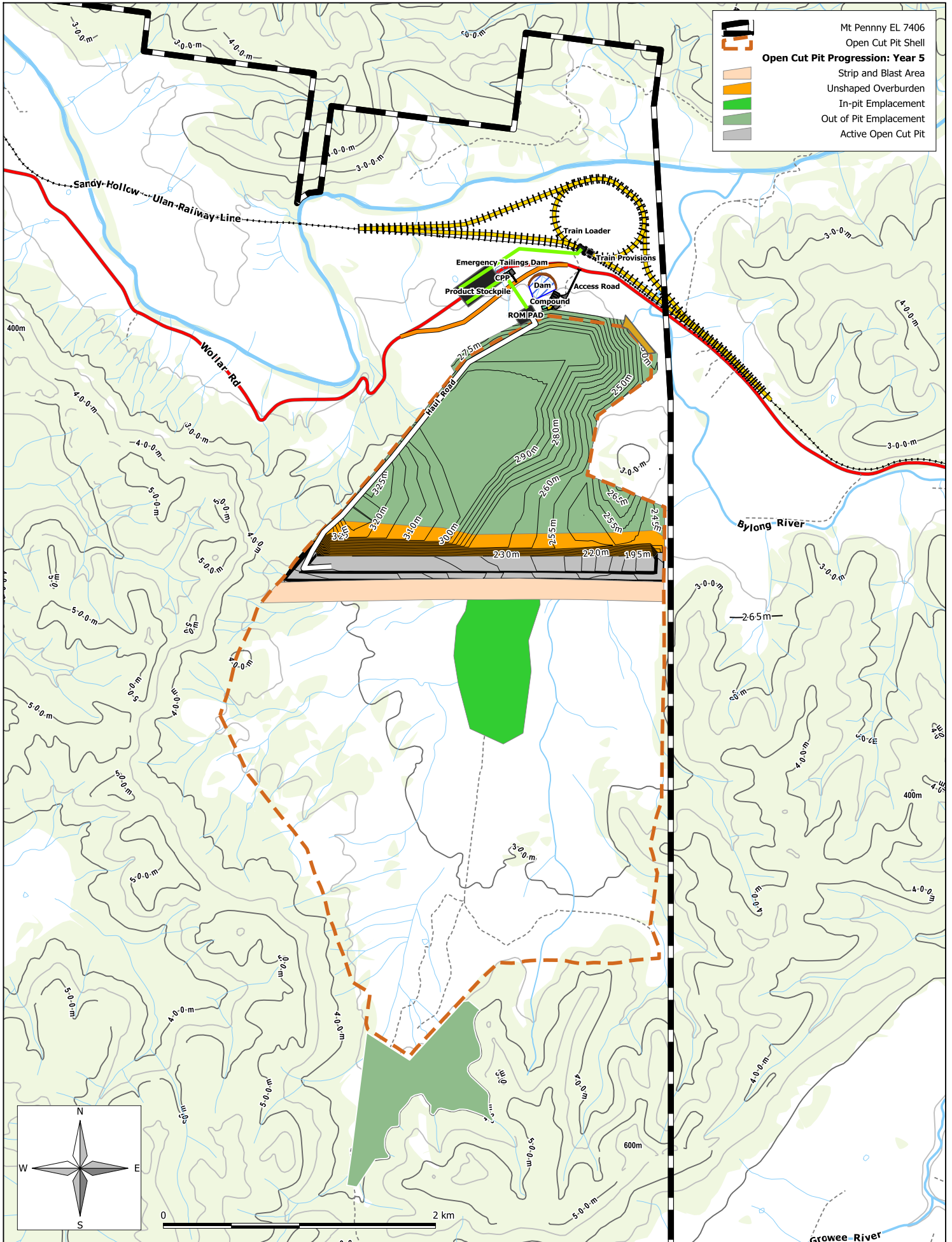
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 Mine Planning by Palaris Mining Pty Ltd

**Mt Penny Coal Project**  
 Proposed mining progression plan for Year 3

Projection: Australia MGA94 (56)    Date: 27/01/2011    Drawn: PB    Scale: 1:25000@A3

FIGURE NO: **7**

REVISION: A  
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Mt Penny EL 7406

Open Cut Pit Shell

**Open Cut Pit Progression: Year 5**

- Strip and Blast Area
- Unshaped Overburden
- In-pit Emplacement
- Out of Pit Emplacement
- Active Open Cut Pit

Rev.	Drawn.	Description.	Approved.
	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

File Name: 20110127\_PEA\_Fig8\_Yr5\_REVA

Mine Planning by Palaris Mining Pty Ltd

Wells Environmental Services

**Mt Penny Coal Project**

Proposed mining progression plan for Year 5

Projection: Australia MGA94 (56)

Date: 27/01/2011

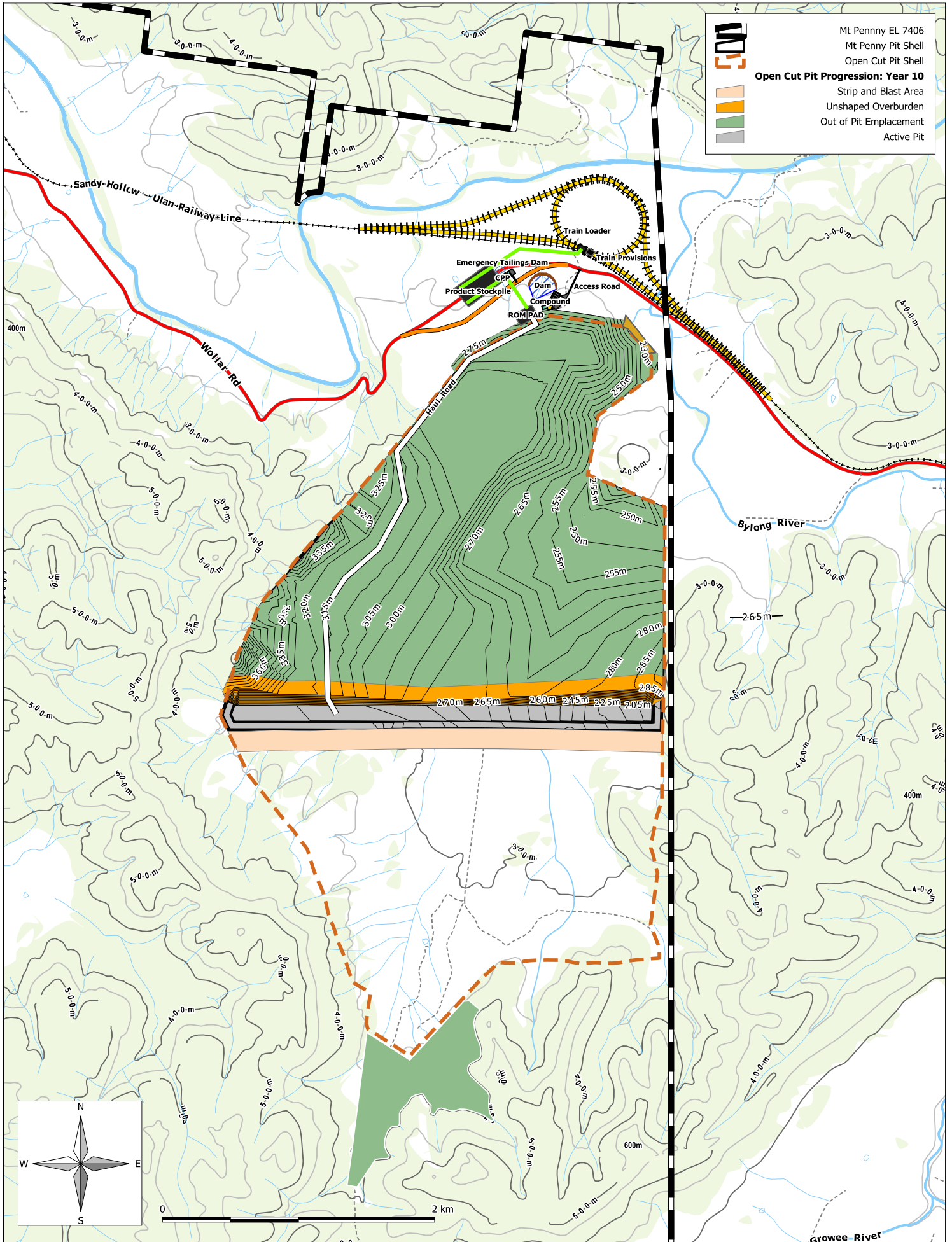
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FIGURE NO: **8**

REVISION: A

SHEET SIZE: A3



Mt Penny EL 7406  
 Mt Penny Pit Shell  
 Open Cut Pit Shell  
**Open Cut Pit Progression: Year 10**  
 Strip and Blast Area  
 Unshaped Overburden  
 Out of Pit Emplacement  
 Active Pit

Rev.	Drawn.	Description.	Approved.
	PB	Alteration to out of pit emplacements	AW

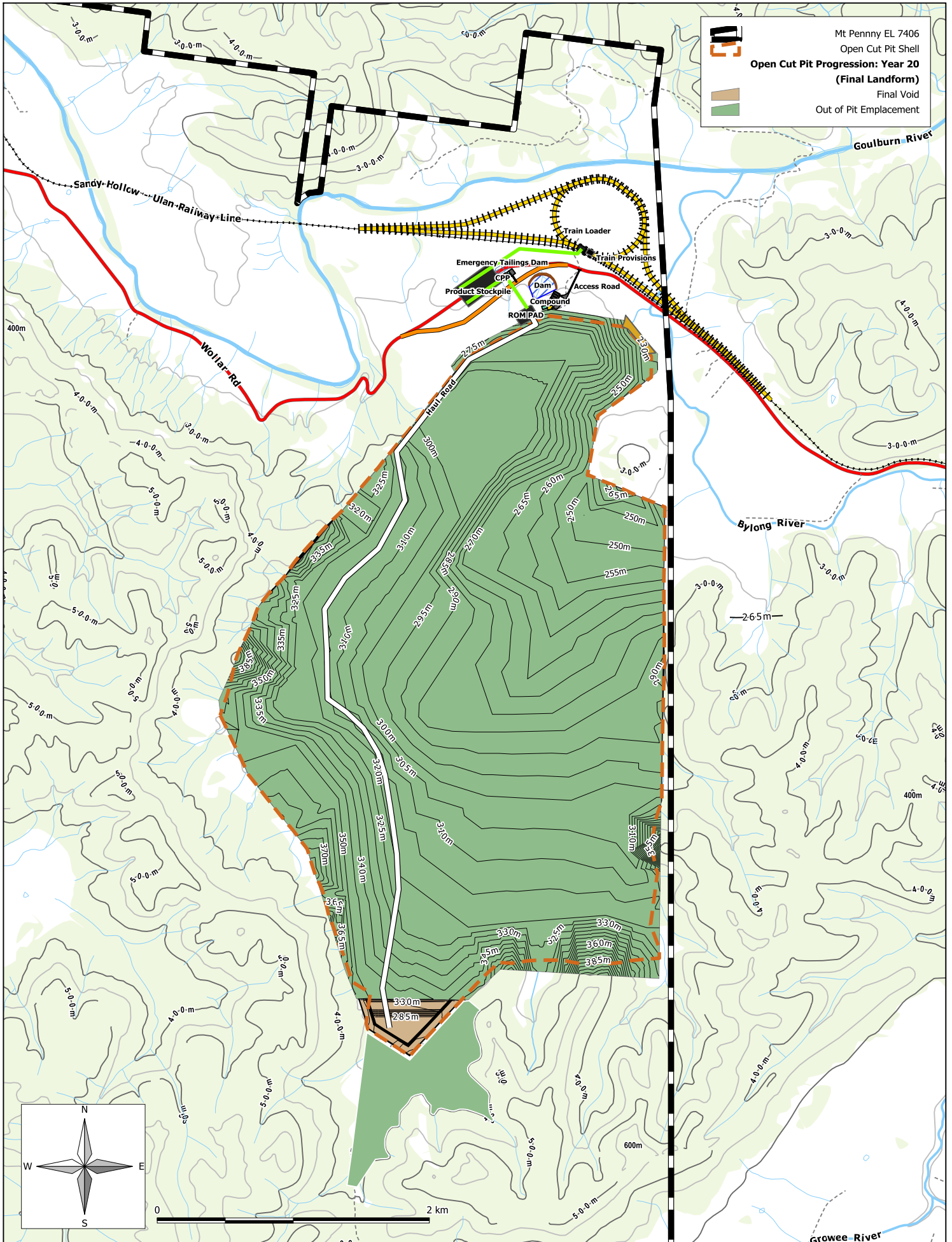
File Name: 20110127\_PEA\_Fig9\_Yr10\_REVA  
 Mine Planning by Palaris Mining Pty Ltd

**Mt Penny Coal Project**  
 Proposed mining progression plan for Year 10

Projection:	Date:	Drawn:	Scale:
Australia MGA94 (56)	27/01/2011	PB	1:25000 @A3

FIGURE NO:  
**9**

REVISION:	A
SHEET SIZE:	A3



Rev.	Drawn.	Description.	Approved.
	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

File Name: 20110137\_PEA\_Fig10\_Y20\_REW  
 Mine Planning by Palaris Mining Pty Ltd

Well Environmental Services

**Mt Penny Coal Project**  
 Proposed mining progression plan for Year 20

Projection: Australia MGA94 (56)    Date: 27/01/2011    Drawn: PB    Scale: 1:25000@A3

FIGURE NO: **10**

REVISION: A  
 SHEET SIZE: A3

### 3.2.3 Water Management

The proposed conceptual water management strategy during mining is expected to be based on the following:

- Construction of a barrier wall/levee along the northern boundary of the open cut should groundwater or flood modeling determine a potential for impact.
- Construction of several inline dams upstream of the mining operations to intercept all surface water runoff and flow in Coggan Creek, based on preliminary estimates three dams with total storage of 185ML will be sufficient for a 1 in 20 yr 12 hour event.
- Preferential use of captured surface water for mining purposes rather than water pumped from a borefield.
- During wet seasons and periods of prolonged or severe rainfall events a gravity assisted pumping network will allow for the bypassing of clean surface water runoff to the lower section of Coggan Creek downstream of mining operations.
- For extreme rainfall events the open cut will provide for a significant contingency surface water storage for flows from the Coggan Creek catchment.
- Other than the proposed clean water bypass, no water discharge is anticipated from the operation, however detailed modeling will be undertaken during the assessment to determine whether a discharge licence may be required.
- The need for environmental flows from the Coggan Valley to the lower section of Coggan Creek and the downstream portion of Bylong and Goulburn Rivers will be investigated during the environmental assessment.

### 3.2.4 Rehabilitation and Final Landform

The progressive approach to rehabilitation is shown within Figures 7 to 10, with the anticipated final landform for the project is illustrated by **Figure 11**.

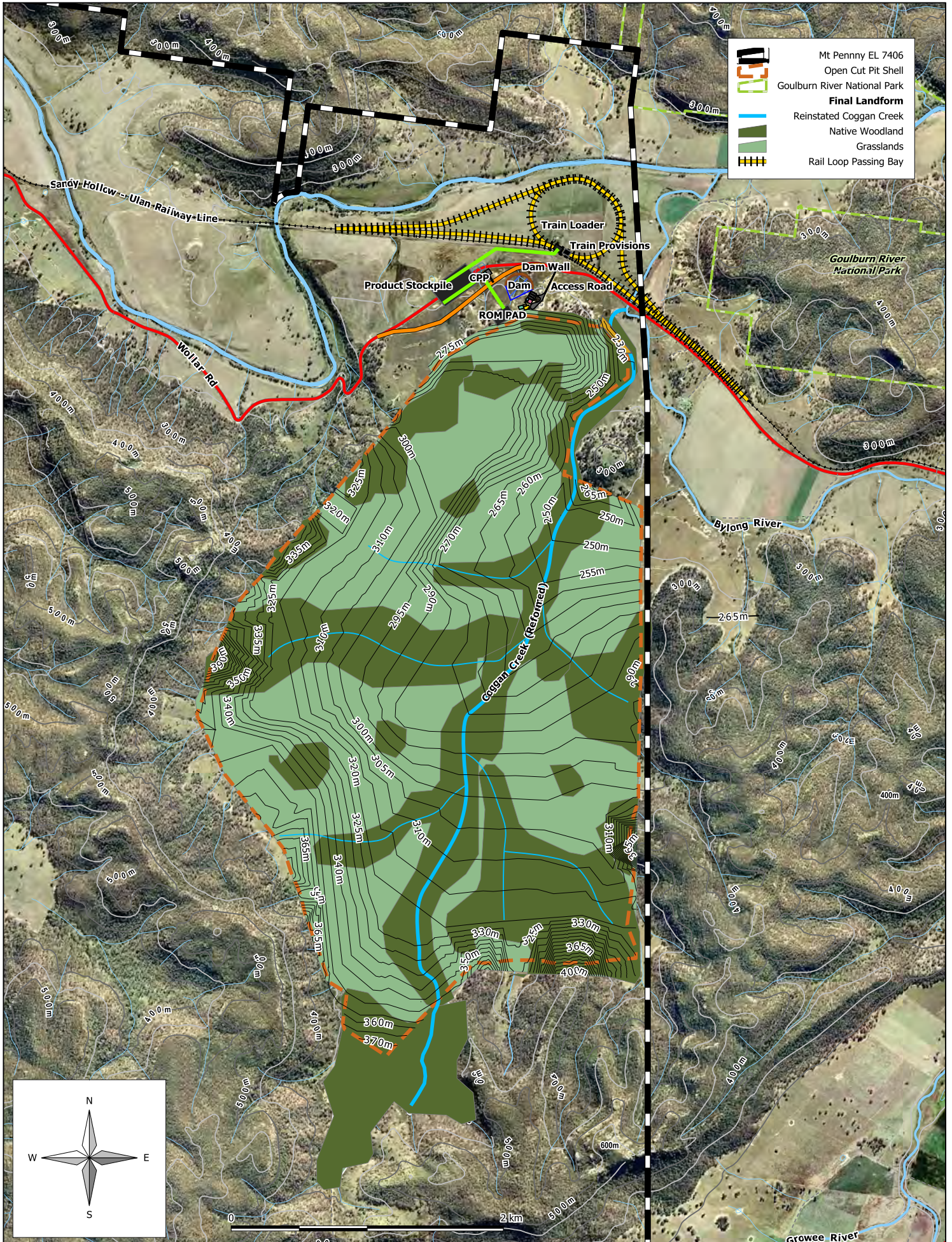
Rehabilitation of the emplacements and open cuts following mining will generally progress as follows:

- During establishment of the emplacements:
  - Strip topsoil stockpiles from disturbance area.
  - Emplace and shape the overburden.
  - Respread topsoil and seed with the appropriate seed mix (woodland or grassland) with tube stock used where appropriate.
  - For the in-pit emplacement, only grass stabilisation will be used considering the future disturbance.
  - Habitat logs, branches and stags will then be incorporated into the landform.
- Once the open cut is being backfilled:
  - Backfilled overburden will be shaped.
  - Topsoil in advance of mining operations will be transferred and spread directly to the shaped overburden.
  - Topsoil will be seeded with the appropriate seed mix (woodland or grassland) with tube stock used where appropriate.
  - Habitat logs, branches and stags will be incorporated into the landform.
  - The final void will be backfilled with overburden, topsoiled and seeded as above.

The success of the rehabilitation will be regularly monitored and repaired as necessary. Monitoring of rehabilitation success will allow for the improvement of techniques as the mine progresses.

The objectives for the rehabilitation of the MPCP are to:

- Re-establish stable, safe and effective landforms and surfaces sympathetic to the existing and surrounding topography.
- Create final landforms cognisant of revegetation potential, slope stability, surface drainage and erosion control.



Rev.	Drawn.	Description.	Approved.
	PB	Alteration to out of pit emplacements	AW

**MT PENNY COAL PTY LTD**

File Name: 20110127\_FEA\_Fig11\_FinalLandform\_REVA

Wells Environmental Services

**Mt Penny Coal Project**  
Final Landform

Projection: Australia MGA94 (56)    Date: 27/01/2011    Drawn: JB    Scale: 1:25000

FIGURE NO: **11**

REVISION: A  
SHEET SIZE: A3

- Progressively rehabilitate the final landform as mining is completed.
- Creation of a final landform.
- Integrate the open cut rehabilitation with the surrounding remnant vegetation.
- Maintain the diversity and genetic resource of the flora currently existing within the locality.
- Maintain and enhance habitat for native fauna.
- Provide necessary access for the suppression of fires, control of noxious animals and weeds and to monitor the rehabilitation.
- The rehabilitation and final landform of the open cut will be designed having regard to the need to reconstruct Coggan Creek through the overburden.
- Backfill the final void with the Southern Emplacement to improve long term final landform.

The long term use of the site at the conclusion of mining would be expected to consist of native vegetation communities providing good habitat values amongst open grasslands that are suitable for occasional grazing of livestock.

### 3.3 Coal Handling and Preparation Facilities

The ROM coal from the open cut will be unloaded from the trucks at the ROM Coal Facility located on the northern side of the open cut. The coal will be crushed and conveyed to the Coal Preparation Plant (CPP) for further processing.

Coal from the CPP will be conveyed to the product stockpiles. A rail loading loop and train loading bin will be constructed. The product coal will be reclaimed from the product stockpiles and loaded on to trains for transportation by rail to the various markets. The CPP will operate on the basis of 3 shifts per day, 7 days per week and employ about 30 persons.

Initially the rail loading loop will allow departing trains to travel in the eastern direction to Newcastle or potentially in the future west and south to Port Kembla. The principal focus is obtaining access to the port at Newcastle.

MPC is aware that consideration is currently being given to upgrading the rail line from Ulan – Gulgong – Mudgee – Wallerawang to cater for the increased supply of coal from projects such as Cobbora. Should this rail upgrade occur, MPC intends to be in a position in which it can deliver the coal locally to Delta Electricity or Macquarie Generation power stations and of course be in a position to access Port Kembla if required.

#### 3.3.1 Coal Reject and Tailings

The Coal Processing Plant (CPP) will incorporate a filter press system that combines coarse and fine coal reject.

MPC will consider new technologies that are aimed at recovering coal fines. This will include capturing the coal fines through technologies that have been trialled at the Ashton and Bulga Coal Mines including the use of screens and briquetting technology.

The coarse and fine coal reject will be conveyed to a reject hopper located adjacent to the ROM Coal Facility where it will be backhauled and emplaced within the overburden.

No tailings storage will be required.

#### 3.3.2 Rail Loop and Train Loading Facility

Product coal will be transferred from the product coal stockpile to a train loading bin serviced by a bi-directional rail loop on the northern side of the Sandy Hollow - Ulan Railway. The rail loop will initially enable routing of trains east to Newcastle or potentially in the future west and south to Lithgow and Port Kembla.

The construction of the rail loop will be staged, with the principal focus in obtaining access to the port at Newcastle. The first stage will be the construction of the eastern loop to cater for transport of coal east to the port at Newcastle. The western loop or second stage would be constructed where marketing of the product coal or constraints at the port at Newcastle provide sufficient benefits to haul coal to the west.

Relevant to this position are the rail upgrades detailed in Section 3.3 above, or that there is sufficient demand to transport the coal to the Delta Electricity or Macquarie Generation power stations. MPC will design the rail loop and loading infrastructure such that there is no significant impact to flood waters associated with the Bylong or Goulburn rivers.

A train provisioning facility will be constructed on the rail loop to provide fuel, oil, sand and cleaning services.

### **3.4 Office and Workshop Facilities**

Office and workshop facilities will be constructed to the north of the open cut, adjacent to the ROM Coal Facility and CPP.

A conceptual infrastructure design (refer to **Figure 12**) positions the open cut related facilities (e.g. workshop, administration offices, bathhouse, stores, fuel storages, crib rooms etc) adjacent to the open cut to minimise heavy vehicle travel outside the open cut, while workshops, stores and administration for the CPP will be positioned adjacent to the CPP. Where feasible facilities will be combined to avoid duplication.

### **3.5 Utilities and Services**

#### **3.5.1 Power**

Load estimates indicate that approximately 6.5MVA will be required to service the electrical demands of the MPCP.

The MPCP is within the Integral Energy electrical distribution network area. Consultation with Integral Energy has identified that the power currently servicing local properties is run through 22kV lines from the Bylong electrical substation and the proposed load will exceed the existing capacity of the lines. MPCP will be required to construct a new 66kV line from the Bylong Substation to power the Project.

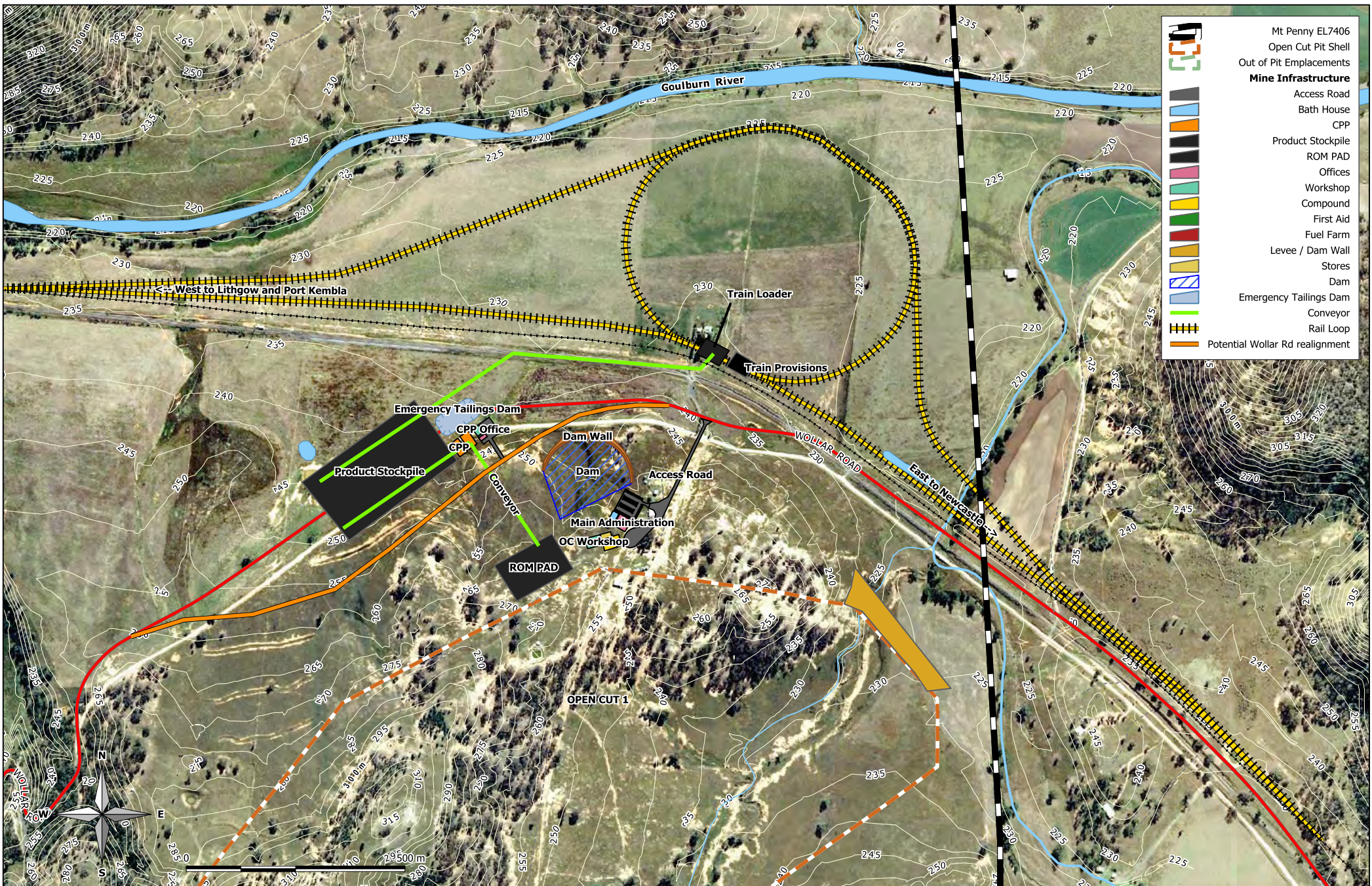
The proposed route for the 66kV line will be located primarily within the Wollar Road reserve from the substation at Bylong to the CPP.

#### **3.5.2 Water Supply**

For the proposed mining rate of 5Mtpa of ROM coal it is anticipated that the MPCP will require 1,500 mega litres (ML) of water on an annual basis. Water supply for the project will be sourced in order of preference as follows:

- Groundwater seepage into the open cut.
- Surface water runoff from within the Project area in advance of mining.
- Extraction of licensed water (alluvium and surface water) allocations from the Bylong River and Upper Goulburn River catchments from a borefield located within and adjacent to the Project.
- Licensed extraction of deeper groundwater within hard rock aquifers from a borefield to be developed near the Project.

MPC has secured the rights to acquire approximately 1,500ML of existing surface water and alluvium Water Access Licences (WALs) in the Bylong River and Upper Goulburn River catchments. MPC will continue to seek to acquire further WAL's to ensure sufficient supply to satisfy the Project's demands.



- Mt Penny EL7406**
- Open Cut Pit Shell
  - Out of Pit Emplacements
  - Mine Infrastructure**
  - Access Road
  - Bath House
  - CPP
  - Product Stockpile
  - ROM PAD
  - Offices
  - Workshop
  - Compound
  - First Aid
  - Fuel Farm
  - Levee / Dam Wall
  - Stores
  - Dam
  - Emergency Tailings Dam
  - Conveyor
  - Rail Loop
  - Potential Wollar Rd realignment

Rev.	Drawn.	Description.	Approved.

**MT PENNY COAL PTY LTD**

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Wells Environmental Services

**Mt Penny Coal Project**  
Conceptual Infrastructure Layout

Projection: Australia MGA94 (56)	Date: 18/11/2010	Drawn: JB	Scale: 1:8000
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FIGURE NO:  
**12**

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To adequately recover sufficient sustainable water supply from alluvial and hard rock water sources MPC will investigate suitable locations for the development of a borefield, within or adjacent to the Project. The borefield will form part of the EA in both surface impacts and associated groundwater drawdowns.

Where feasible MPC will seek to develop a program to share licence allocations where not required for mining operations with neighbouring agricultural properties to minimise potential for loss of irrigation based agricultural production.

Several water containment and storage dams will be constructed for the MPCP. The dams will be located within the open cut area to manage surface water runoff and surplus water storage. Additional dams will be constructed within the infrastructure area to provide operational water for the CPP.

### **3.5.3 Roads**

Wollar Road traverses the northern part of the MPCP. The relocation of the road will be investigated during design of the infrastructure area. Wollar Road separates the open cut from the Sandy Hollow - Ulan Railway requiring coal to be conveyed to the train loading facility through a grade separated crossing of Wollar Road.

MPC will undertake a traffic impact assessment of the local roads servicing the site and incorporate the findings of the study into the project design.

Several undeveloped Crown Roads exist within the MPCP area, MPC will seek to close redundant Crown Roads in consultation with the Land and Property Management Authority (LPMA), Mid-Western Regional Council and any affected landowners.

## **3.6 Employment and Shift Times**

It is proposed that the MPCP will operate on a 24 hour 7 day a week basis and provide employment opportunities for approximately 250 people. It is likely that the Project will operate in 3 shifts, a morning, an afternoon and a night shift.

## 4 LEGISLATION FRAMEWORK

This section details the relevant NSW and Commonwealth legislation that applies to the environmental assessment of MPCP.

### 4.1 Environmental Planning and Assessment Act 1979

#### 4.1.1 MPCP Approval Authority

The MPCP is a coal mining development identified within Clause 6(1) and Schedule 1 of *State Environmental Planning Policy (Major Development) 2005* and is a project to which Part 3A of the *EP&A Act 1979* applies.

The approval authority for the project will be the Minister for Planning pursuant to the provisions of Part 3A (Major infrastructure and other projects) of the *EP&A Act 1979* and *State Environmental Planning Policy (Major Development) 2005*.

#### 4.1.2 Permissibility of MPCP

##### 4.1.2.1 Introduction

Under Section 75J(3), the Minister for Planning, when deciding whether to approve the carrying out of a project, may (but is not required) to take into account the provisions of any environmental planning instrument that would not (because of Section 75R) apply to the project if approved. However, the *EP&A Regulation 2000* may preclude approval for the carrying out of a class of project that such an instrument would otherwise prohibit.

In this respect, Clause 80 of the *EP&A Regulation 2000* states:

**“80 Other projects prohibited by environmental planning instruments for which project approval may not be given**

(1) For the purposes of section 75J (3) of the Act, approval for the carrying out of a project may not be given under Part 3A of the Act for any project, or part of a project, that:

(a) is not the subject of an authorization or requirement under section 75M of the Act to apply for approval of a concept plan, and

(b) is prohibited by an environmental planning instrument that would not (because of section 75R of the Act) apply to the project if approved.”

Accordingly, it is necessary to consider whether the MPCP is prohibited by an environmental planning instrument.

##### 4.1.2.2 2007 SEPP (Mining)

Clause 7 of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (SEPP (Mining)) states:

**“7 Development permissible with consent**

(1) **Mining**

Development for any of the following purposes may be carried out only with development consent:

(a) underground mining carried out on any land,

(b) mining carried out at surface level:

- (i) on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or
- (ii) on land that is, immediately before the commencement of this clause, the subject of a mining lease under the [Mining Act 1992](#) or a mining licence under the [Offshore Minerals Act 1999](#),”

MPCP will constitute mining carried out at surface level.

MPCP and associated facilities will be permissible under Clause 7(1) (b) of SEPP (Mining) if development for the purposes of agriculture or industry may be carried out (with or without development consent) under the terms of the relevant environmental planning instrument. It is therefore necessary to consider the zonings of the land and land uses permitted under the *Mid-Western Regional Interim Local Environmental Plan 2008* and *Rylstone Local Environmental Plan 1996* to determine whether the land upon which MPCP and associated facilities are proposed that mining, agriculture or industry is permissible development.

#### **4.1.2.3 Local Government Zonings**

The MPCP is located wholly within the Mid-Western Regional Council local government area. A summary of the local environmental planning instruments applying to the Project is provided below:

##### ***Rylstone Local Environmental Plan 1996***

The vast majority of the MPCP is zoned 1(a) General Rural pursuant to the provisions of the Rylstone Local Environmental Plan 1996. Mining is a permissible form of development subject to consent being obtained in the zone. In addition, agriculture is permissible in the 1(a) General Rural Zone and accordingly under Clause 7(1)(b)(i) of SEPP (Mining) mining is permissible.

##### ***Mid-Western Regional Interim Local Environmental Plan 2008***

A small part of the MPCP is zoned ‘Agricultural Zone’ pursuant to the provisions of the Mid-Western Regional Local Environmental Plan 2008. Mining is a permissible form of development subject to consent being obtained in the zone. In addition, agriculture is permissible in the Agriculture Zone and accordingly under Clause 7(1)(b)(i) of SEPP (Mining) mining is permissible.

#### **4.1.2.4 Summary regarding permissibility**

The MPCP and associated facilities are permissible with consent, having regard to the provisions of both Midwestern Regional Interim Local Environmental Plan 2008 and Rylstone Local Environmental Plan 1996 and Clause 7 of the SEPP Mining.

Accordingly, the Minister for Planning is not precluded from granting approval to MPCP by the provisions of Section 75J (3) of the EP&A Act 1979 and Clause 80 of the EP&A Regulations 2000.

## **4.2 State and Regional Environmental Plans**

In addition to the SEPP Mining the following State Environmental Planning Policies (SEPPs) and any Regional Environmental Plans would apply to consideration by the Minister for Planning of the MPCP but for Section 75R which has the effect of removing the obligation for him to consider them but allows him to do so if he so elects. The development of the MPCP is not prohibited by any of these instruments.

The Environmental Assessment will consider the following instruments:

- *SEPP No. 33 – Hazardous and Offensive Development.*
- *SEPP No. 44 – Koala Habitat Protection.*
- *SEPP No. 55 – Remediation of Land.*
- *SEPP (Major Development) 2005.*

- SEPP (Rural Lands) 2008.
- SEPP (Mining, Petroleum Production and Extractive Industries) 2007.

### 4.3 Relationship to Other New South Wales Legislation

In addition to Project Approval under the *EP&A Act 1979*, the MPCP will also require authorisations under various laws. These are discussed below.

#### 4.3.1 Section 75U EP&A Act 1979

Pursuant to Section 75U of the *EP&A Act 1979*, there are a number of authorisations that will not be required for the MPCP if approval is granted by the Minister for Planning under Part 3A and the MPCP becomes an approved project. Relevantly, the authorisations that will not apply because of Section 75U include:

- A permit under Section 87 or consent under Section 90 of the *National Parks and Wildlife Act 1974*.
- A water use approval under Section 89, a water management work approval under Section 90 or an activity approval under Section 91 of the *Water Management Act 2000*.
- Permits under sections 201, 205 and 219 of the *Fisheries Management Act 1994*.
- Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of an Approved Project.
- An authorisation to clear native vegetation under the *Native Vegetation Act 2003*.

#### 4.3.2 Section 75V EP&A Act 1979

Pursuant to Section 75V of the *EP&A Act 1979*, there are a number of authorisations that must be issued in terms substantially consistent with the Part 3A approval if such approval is required for the conduct of the approved project. These authorisations are (relevantly):

- A mining lease under the *Mining Act 1992*.
- An environment protection licence (EPL) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in Section 43 of that Act).
- Consent under Section 138 of the *Roads Act 1993*.

#### 4.3.3 Mining Act 1992

A mining lease will be required to carry out the MPCP. If the project becomes an Approved Project the Minister for Mineral Resources must issue a mining lease in terms that are substantially consistent with the project approval granted by the Minister for Planning.

##### 4.3.3.1 Section 58 and Section 62 of Mining Act 1992

Under Section 58 of the *Mining Act 1992* a mining lease cannot be granted over an existing exploration title without the written consent of the title holder. The eastern boundary of EL 7406 adjoins Authorisation 287, held by Anglo Coal (Bylong) Pty Limited, should a portion of the project be required within this area, written consent from the title holder will be required in accordance with Section 58.

Under Section 62 of the *Mining Act 1992* a mining lease cannot be granted within prescribed distances of dwelling-houses, gardens and improvements without the written consent of the landholder. However, it is not necessary for the NSW Minister of Planning under the *EP&A Act 1979* to have regard to the limitations and protections of the *Mining Act 1992* when determining the project application. Those limitations and protections will be activated when an application for a mining

lease is lodged, notification is given to the landholders, an objection or claim can be made by the landholder and any dispute is referred to the NSW Land & Environment Court (for dwelling houses and gardens) or a valuer (for substantial improvements).

#### **4.3.3.2 Mine Operations Plan**

Any approval for the MPCP will require that all mining be in accordance with a Mine Operations Plan (MOP), approved by the Minister for Mineral Resources. Conditions to this effect will be included in any mining lease issued by the Minister for Mineral Resources. Subject to the implementation of the *Mining Amendment Act 2008* the MOP will be replaced by a Rehabilitation Environmental Management Plan (REMP) that must be prepared in accordance with the REMP guidelines.

#### **4.3.3.3 Colliery Holding**

Section 163 of the *Mining Act 1992* provides that the holder of a mining lease for coal must apply to have the land registered as a colliery holding before commencing mining operations under the lease, thus triggering the application of the *New South Wales Coal Mine Health and Safety Act 2002*.

#### **4.3.3.4 Compensation for Compensable Loss**

Part 13 of the *Mining Act 1992* contains provisions enabling any landholder who becomes entitled to compensation for 'compensable loss' (as defined in Section 262 of the *Mining Act 1992*) suffered or likely to be suffered as a result of the rights conferred by MPC by the grant of the mining lease.

#### **4.3.4 Coal Mine Health and Safety Act 2002**

The primary objective of the *Coal Mine Health and Safety Act 2002* is to assist in securing the objectives of the *Occupational Health and Safety Act 2000* in relation to coal operations and to put in place special provisions necessary for the control of particular risks arising from the mining of coal.

#### **4.3.5 Crown Lands Act 1989**

The approval of the Department of Lands will be required under the *Crown Lands Act 1989* for any works or mining in Crown road reserves or on Crown land.

This will apply to Crown roads within the project area, for example Wollar road, as well as any part of the Project that is planned to be within Crown Land.

#### **4.3.6 Fisheries Management Act 1994**

The *Fisheries Management Act 1994 (FM Act 1994)* declares and lists threatened species of fish and marine vegetation and endangered populations and ecological communities. It contains measures to conserve those identified species, populations and communities and to promote ecologically sustainable development.

By virtue of Section 75U of the *EP&A Act 1979*, permits under Sections 201 (dredging), 205 (marine vegetation) and 219 (blockage of fish passage) of the *FM Act 1994* are not required for this project.

An aquatic ecology assessment will be undertaken to determine the presence, potential impact and mitigation measures for threatened species listed under the *FM Act 1994*.

#### **4.3.7 Protection of the Environment Operations Act 1997**

An environment protection licence (EPL) under the *Protection of the Environment Operations Act 1997 (PoEO Act 1997)* will be required for the MPCP. If the MPCP becomes an Approved Project the Department of Environment, Climate Change and Water (DECCW) must issue an Environment Protection Licence in terms that are substantially consistent with the project approval granted by the Minister for Planning.

#### **4.3.8 Roads Act 1993**

The MPCP will require temporary closures and upgrades to roads during the construction of the project. An approval under Section 138 of the *Roads Act 1993* from the Roads and Traffic Authority (RTA) and Mid-Western Regional Council will be required for these works. If the MPCP becomes an approved project the Mid-Western Regional Council must issue an approval under Section 138 in terms that are substantially consistent with the project approval granted by the Minister for Planning.

#### **4.3.9 Threatened Species Conservation Act 1995**

The *Threatened Species Conservation Act 1995* (TSC Act 1995) identifies threatened species, populations and ecological communities and key threatening processes. It contains measures to conserve those identified species, populations and ecological communities and integrates assessment regarding activities which might impact upon those species, populations and ecological communities and those activities considered key threatening processes into the assessment and planning process.

The ecological assessment undertaken for the project will be required to assess the impacts to those species listed within the *TSC Act 1995*. Refer to *Section 6.7* for threatened species identified or considered likely to occur in the project area.

#### **4.3.10 Water Act 1912 and Water Management Act 2000**

The MPCP area is currently administered under both the *Water Act 1912* and *Water Management Act 2000* (WMA 2000) with respect to water approvals and licensing.

The *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009*, commenced on 1 August, 2009 and applies relevantly to the Bylong River water source and Upper Goulburn River Water Source.

The licensing provisions of the *WMA 2000* apply to unregulated and alluvial water sources. Waters within fractured rock aquifers and basement rocks will continue to be governed by the *Water Act 1912*.

By virtue of Section 75U of the *EP&A Act 1979*, water use approvals under Section 89, water management work approvals under Section 90 and activity approvals under Section 91 of the *WMA 2000* are not required for a project which has been approved under Part 3A of the *EP&A Act 1979*. Section 75U of the *EP&A Act 1979* does not provide any exemption from the obligation to secure a WAL under the *WMA 2000*.

### **4.4 Commonwealth Legislation**

#### **4.4.1 Environmental Protection and Biodiversity Conservation Act 1999**

An approval from the Minister for Environment (Commonwealth) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999) is required for actions, defined in the act, which may or will have a significant impact on a Matter of National Environmental Significance (MNES). The *EPBC Act 1999* prohibits these actions without an approval under Part 9 of the *EPBC Act 1999*.

An assessment and referral for the MPCP on MNES will be undertaken. An assessment under the bilateral agreement will be sought for the project.

## 5 PROJECT CONSULTATION

### 5.1 Consultation Strategy

The application of the NSW DoP *Guidelines for Major Project Community Consultation, (2007)* will underpin the MPCP consultation program to ensure that it is both "adequate and appropriate".

The consultation program will seek to engage those stakeholders (individuals and organisations) likely to have an interest in the project and be afforded the opportunity to express their views and opinions. Stakeholders identified at this early stage of the project include:

- Landowners and occupiers of the land in the vicinity of the project that maybe directly or indirectly impacted.
- Individual and community groups likely to have an interest in the regional implications of the project proceeding or not proceeding.
- Mid-Western Regional Council.
- State (NSW Office of Water, DECCW, DII) and Federal (Department of Water Heritage and the Arts - DEWHA) government authorities.

Information about the project will be widely distributed throughout the community via letters to key stakeholders, information days, public displays, newsletters, public notices, website, formation of focus groups and briefings of individuals and groups. An employment register will be established for the project. The register will be used to record the names and contact details of persons and companies seeking employment or to provide services at either the construction and or operational phases of the project

The results of the consultation will be recorded, analysed and assessed with regard to the design of the project and reported within the EA report.

### 5.2 Consultation So Far

MPC has begun consultation for the MPCP. Consultation undergone to date includes:

- One on one discussion with landowners.
- Establishment of land access agreements.
- Compilation of an Aboriginal stakeholder register.
- Meetings with utility providers.
- Meetings with Government agencies.
- Obtaining right to acquire the key properties associated with the MPCP.

#### 5.2.1 One on One Discussions and Land Access Agreements

Since the commencement of exploration within EL 7406, MPC and its representatives have engaged in "one on one" discussions with landowners within and adjoining EL 7406 to establish access to lands for exploration and collection of baseline environmental data.

Further "one on one" discussions will be held with interested or potentially impacted individuals as the project progresses.

#### 5.2.2 Aboriginal Stakeholder Consultation

MPC have undertaken extensive consultation since February 2010 to identify Aboriginal stakeholders under the DECCW's *Interim Community Consultation Guidelines*. The process has resulted in twenty eight (28) registered Aboriginal stakeholders expressing an interest in the project.

Stakeholders were informed of the project by MPC undertaking consultation with state agencies, Aboriginal groups and individuals, public notices and a community consultation meeting held in Mudgee on 28 May, 2010.

Further stakeholder meetings will be held in the near future to discuss the findings of the field work. The process of Aboriginal stakeholder consultation will continue as the project moves forward.

### **5.2.3 Utility Providers**

MPC has undertaken consultation with Integral Energy and the Australian Rail Track Corporation (ARTC)x to understand the MPCP electrical energy and rail transport requirements.

On 22 November 2010, Integral Energy provided approval for the MPCP to connect to the Integral Energy Network. The connection would be via a 66kV overhead power line from the Bylong Substation. Works could now commence on the design and location of the power poles, that would be targeted to be placed within the public road reserve to simplify access.

### **5.2.4 Government Agencies**

#### **5.2.4.1 Department of Industry and Investment**

Consistent with the EOI documentation a CPDP for the MPCP was presented to technical officers of the DII-Mineral Resources branch in Maitland on 30 September 2010. In correspondence dated 8 October 2010, DII advised the DoP that it had requested the proponent to remove the Eastern Emplacement area from the proposal as that area was held under title by another company. DII advised the DoP that it supported the project progressing to the planning assessment and approval process as a responsible utilisation of the State's valuable coal resources.

#### **5.2.4.2 Department of Planning**

A meeting between representatives of MPC and officers of the DoP was held on 18 October 2010. The purpose of the meeting was to provide an overview of exploration and the project whilst seeking guidance for the next steps in the planning and assessment process.

## 6 ENVIRONMENTAL ASSESSMENT AND IDENTIFICATION OF KEY ISSUES

MPC has commenced extensive base line environmental studies and is progressing with the investigation of the potential effects of the MPCP on both the community and physical environment. This section documents the understanding of the likely key issues associated with the development of the MPCP based on the conceptual project plan and the information collected at the time of the Project Application.

### 6.1 Risk Assessment

A preliminary risk analysis was undertaken to identify potential key risks, the studies and mine design that would better define or reduce the risks and potential future measures that could further reduce the risk level. The preliminary risk assessment identifies key issues or risks on which the environmental assessment report should focus. The risk matrix, severity, hazard type and probability table used for the assessment is contained in **Appendix 2**.

Broadly the key environmental issues identified in the risk assessment were as follows:

- Air Quality (impacts to receptors).
- Ecology (displacement and clearing of threatened plants animals and communities).
- Heritage (impact to Aboriginal and Non-Aboriginal heritage items).
- Natural Hazards.
- Noise and vibration (impacts to receptors and adjoining structures).
- Socio-economic and community (cost-benefit analysis, local roads, community facilities, land use).
- Soils, agriculture and rehabilitation.
- Utilities and Project Design.
- Water (surface water, groundwater, availability, impact on other users, contamination, management and flooding).

### 6.2 Climate

Approximately 50km south-west of the MPCP area, the Bureau of Meteorology (BOM) station at the Mudgee Airport holds climate records since 1988, the climate descriptions below are based on these weather records. Other BOM stations in the area include Mudgee (George St), Gulgong and Nullo Mountain, which are all approximately 40-50km from the site.

To provide more localised weather conditions MPC is establishing a weather station at the site.

#### 6.2.1 Rainfall

Seasonal changes are a factor in the distribution of annual rainfall, with a greater proportion of rainfall occurring during the summer months. Over the remaining seasons, the rainfall is spread more evenly with minimum totals generally being recorded in winter. The wettest median monthly rainfall occurs in November where 74.7mm occurs over an average of 9.6 days. April is recorded as the driest month, with a median of 15.0mm occurring over an average of 4.6 days. The region annually receives an average of 639.2mm of rainfall.

## 6.2.2 Temperature and Humidity

Summers are dominated by hot, to extremely hot days with temperatures occasionally exceeding 40°C between November and February. The average temperature in the summer months varies between averages of 30.6°C and 13.4°C (overnight). During winter months the minimum recorded temperature is -7.7°C with the average monthly temperature varying between 1.3°C and 14.9°C.

Frosts occur regularly between May and August, where on average more than 76.9 days per year record temperatures below 2°C (temperatures less than 2°C measured at 1.2m typically equate to a ground surface temperature of 0°C, BOM 2008).

Annually, humidity varies between an average of 72% at 9am and 44% at 3pm.

## 6.2.3 Winds

Winds in the summer months are dominated by south-east winds in the morning hours and switch to strong westerly winds in the afternoon. Winds in the winter months are light and scattered in the morning hours, with predominantly strong westerly winds in the afternoon. Spring and autumn months largely follow the pattern of scattered winds in the morning with predominantly westerly winds in the afternoon.

## 6.2.4 Inversions

Temperature inversions occur when relatively dense, cool air bodies are trapped below warmer, lighter air masses. Inversions typically represent calm air (no wind) conditions at the surface and the two bodies of air do not mix readily. An inversion, therefore, inhibits the dispersion of dust and gases, tending to cause higher concentrations at ground level. An inversion can also effectively “trap” sound energy near the ground leading to a potential increase in noise levels at sensitive receptors.

## 6.3 Air Quality

Air quality in the region is typical of a dry rural environment, the key common sources of dust and emissions in the area include:

- Traffic passing along roads in the form of dust clouds.
- Agricultural activities associated with cropping and livestock grazing.
- Quarrying and borrow pits.
- Trains passing along the Sandy Hollow - Ulan Railway.

### 6.3.1 Potential Key Risks to Air Quality

Potential key risks associated with air quality caused by the project include:

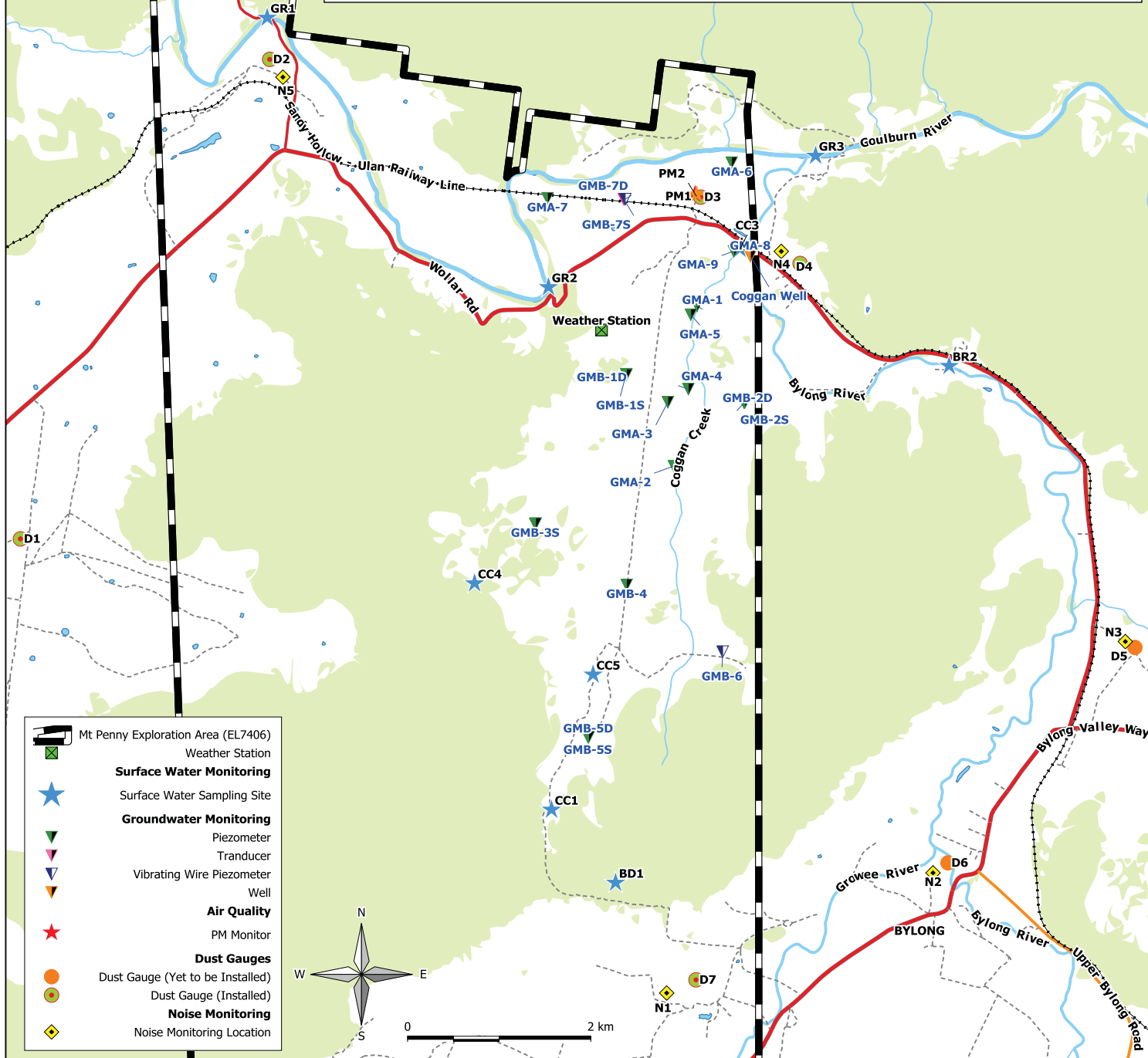
- Air quality impacts to private properties and receptors within dwellings.
- Greenhouse gas emissions and climate change impacts from this Project.
- Cumulative impacts from neighboring titles as well as surrounding agriculture and rural land use.

### 6.3.2 Assessment Approach

MPC established an air quality monitoring network in August 2010 to monitor background levels of the area. **Figure 13** displays the air quality monitoring network for the MPCP, the network consists of:

- Five (5) depositional dust gauges.
- One (1) PM10 hi-volume air sampler.
- One (1) PM2.5 hi-volume air sampler is scheduled for installation in February 2011.

Name	Type	MGA East	MGA North	Name	Type	MGA East	MGA North
D1	Dust Gauge	218494.00	6413693.00	Coggan Well	Groundwater Bore	226455.58	6416776.54
D2	Dust Gauge	221212.00	6418925.00	GMA-1	Groundwater Bore	225873.59	6416236.88
D3	Dust Gauge	225913.00	6417422.00	GMA-2	Groundwater Bore	225618.73	6414488.10
D4	Dust Gauge	226997.00	6416698.00	GMA-3	Groundwater Bore	225554.83	6415185.39
D5	Dust Gauge	230647.00	6412508.00	GMA-4	Groundwater Bore	225778.31	6415328.00
D6	Dust Gauge	228609.00	6410158.00	GMA-5	Groundwater Bore	225805.12	6416139.57
D7	Dust Gauge	225861.00	6408882.00	GMA-6	Groundwater Bore	226250.34	6417798.67
N1	Noise Monitor	225541.00	6408738.00	GMA-7	Groundwater Bore	224241.99	6417410.33
N2	Noise Monitor	228446.00	6410049.00	GMA-8	Groundwater Bore	226368.28	6416882.89
N3	Noise Monitor	230543.00	6412573.00	GMA-9	Groundwater Bore	226273.58	6416831.72
N4	Noise Monitor	226791.00	6416830.00	GMB-1D	Groundwater Bore	225102.42	6415483.51
N5	Noise Monitor	221356.00	6418731.00	GMB-1S	Groundwater Bore	225099.88	6415490.76
PM 1	PM Monitor (10 Micron)	225850.00	6417431.00	GMB-2D	Groundwater Bore	226394.16	6415182.36
PM 2	PM Monitor (2.5 Micron)	225868.00	6417430.00	GMB-2S	Groundwater Bore	226385.55	6415179.33
BD1	Surface Water	224984.00	6409938.00	GMB-3D	Groundwater Bore	224113.40	6413859.81
BR2	Surface Water	228622.00	6415577.00	GMB-3S	Groundwater Bore	224107.53	6413859.47
CC1	Surface Water	224285.00	6410736.00	GMB-4	Groundwater Bore	225105.40	6413191.83
CC3	Surface Water	226340.00	6416855.00	GMB-5D	Groundwater Bore	224690.70	6411531.00
CC4	Surface Water	223447.00	6413205.00	GMB-5S	Groundwater Bore	224685.45	6411527.79
CC5	Surface Water	224739.00	6412209.00	GMB-6	Groundwater Bore	226151.93	6412463.14
GR1	Surface Water	221185.00	6419377.00	GMB-7D	Groundwater Bore	225089.65	6417400.76
GR2	Surface Water	224253.00	6416438.00	GMB-7S	Groundwater Bore	225073.87	6417401.00
GR3	Surface Water	227165.00	6417871.00				



**Mt Penny Exploration Area (EL7406)**

- Weather Station
- Surface Water Monitoring**
  - Surface Water Sampling Site
- Groundwater Monitoring**
  - Piezometer
  - Transducer
  - Vibrating Wire Piezometer
  - Well
- Air Quality**
  - PM Monitor
- Dust Gauges**
  - Dust Gauge (Yet to be Installed)
  - Dust Gauge (Installed)
- Noise Monitoring**
  - Noise Monitoring Location

- One (1) meteorological station to assess local weather conditions.

An air quality specialist consultant will be engaged to undertake an assessment of air quality and greenhouse gas impacts caused by the project. The assessment will involve (but not be limited to):

- Confirmation of background dust levels (depositional, PM<sub>10</sub> and PM<sub>2.5</sub>).
- Calculation and assessment of dust emissions from mining operations for various production years.
- A set of site-specific, synthetic meteorological data will be created using The Air Pollution Model (TAPM) that where possible utilises locally collected data.
- Assessment of impacts to the residents of the local area including Bylong village to DECCW standards against accepted DoP and DECCW criteria.
- Assessment of cumulative impacts.

MPC will seek to acquire or enter into site specific arrangements for properties impacted by the mining operations.

## 6.4 Acoustics & Blasting

Ambient noise levels in the area is typical of a rural environment, the key common sources of noise emissions in the area include:

- Traffic passing along unsealed roads.
- Agricultural activities associated with cropping and livestock grazing.
- Quarrying and borrow pits.
- Trains passing along the Sandy Hollow - Ulan Railway.

With exception to a small basalt quarry located approximately 8km to the east of the project area there are no sources of blast related impacts (vibration and overpressure) in the vicinity of the project.

### 6.4.1 Potential Key Risks from Noise and Vibration

Potential key risks associated with noise and vibration caused by the project include:

- Acoustic impacts to nearby dwellings.
- Blasting impacts to surrounding properties, utilities, structures and landscape
- Blasting impacts to items of environmental heritage and objects of significance due to blasting and vibration.
- Cumulative impacts from neighboring titles as well as surrounding agriculture and rural land use.
- Trains passing along the Sandy Hollow – Ulan Railway.

### 6.4.2 Assessment Approach

Spectrum Acoustics Pty Ltd have been engaged to undertake acoustics and blast modelling assessment for the project and consider cumulative impacts and safeguards.

MPC has established preliminary noise monitoring sites for the assessment of background levels in the Bylong area. The noise monitoring program is expected to begin in late 2010/early 2011.

Acoustic goals for MPCP will be developed in general accordance with the Industrial Noise Policy and National Environmental Protection Measures (NEPM) having regard to the background noise levels in the area. Blasting and vibration goals will be developed for MPCP.

Further assessment of acoustics and blasting impacts will be undertaken during the EA process and will involve the assessment of:

- Collection of background noise levels in the local area including existing noise levels from trains on the Sandy Hollow to Ulan Railway.

- Noise and vibration effects associated with the project to all privately owned land and residences identified in the locality.
- Potential vibration impacts to the surrounding private properties and Bylong village are assessed.
- That noise emissions from mining operations will be assessed for various production years.
- Noise emissions from the throughput at the Coal Handling and Preparation Plant (CHPP) are incorporated into modelling.
- A set of site-specific, synthetic meteorological data be created using The Air Pollution Model (TAPM) and where possible utilises locally collected data.
- Modelling will be in accordance with the requirements of the Industrial Noise Policy and consideration given to cumulative impacts of other industrial/mining operations.
- Potential acquisition of privately owned land dependant on results of noise and vibration monitoring and criteria.

## **6.5 Groundwater**

### **6.5.1 Potential Key Risks with regard to Groundwater**

Potential key risks associated with groundwater for the project include:

- Drawdown of groundwater (hard rock and alluvium) from borefield and open cut operations and impact to users upstream and downstream.
- Contamination of groundwater.
- Loss of water from Goulburn River or Bylong River alluvium into the open cut.
- Availability of groundwater resources to meet Project needs.

### **6.5.2 Assessment Approach**

MPC engaged Hydroilex Pty Ltd (geological and groundwater consultants) to implement a program of site investigations to assist in the evaluation of existing groundwater resources of the area. A summary of collected the baseline information collected to date is provided below.

#### **6.5.2.1 Existing Groundwater**

Twenty one (21) piezometers have been installed within the project area to assist in the evaluation of groundwater resources. The locations of these monitoring points are shown on Figure 13. The piezometers are sampled and analysed on a quarterly basis, with monthly or automatic logging groundwater levels.

The piezometers were located to allow a geographic spread of monitoring locations across the project area. They are also designed to allow separate monitoring, sampling and testing of aquifers in the Goulburn River, Ulan and Coggan coal seam intervals, as well as the inter-burden and under-burden sediments. A curtain of holes was also drilled to demarcate Bylong, Coggan Creek, and Goulburn River alluvial aquifers.

The hydrology of the area under investigation can be broadly classified into the following regimes:

- Localized aquifers within the unconsolidated Recent alluvium associated with the present drainage system.
- Aquifers within the Permian coal measures.
- Limited aquifer potential in the Shoalhaven Group sediments.
- Aquifers in faulted or highly fractured ground.

Packer testing (Falling Head) in the sedimentary rock formations reveals that the only significant permeability occurs in the Ulan Lower Seam. The Marrangaroo Formation has low permeability. At the confluence of the Bylong and Coggan Creek's the alluvials have high permeability, elsewhere, the Coggan Creek alluvials are dry.

Groundwater levels from screened intervals in the Ulan Lower Seam range from around 300 m AHD near the southern end of the resource area to approximately 230 m AHD at its northern end. This fall is consistent with seam structure, which dips to the north and north east, at comparable grade.

The pH of groundwater recovered from the monitoring bores is generally neutral (high 6 to low 7 ranges) with a few samples showing acidic or alkaline values (less than 6.5 or more than 7.5). Electrical conductivities returned values ranging from 2000 to 6000 $\mu$ S/cm, compared to surface waters collected from the Goulburn River which was 720 $\mu$ S/cm. The higher conductivities indicate salinities in the order of 1200 to 3800ppm, which renders the water at the lower end of usefulness for stock and excepting salt tolerant crops, irrigation. Measurements of redox potential (Eh) reveal water with mildly oxidizing to reducing states, with exception of samples recovered Coggan, Bylong Creek and Goulburn River alluvials, which are all in a higher reduced state than would normally be expected and indicative of deteriorating groundwater quality.

### 6.5.2.2 Impact Assessment

MPCP have engaged RPS Aquaterra Consulting Pty Ltd (Aquaterra) to utilise the collected baseline data to investigate, analyse and report the impacts of the project. In addition Aquaterra will develop ameliorative measures to mitigate adverse groundwater impacts resulting from the project.

Aquaterra's assessment approach involves:

- Carryout research with respect to the area and gather topographical data, published geological records and review the data obtained in the monitoring bores and piezometers.
- Liaise with officers of NOW to fully understand groundwater issues that need to be investigated and reported within the EA.
- Conduct a groundwater census to identify all other groundwater users and potential groundwater dependant ecosystems around the site.
- Prepare a groundwater numerical model based on the site using Modflow-Surfact with a Groundwater Vistas interface that reflects suitable boundary conditions and is calibrated against hydraulic testing results for the area.
- Report the findings of the groundwater modeling and investigations for the MPCP and provide recommendations with respect to monitoring and groundwater management based on predicted impacts.

## 6.6 Surface Water and Flooding

The MPCP is located on the eastern side of the great divide and lies wholly within the Hunter River catchment. The Bylong River and Coggan Creek flow through EL 7406 generally north as tributaries of the Goulburn River. The Bylong River Catchment covers an area of approximately 697.5km<sup>2</sup> and flows from its headwaters at 750m AHD to the Goulburn River (219m AHD). The Bylong River catchment is generally characterised by agricultural properties and rural areas. The Bylong River confluence with the Goulburn River is approximately 1km to the north of the MPCP.

The MPCP is located on the western side of the Bylong River, primarily within the Coggan Creek catchment. The Coggan Creek catchment is approximately 21.2km<sup>2</sup> (or about 3% of the total Bylong River catchment) with water flowing generally in a northerly direction from an elevation of 400 to 500m AHD along the eastern, western and southern ridgelines down to approximately 220m at its confluence with the Bylong River east of the MPCP.

Water flows within Coggan Creek are heavily dependent on rainfall and surface water runoff, the lower incised portions of the creek contain small isolated pools of water occasionally connected by

very shallow water flow. Local landowners very rarely see the creek flow, particularly at its confluence with the Bylong River.

The structure of Coggan Creek can be effectively divided into four main sections:

- From its confluence with Bylong River for a distance of 900m Coggan Creek is in sections heavily incised, with eroded banks and little or no riparian vegetation, see **Photograph 1** and **2**.



**Photograph 1:**  
Bylong River, immediately north of Coggan Creek confluence.



**Photograph 2:**  
Coggan Creek looking north in downstream section.

- Between 900m and 1300m the creek remains heavily incised with eroded banks with some eucalypt riparian vegetation, within this section the creek contains bull rushes and occasional pools of water. This section is expected to coincide with an historic inline dam that has since been breached. Refer to **Photographs 3** and **4**.



**Photograph 3:**  
Coggan Creek looking north between 900m and 1300m.



**Photograph 4:**  
Coggan Creek looking south between 900 and 1300m.

- Between 1300m and 2800m the creek is still incised (though less than downstream) with eroded banks and some riparian vegetation. There are some very small isolated sections that contain bull rushes.
- Beyond 2800m to the top of the catchment (a further 4500m) the creek is rarely incised and in most areas is difficult to clearly define a flow path. Refer to **Photographs 5** and **6**.



**Photograph 5:**  
Coggan Creek looking north above 2800m from confluence.



**Photograph 6:**  
Coggan Creek looking south above 2800m, creek is in centre of photograph.

### 6.6.1 Potential Risks with regards to Surface Water

Potential key risks associated with surface water for the project include:

- Contamination of the Bylong River or Goulburn River.
- Potential for acid rock drainage (albeit unlikely due to the freshwater deposits)
- Loss of water from the Goulburn River or Bylong River alluvium, or surface water into the open cut.
- Management of water in consecutive wet seasons.
- Flooding of project (pit and infrastructure) and changes to flooding characteristics.

### 6.6.2 Assessment Approach

Worley Parsons Pty Ltd have been engaged to assess impacts to surface water, address surface water management and undertake a flood impact assessment.

Environmental Geochemistry International (EGI) has been engaged to analyse exploration borehole core from the MPCP area to determine whether risk exists in relation to acid rock drainage (ARD) or other adverse geochemical characteristics. Their report will include recommendations for management materials where necessary to avoid potential contamination of surface waters.

MPC has developed a surface water monitoring program of eight (8) sites including dams and the key rivers and creeks in and around the project area. The surface water monitoring sites for the MPCP are shown in Figure 13. Monitoring includes monthly and quarterly sampling incorporating a suite of analysed parameters including anions, cations, metals, pH conductivity. Results (for temperature, pH and electrical conductivity) of the key streams are given in **Table 6.1** below.

**Table 6.1: Results of preliminary water quality sampling.**

Sampling Location	pH	EC (µs/cm)
Goulburn River, upstream at Ringwood Road crossing.	8.3	719
Goulburn River, downstream, north east of project.	8.0	725
Bylong River, upstream, east of the project.	7.9	2300
Coggan Creek, before confluence with Bylong River.	8.5	3660

The key aspects of the assessment approach for surface water and flooding will include:

- Collection and review of baseline data on water quality and available flow, rainfall and topographic data including survey sections for the flooding and surface water impacts assessments.
- Undertake a flood impact assessment including:
  - A hydrologic assessment of the Goulburn and Bylong River Catchment's would be undertaken in order to determine the flood hydrographs during a 5, 20 and 100 year and PMF flood events. The hydrologic results would be calibrated using any available stream and rainfall data.
  - A HEC-RAS model would be developed for the section of Goulburn and Bylong Rivers in the vicinity of the mine site. The model will be used to estimate flood levels and extents over the site and identify any flood constraints to the project. Flood extent maps will be prepared following the completion of the modelling.
  - A flood impact assessment would be undertaken to quantify the impact of the project on localised and regional flooding.
- Preparation of a "salinity budget" to understand salt within the existing and post mining landscape.
- A site water balance will be developed for the project. The objective of the water balance is to quantitatively assess the balance between estimated mine water usage requirements and controlled and uncontrolled water sources, including an assessment of the need to dispose of excess water during certain events, and what treatment of this water would be required.
- Estimated water surplus/deficit for dry, wet and average rainfall years. This assessment will quantify the predicted reduction in stream flow, which will be reported as potential impacts in the EA.
- Development of stormwater management plans for the life of the mining operation. Including the delineation of clean and dirty water diversion drains and locating and sizing of sediment control ponds as well as flood mitigation and water storage dams.
- A water quality assessment, including development of surface water monitoring, reporting and response plan for the pre-development, construction and operational phases of the mine.
- Prepare conceptual, progressive creek reconstruction and rehabilitation plans for Coggan Creek following mining.
- Assess waste water (e.g. bathhouse ablutions) disposal options for the Project.

## **6.7 Terrestrial and Aquatic Ecology**

The MPCP area supports a variety of vegetation formations, from open grassland to dry sclerophyll forest. The study area is bound by remnant bushland within Goulburn River National Park to the north, by remnant bushland on Crown Land to the east and west. The Goulburn River and Wollar Road traverse the northern portion of the MPCP area, while Mount Penny is located on the southern boundary of the Project area. The Project area has been subject to extensive livestock grazing activities and also some cropping practices have taken place.

Conservation areas in the region include:

- Goulburn River National Park, approximately 1km to the north.
- Wollemi National Park, approximately 10km to the south east.
- Munghorn Gap National Park, approximately 40km to the west.
- Bylong State Forest, approximately 10km to the south east.

### **6.7.1 Potential Key Risks with regard to Terrestrial and Aquatic Ecology**

Potential key risks relating to flora and fauna associated with the MPCP include:

- Clearing of native vegetation, including riparian vegetation.
- Clearing and impacts to threatened flora, fauna and ecological communities listed under the NSW *TSC Act 1995*, *FM Act 1994* and the *EPBC Act 1999*.
- Impacts to groundwater dependant ecosystems.

## 6.7.2 Assessment Approach

EcoBiological Pty Ltd have been engaged to assess the existing flora and fauna values of the area and to assess the potential impacts of the project and to detail ameliorative measures and safeguards. A preliminary report has been completed based on initial survey results, these results were used to compile this section.

MPC has also engaged Marine Pollution Research Pty Ltd to undertake an assessment of the areas aquatic values, determine the potential impacts associated with the MPCP and to recommend ameliorative measures and safeguards.

A more accurate vegetation and aquatic community delineation and condition assessment will be identified during subsequent surveys.

### 6.7.2.1 Fauna Survey

An assessment of fauna and their habitats was undertaken across the Project area, targeting all types of habitat present. Surveys so far cover the late summer, early autumn and late autumn survey periods.

Fauna surveys involved the following techniques:

- Arboreal mammals – Elliot B traps, hair tubes, nocturnal spotlighting and diurnal surveys.
- Koala survey – Spot Assessment Technique (SAT) tests (ground survey of Koala faecal pellets)
- Terrestrial mammals - Elliott A, Elliott B, Cage traps, hair tubes, nocturnal spotlighting and diurnal searches for activity such as diggings and droppings etc.
- Bats – Harp traps, Anabat II bat-call recorders, and nocturnal spotlight searches of tree habitats.
- Birds – Diurnal and nocturnal visual inspections and call interpretations
- Reptiles – searches of suitable habitat, funnel traps, opportunistic searches.
- Amphibians - diurnal herpetological searches, nocturnal spotlight surveys and herpetological searches.

### 6.7.2.2 Aquatic Survey

MPC has been engaged to undertake seasonal surveys of the aquatic ecology values within Project area and surrounds. The aquatic ecology assessment will assess:

- Aquatic habitat resources in the study area including Coggan Creek, dams and the Bylong and Goulburn Rivers.
- Ecological and riparian attributes of the study area's aquatic habitats.
- Aquatic resources in the study area that provide suitable and sustained aquatic habitat for fish and other aquatic biota.
- Is there fish passage between Coggan Creek and Bylong/Goulburn Rivers?
- Threatened aquatic species or communities residing within the study area or any mammals such as platypus and Australian water rat that may utilise the study area.
- The presence of groundwater dependant ecosystems.
- The presence of stygofauna will also be investigated.

### 6.7.2.3 Flora Survey

EcoBiological has completed 3 seasonality surveys and 1 targeted orchid survey. The seasonality surveys were completed in February, March, May and September 2010 (Summer, Autumn, and

Spring). The targeted orchid survey was complete in early October and predominately targeted threatened orchids known to occur in the locality. Results of the spring seasonality surveys are in the process of being analysed and will contribute to defining the extent of derived grassland.

Flora surveys involved a combination of the following techniques:

- Rapid data points in February 2010.
- Floristic quadrats:
  - February - March 2010: 79 (20m x 20m) quadrats and 1 (100m) transect.
  - May 2010: 9 (20m x 20m) quadrats.
  - October 2010: floristic (20m x 20m) quadrats
- Random meanders.
- Targeted threatened species surveys in October 2010.
- Floristic Identification and Nomenclature.

### **Vegetation Mapping**

The boundaries of each of the identified vegetation community within the study area were mapped using a combination of rapid data points (RDP), ecotone walking and aerial photography interpretation (API). The identified vegetation communities were given a nominal name based on the dominant overstorey species and vegetation structure.

#### **6.7.2.4 Survey Results**

##### **Aquatics**

Autumn and spring surveys have been completed, with sampling at five sites for macro-invertebrates, fish, water quality and assessment of habitat.

Sites are located in Coggan Creek, Bylong River and the Goulburn River, dams within the project area have also been surveyed. River Creek Environment (RCE) scores (as a percentage, where 100% is ideal) for the sites ranged from 30 to 46% at sites on Coggan Creek given the poor riparian vegetation and habitat to 77% on the Goulburn River where habitat and vegetation is better.

No threatened species have been observed in surveys undertaken to date.

##### **Flora**

A total of 430 flora species, subspecies, varieties and forms were identified during vegetation surveys and subsequent identification analysis.

##### **Threatened Flora Species**

Preliminary searches of relevant databases found 4 threatened ecological communities, 20 threatened flora species and 2 threatened populations could potentially occur within 25km of the site.

Threatened flora species identified during field surveys have included:

- Two (2) threatened flora species, *Ozothamnus tessellatus* and *Pomaderris queenslandica* (Scant *Pomaderris*).
- Two (2) endangered flora populations, *Cymbidium canaliculatum* and *Eucalyptus camaldulensis* in the Hunter catchment.
- Two (2) Rare Or Threatened Australian Plants (ROTAP) listed species, *Gonocarpus longifolius* and *Pomaderris precaria*, were also recorded within the Project area.

##### **Vegetation Communities**

Vegetation mapping has identified 13 vegetation communities within the MPCP area as shown by **Table 6.2** and **Figure 14**, this consists of 12 native vegetation communities and a grassland community made up of native and agricultural grasses, that is subject to further investigation.

Continued survey and assessment during the EA process will further define these communities determine impacted quantities and vegetation quality.

Of the native vegetation communities recorded in the MPCP area:

- Three (3) are considered an endangered ecological communities (EEC) falling under the definition of *White Box Yellow Box Blakely's Red Gum Woodland*. Portions of this community also correspond to the EPBC-listed *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* a Critically Endangered Ecological Community (CEEC).
- Two (2) are considered a vulnerable ecological community (VEC) falling under the definition of the *Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion*.

**Table 6.2: Vegetation Communities.**

Vegetation Community	TSC Act 199 Status	EPBC Act 1999 Status	Potential Area of Impact by Preliminary Mine Layout (ha)
Un-vegetated			10
Grass Community (native and agricultural)	TBD	TBD	1150
Derived Shrubland			7
Freshwater Wetland Complex			1
Grey Box Grassy Woodland	EEC		21
Grey Gum Sheltered Forest			0
Red Gum Grassy Woodland	EEC		1
River Oak Riparian Forest			0
Rough-barked Apple – Red Gum Riparian Forest			5
Sandstone Ridge Complex			2
Slaty Box Grassy Woodland	VEC		60
Slaty Box Shrubby Woodland	VEC		25
White Box Grassy Woodland	EEC	CEEC	115
White Box Shrubby Woodland			62
TBD - To be determined during the environmental assessment process.			

### **Fauna**

A total of 168 fauna species have been recorded during surveys within the study area, comprising:

- 5 amphibians.
- 24 reptiles.
- 16 terrestrial/arboreal mammals.
- 104 birds.
- 19 bats.

### **Threatened Fauna Species**

Preliminary database searches indicated a total of 36 threatened fauna species, comprising 23 birds, 10 mammals, 2 reptiles and 1 amphibian were previously recorded as occurring within a 25 kilometre radius of the study area.

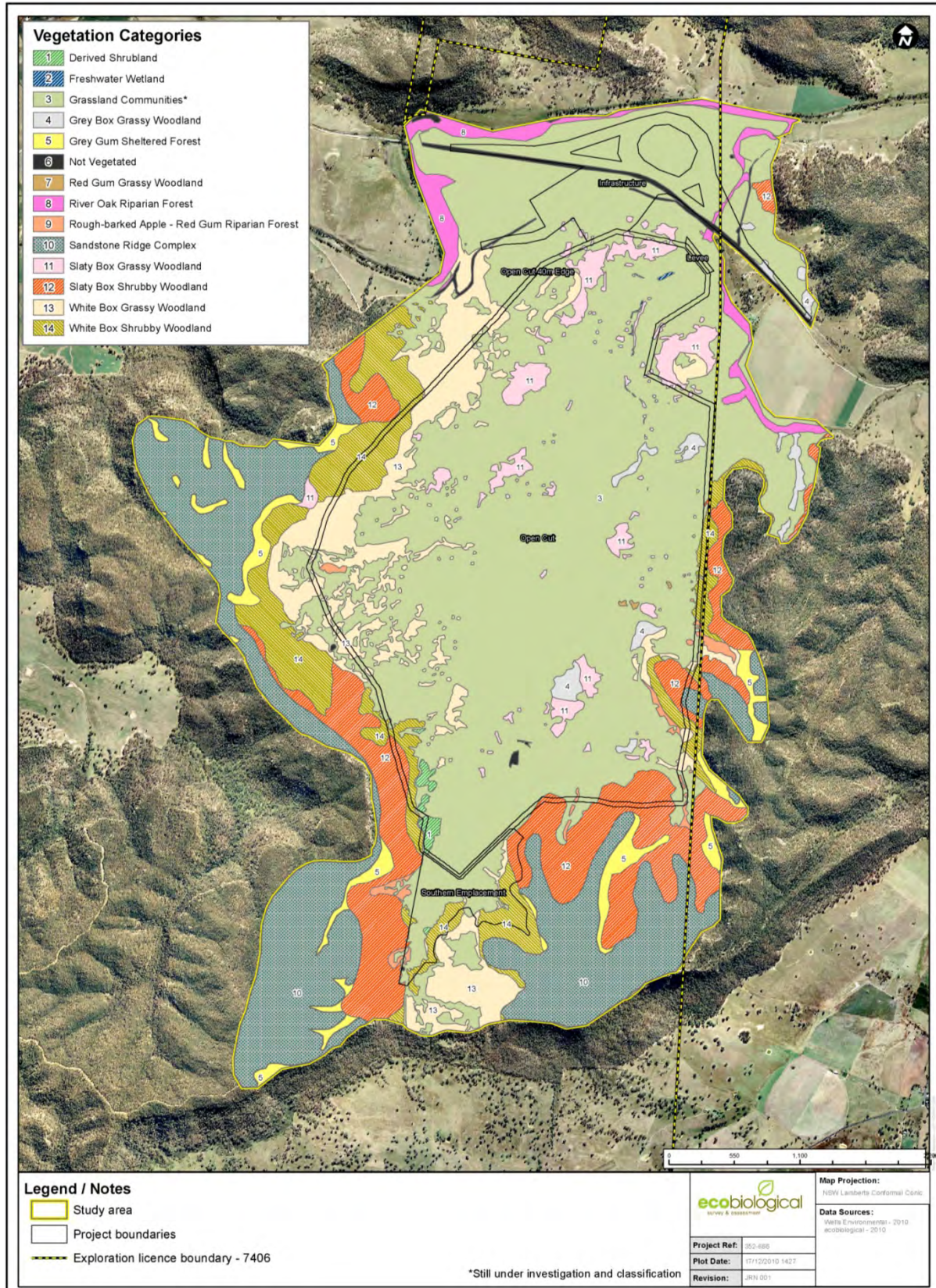


Figure 14: Preliminary vegetation mapping of the study area.

Of the 168 species recorded during surveys, 20 threatened species under the NSW TSC Act 1995 were identified using the study area, including 12 birds and 8 mammals, three (3) of these are protected under the EPBC Act 1999, refer to **Table 6.3**.

**Table 6.3: Threatened fauna species recorded during surveys.**

Fauna Type	EPBC Act 1999 Status	TSC Act 1995 Status
<b>Birds</b>	<i>Regent Honeyeater</i> <sup>#</sup>	<i>Masked Owl</i> <sup>#</sup> , <i>Powerful Owl</i> , <i>Brown Treecreeper</i> <sup>#</sup> , <i>Diamond Firetail</i> <sup>#</sup> , <i>Flame Robin</i> , <i>Glossy Black-Cockatoo</i> , <i>Hooded Robin</i> , <i>Little Lorikeet</i> , <i>Speckled Warbler</i> , <i>Varied Sittella</i> , <i>Turquoise Parrot</i> , <i>Black-chinned Honeyeater</i> , <i>Regent Honeyeater</i> <sup>#</sup>
<b>Mammals</b>	<i>Brush-tailed Rock-wallaby</i> <sup>*</sup> , <i>Large-eared Pied Bat</i> <sup>*</sup> , <i>Greater Long-eared Bat</i> <sup>*</sup>	<i>Brush-tailed Rock-wallaby</i> , <i>Large-eared Pied Bat</i> <sup>#</sup> , <i>Little Bentwing-bat</i> , <i>Eastern Bentwing-bat</i> <sup>#</sup> , <i>Greater Long-eared Bat</i> , <i>Yellow-bellied Sheathtail Bat</i> <sup>#</sup> , <i>Greater Broad-nosed Bat</i> <sup>#</sup> , <i>Eastern Cave Bat</i> <sup>#</sup>
<b>Notes</b>	<p>* Species' habitat is located predominantly in the ridgelines, it is expected that the Project will not directly impact these species.</p> <p># Species with an identified usage of the Project area, potential impacts will be further examined during the EA process.</p>	

#### SEPP 44 – Koala Habitat Protection

Three (3) tree species (*Eucalyptus punctata*, *E. albens* and *E. blakelyi/tereticornis*) were found within the study area during surveys. Selected sites were examined for koala populations. To date, no Koalas have been observed within the study area.

#### 6.7.3 Impact Offset Strategy

To recover the valuable state owned coal resource MPC accept that some impact to native flora and fauna will be unavoidable. In order to minimise the impacts to the native flora and fauna MPC will develop a comprehensive rehabilitation and offset strategy for inclusion within the EA. The rehabilitation and offset strategy will include:

- Thorough investigation of the threatened flora, fauna and aquatic species and communities present in the Project area.
- Review of Project design to avoid impacts where feasible.
- Thorough understanding of the flora, fauna, aquatic and ecological community impacts caused by the Project.
- For unavoidable impacts "like for like" (in relation to type, quality and area) offsets together with rehabilitation will be negotiated with NSW DoP, DECCW and the Commonwealth DEWHA, in order to achieve a "maintain or improve" biodiversity outcome.
- Re-instatement of Coggan Creek post mining to introduce diversity in habitat.
- Active management measures to minimise impacts to threatened flora, fauna and communities measures such as; mining progression, progressive rehabilitation, vegetation clearing protocols, collection of endemic seed, translocation, and other measures to reduce impacts.
- Protection of existing wildlife linkages.

## 6.8 Aboriginal Heritage

MPC has engaged Archaeological Risk Assessment Services Pty Ltd (ARAS) to undertake an Aboriginal cultural heritage assessment of the MPCP in accordance with the Department of Environment, Climate Change and Water (DECCW) Community Consultation Guidelines. The conduct of an Aboriginal cultural heritage assessment was identified within the preliminary environmental risk analysis as a key environmental and community issue for the project.

The identification of Aboriginal stakeholders (groups and individuals) formally commenced in February 2010. Public notices were placed in the Sydney Morning Herald and Mudgee Guardian newspapers on 26 February 2010, inviting registrations of interest from Aboriginal groups or individuals who wanted to be consulted about the project.

An Aboriginal stakeholder consultation meeting was held in Mudgee on 28 May 2010 to discuss the potential project and investigations that would be undertaken if a viable project was identified. MPC sought applications from registered Aboriginal stakeholders to assist ARAS undertake field surveys and gather information about cultural significance and entered into agreements with seven (7) individuals and groups to undertake the work. Fieldwork for the project commenced on 5 October 2010.

The MPCP has twenty-eight (28) registered Aboriginal stakeholders under the DECCW Community Consultation Guidelines.

### 6.8.1 Potential Key Risks with regard to Aboriginal Heritage

ARAS has conducted a review of the AHIMS data base that shows that there are registered Aboriginal sites in and around the MPCP area. The construction and operation of a coal mine has the potential to damage or disturb items and places with cultural, historical, social and or archaeological importance to the local Aboriginal community.

### 6.8.2 Assessment Approach

The commencement of the Aboriginal consultation process occurred under the DECCW *Interim Community Consultation Requirements for Applicants* (Dec 2004), since that time, a new guideline called the *Aboriginal cultural heritage requirements for proponents* (April 2010) was introduced, with a commencement date of 12 April 2010.

In accordance with the new guidelines Aboriginal heritage assessment and consultation for the MPCP will adhere to the new guidelines.

The assessment will be a combination of consultation with local Aboriginal stakeholders and detailed site surveys including geomorphic assessment of the project area to better understand landscape changes and survey results.

The assessment approach has and will continue to involve:

- The conduct of background research involving a review of existing reports and searches of the AHIMS data base.
- The undertaking of consultation with the registered Aboriginal stakeholders for the project in accordance with the DECCW guidelines.
- The conduct of detailed field surveys in conjunction and in consultation with Aboriginal stakeholder representatives.
- The preparation of an Aboriginal cultural heritage assessment report with input from registered Aboriginal stakeholders. The report will include an assessment of cultural heritage values with respect to identified objects or places, as potential impacts and development of mitigation/safeguard measures.

### 6.8.3 Results of Consultation and Survey

Consultation and survey of the project area has resulted in the following:

- A register of 28 Aboriginal stakeholders established as per DECCW guidelines.
- A stakeholder meeting held in Mudgee in May 2010.
- Dr Peter Mitchell completed a geomorphic assessment of the study area.
- Survey teams were established and field survey commenced in October and completed in late December 2010.
- The survey identified 4881 Aboriginal objects from 164 sites, made up of; 27 artefact scatters, 57 isolated finds, 3 scarred trees, 78 artefact scatters with PADs, 1 isolated PAD and 4 partially intact hearths.
- The majority of identified sites have been associated with Coggan Creek and Bylong River.

## 6.9 European Heritage

Non-Aboriginal settlement of the Bylong Valley is expected to have commenced soon after its discovery in 1822 by Lieutenant William Lawson who explored the valleys of the Goulburn River. The Bylong Valley soon became well known for its pastoral qualities producing cattle and thoroughbreds (*Bylong Valley 1884- 1984 Centenary of Education*).

The MPCP is located within the parish of Coggan. According to the 1883 LPMA parish maps land in the Coggan Creek valley area was first settled by John Lee (who held very large tracts of land in the local area), James Gettens, Jacob Marsh, Thomas Spradbrow and William Mead. To the north east of the MPCP is the property of *Coggan* owned John Mead (hence the name Meads Crossing). The Coggan property had a half time school that operated from 1884 through to 1892 where the school closed due to diminished attendance (*Bylong Valley 1884- 1984 Centenary of Education*).

There is one house, several farming structures and the ruins of another house that have currently been observed within the MPCP area. There are no items within the MPCP area that are currently listed on the local, regional, NSW or Commonwealth heritage registers.

### 6.9.1 Potential Key Risks to European Heritage

Damage to items of heritage significance through direct and indirect impacts.

### 6.9.2 Assessment Approach

MPC will engage an appropriately qualified European heritage consultant to undertake an assessment of items of environmental heritage which could be potentially disturbed or impacted as a consequence of the project proceeding.

The European heritage assessment will involve the following key steps:

- Determine the potential area of impact (direct or indirect) associated with the MPCP.
- Undertake baseline research of the locality and specifically upon those properties that may be impacted. Background research and targeted reviews of the NSW State Heritage Inventory, Australian Heritage Database, Land Titles, Parish Maps and local histories will be undertaken, together with consultation with local historical societies and individuals.
- Conduct a heritage survey (including consultation with stakeholder groups) to identify and locate any items or places of environmental heritage, record, evaluate significance and condition.
- Determine the likely heritage impact upon identified items(s) of environmental heritage.

- Assess and determine appropriate mitigation measures to avoid, reduce or ameliorate heritage impact and loss.

All work will be undertaken in accordance with current best practice guidelines including NSW Heritage Branch's Assessing Significance Guideline, Statement of Heritage Impact Guideline and the Australian ICOMOS Burra Charter.

## 6.10 Soils, Land Capability and Agricultural Suitability

Generally land use in the MPCP area is characterised by cleared valley floors that have been used extensively for grazing with the flatter areas along Coggan Creek also used for occasional cropping. Flats adjacent to Bylong River and Coggan Creek are irrigated and cropped on a regular basis. The mid slopes of the valleys have scattered tree cover and have been grazed, with the ridgelines heavily timbered with little or no agricultural potential.

The soils and Land Capability classifications for the MPCP area are summarised in **Table 6.4** below.

**Table 6.4** Soils and Land Capability Classifications in the MPCP Area from the 'Soil Landscapes of Singleton 1:250,000 sheet'.

Soil Landscape*	Location*	Soil Types*	Land Capability Classification*
Growee.	Valley floors.	The top, middle and lower slopes present Red, yellow and brown Solodic Soils respectively. Non-Calcic Brown Soils occur on lower well drained slopes.	III-IV.
Benjang.	Valley floors.	Red, yellow and brown Solodic Soils on steeper benches. Brown Podzolic soils on the upper slopes. Non-Calcic Brown Soils on the lower portions of larger flat slopes	IV-V.
Lees Pinch.	Ridge Lines.	Dominated by Shallow Silacious Sands with shallow loams. Some yellow and brown earths occurring on footslopes. Yellow Soloths are present at slop breaks with Grey Soloths in midslope positions. Yellow Podzolic Soils and Earthy Sands occur on some better drained upper slopes.	V-VIII.
Ogilvie.	Ridge Lines.	Dominated by Shallow loams and sands. Brown Solodic Soils on lower parts of slopes. Silacious Sands and Sandy Earths in drainage lines.	VI-VII.

\*Source: 'Soil Landscapes of Singleton 1:250,000 sheet'.

### 6.10.1 Potential Key Risks with regard to Soils and Land Use

Potential key risks to soils, land capability and agricultural suitability

- Increased erosion of soils within the project area.
- Degradation of soil quality.
- Soils contamination resulting from spillage of hydrocarbons and other chemicals.
- Alteration of physical and chemical soils properties.
- Dedicating lands for biodiversity offset and their impacts to farming and coal sterilisation.

### 6.10.2 Assessment Approach

MPC will engage consultants to undertake a soil, land capability and agricultural suitability surveys of the MPCP area. The assessment will be undertaken through field sampling, analysis and mapping of soils with consideration to topography, drainage and other relevant factors.

## 6.11 Visuals Impacts

Visually the area is characterised by open grazing lands, with steep timbered ridges with frequent cliff lines and sandstone outcrops. Local roads, the Sandy Hollow - Ulan Railway and scattered rural dwellings and rural sheds are the main built structures in the landscape.

The area of the MPCP open cut will generally be well shielded as the Coggan Creek valley is well hidden from the Wollar Road with only a few glimpses into the valley. The Eastern Emplacement Area is located within a saddle area and will further screen the broader area of open cut mining.

The design and location of coal stockpiles, the CPP, conveyors and train loading facilities will be considered with respect to potential visual impacts. Treatments such as earthen bunds or vegetation screens will be implemented where necessary.

### 6.11.1 Potential Key Risks to Visual Amenity

Potential impacts to the visual amenity will be influenced by:

- Location and design of infrastructure.
- Night time lighting.

### 6.11.2 Assessment Approach.

MPC will engage appropriately qualified landscape architect to undertake a visual analysis and impact assessment of the MPCP.

The visual impacts of the project will be further assessed during the EA process. This will involve:

- Adequately assess the night and day time visual attributes of the area.
- Assessing the impacts arising from the MPCP.
- Consider the visual impacts and provide input to Project design.
- Development of recommendations to reduce the visual impacts from the project.
- Ensuring that the final landscape treatment reduces the visual impact of the project .

## 6.12 Rehabilitation and Final Landform

Rehabilitation of mined areas will occur progressively over the life of the project, beginning in the north and progressing to the south.

The final landform will consist of a mosaic of native grasses and woodland with no final void. Mining will be completed in the southern end of the open cut area in year 20 at which point the void will be backfilled from overburden in the Southern Emplacement Area. Coggan Creek will be progressively reformed behind the active mine, incorporating where necessary a chain of ponds within the final landform to reduce flow velocities and provide water sources within a typically dry landscape.

### 6.12.1 Potential Key Risks for Rehabilitation and Final Landform

The following rehabilitation and final landform issues may apply to the development of MPCP:

- Provision of effective rehabilitation of the open cut following mining consistent with surrounding vegetation communities.
- Provision of effective vegetation corridor linkages between adjoining vegetation remnants.
- Establishment of a landform that is variable and mimics a natural appearance.
- Reinstatement of Coggan Creek.

- Provision of a self draining stable landform.

### **6.12.2 Assessment Approach**

The rehabilitation and final landform will be developed during the EA and subsequent MOP or REMP process. The key elements of the assessment will include:

- Understanding of soil stripping depths, quantities and characteristics for use in rehabilitation as a growth medium.
- Preparation of a post mining land surface including the definition of domains, and future land capabilities.
- Detailed assessment and planning of the Coggan Creek reconstruction.

## **6.13 Social and Economic Impacts**

### **6.13.1 Potential Key Risks for Social and Economic Impacts**

Potential key social and economic risks that have been identified for the MPCP include:

- Adverse impact to roads and rail utilisation by community and ability to access project.

### **6.13.2 Assessment Approach**

The granting of project approval to MPCP will enable the recovery of valuable State owned coal resources that underlie the area. The recovery of these resources will result in considerable economic benefits for the Mid-Western Regional Council local government area, the State of New South Wales and Australia, which will flow from royalties to be paid on coal sales, employment and flow on taxes to all levels of Government, as well as the provision of services and facilities in the region. These benefits will considerably exceed the current economic return from the existing agricultural use of the land.

The project will have a positive impact upon aspects of the socio-economic composition and level of service provision for facilities provided by Mid-Western Regional Council. The level of impact will be analysed during the course of the environmental assessment.

MPC recognises that the MPCP will have an impact upon aspects of the socio-economic composition and level of service provision for facilities provided by the Mid-Western Regional Council. Any social impacts of the proposed MPCP on the residents in the surrounding areas, and in the village of Bylong, are of high importance to MPC. The full level of impact will be assessed during the environmental assessment report process.

MPC will undertake an assessment of the community in the surrounding areas and identify strategies to promote the long term survival of the village.

MPC will seek to enter into a Voluntary Planning Agreement with the Mid-Western Regional Council or contribute monies pursuant to Section 94 of the EP&A Act 1979 in respect of the MPCP project toward the provision of public facilities and amenities.

The assessment of the socio-economic impacts of the MPCP will include (but not be limited to):

- Preparation of traffic impact assessment for the MPCP and roads servicing the site.
- Preparation of a benefit -cost analysis for the MPCP.
- Assessment of the economic benefit of the Project by applying an economic multiplier to the project.
- Assessment of the impacts of the Project on the social and economic dynamics of the area.

## **6.14 Landholder Involvement**

### **6.14.1 Access to Lands**

MPC have developed a Rural Land Access Agreement for the conduct of exploration drilling, environmental studies and monitoring in conjunction with local landowners. The agreements are based on a number of protocols which the company must observe in undertaking access to private property to conduct its activities. This includes the company agreeing to fully and promptly repair all damage to the surface of the land where caused by exploration activities and or the conduct of environmental studies

### **6.14.2 Landholder Rights**

MPC will continue its consultation with landholders and seek to enter into appropriate landholder agreements as early as is practicable whereby such agreements are for acquisition, and or for compensation.

Landholders have a statutory right to compensation for “compensable loss” caused by mining under Part 13 of the Mining Act 1962. MPC expects that any project approval will include a condition that any private landholder whose property is affected by noise, dust or vibration beyond the environmental goals determined in the project approval will have the right to require MPC to purchase the property for the non MPC affected market value plus compensation for relocation..

## **7 CONCLUSION**

It is respectfully requested that the NSW Director-General of Planning issue Environmental Assessment Requirements for the MPCP under Part 3A of the EP&A Act 1979.

## 8 REFERENCES

- Bureau of Meteorology – *Climate Statistics for Australian Locations. Summary Statistics for Mudgee Airport.* ([http://reg.bom.gov.au/climate/averages/tables/cw\\_062101.shtml](http://reg.bom.gov.au/climate/averages/tables/cw_062101.shtml))
- *Bylong Valley Centenary of Federation 1884 -1984*
- Cascade Coal, (2010) EL7406 Report on Geological Investigations August 2010.
- Department of Primary Industries 2006 – Environmental Management Guidelines for Industry. *Guidelines to the Mining, Rehabilitation and Environmental Management Process.*
- EcoBiological 2010 – *Preliminary Flora, Fauna and Threatened Species Assessment: Mt Penny Coal, Bylong, NSW.*
- Environment Protection Authority (2000) ‘*NSW Industrial Noise Policy*’.
- Hunter-Central Rivers Catchment Management Authority 2007. *Hunter-Central Rivers Catchment Action plan.*
- Kovac, M. And Lawrie J.W. (1991) Soil Conservation Service of NSW - *Soil Landscapes of the Singleton 1:250,000 Sheet.* Soil Conservation Service of NSW, Sydney.
- Mid-Western Regional Council 2008 – *Mid-Western Regional Interim Local Environmental Plan 2008.*
- Mid-Western Regional Council (1996) - Rylstone Local Environmental Plan 1996.
- Mt Penny Coal Pty Ltd – *Conceptual Project Development Plan Document September 2010.*
- Parsons Brinkerhoff (2008) – *Mid-Western Regional Comprehensive Land Use Strategy. Prepared for Mid-Western Regional Council.*
- Resource Strategies 2005 – *Wilpinjong Coal Project Environmental Impact Statement.*
- Wells Environmental Services 2006 – *Moolarben Coal Mine Environmental Assessment; and Report (Stage 1).*
- Wells Environmental Services and Coffey Natural Systems 2006 – *Moolarben Coal Mine Environmental Assessment Report (Stage 2).*



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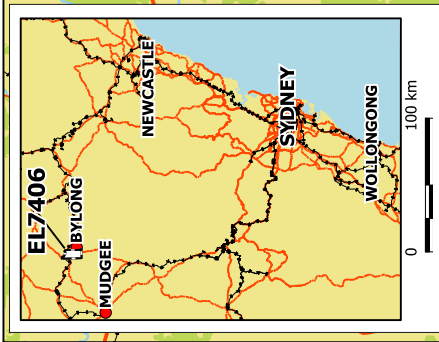
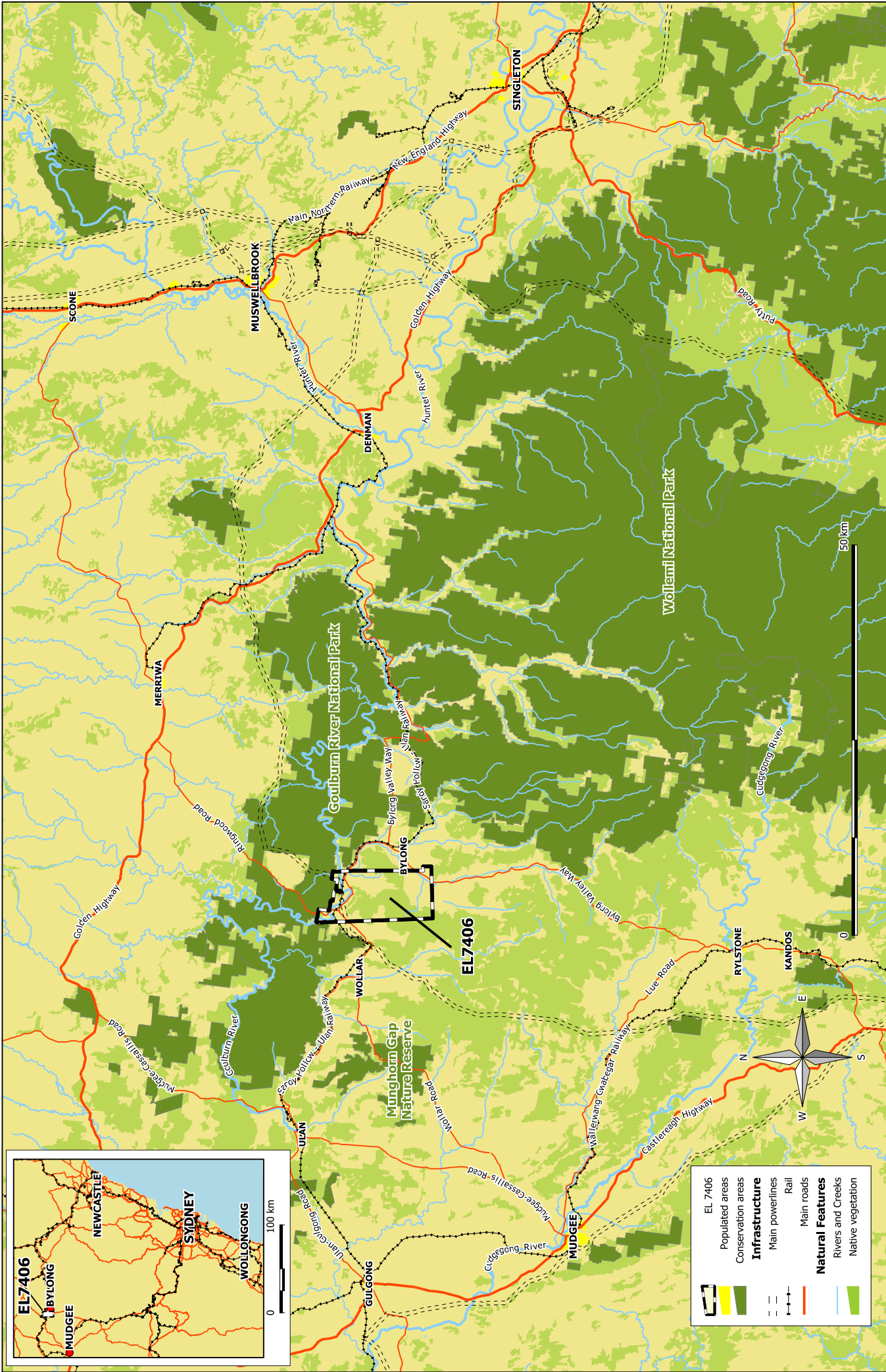
# **APPENDIX 1**

## **MPCP Land Schedule**



Mt Penny Coal Project Property Schedule				
Area	Lot	DP	Parish	County
All Areas	Sandy Hollow - Ulan Railway		Coggan, Murrumbo, Bylong	Phillip
All Areas	Formed and unformed Crown Roads		Coggan, Murrumbo, Bylong, Burrumbelong,	Phillip
All Areas	Formed and unformed Public Roads		Coggan, Murrumbo, Bylong, Burrumbelong	Phillip
All Areas	Unidentified Crown Land		Coggan, Murrumbo, Bylong, Burrumbelong	Phillip
All Areas	Bylong River		Coggan, Murrumbo, Bylong	Phillip
Infrastructure	Goulburn River		Coggan	Phillip
Open Cut, Emplacements and Infrastructure	153	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	75	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	74	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	79	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	232	DP257572	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	31	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	80	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	78	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	177	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	72	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	210	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	76	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	77	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	162	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	49	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	4	DP114985	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	27	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	163	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	44	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	4	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	41	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	46	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	189	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	193	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	39	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	50	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	67	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	29	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	36	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	65	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	34	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	212	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	205	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	37	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	3	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	152	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	164	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	68	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	69	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	7004	DP1001788	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	161	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	35	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	25	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	32	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	64	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	48	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	26	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	203	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	190	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	70	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	38	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	40	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	66	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	42	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	45	DP755421	Coggan	Phillip

Mt Penny Coal Project Property Schedule				
Area	Lot	DP	Parish	County
Open Cut, Emplacements and Infrastructure	43	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	71	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	73	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	33	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	127	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	30	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	1	DP1105755	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	28	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	47	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	30	DP828835	Murrumbo	Phillip
Open Cut, Emplacements and Infrastructure	24	DP755443	Murrumbo	Phillip
Open Cut, Emplacements and Infrastructure	1	DP817097	Murrumbo	Phillip
Open Cut, Emplacements and Infrastructure	194	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	166	DP755421	Coggan	Phillip
Open Cut, Emplacements and Infrastructure	1	DP817097	Coggan	Phillip
Potential Borefields	1	DP755421	Coggan	Phillip
Potential Borefields	310	DP851752	Coggan	Phillip
Potential Borefields	58	DP755421	Coggan	Phillip
Potential Borefields	146	DP755421	Coggan	Phillip
Potential Borefields	184	DP755421	Coggan	Phillip
Potential Borefields	154	DP755421	Coggan	Phillip
Potential Borefields	2	DP800233	Coggan	Phillip
Potential Borefields	194	DP755421	Coggan	Phillip
Potential Borefields	311	DP851752	Coggan	Phillip
Potential Borefields	36	DP755421	Coggan	Phillip
Potential Borefields	37	DP755421	Coggan	Phillip
Potential Borefields	30	DP828835	Coggan	Phillip
Potential Borefields	195	DP755421	Coggan	Phillip
Potential Borefields	90	DP755419	Burrumbelong	Phillip
Potential Borefields	1	DP421103	Burrumbelong	Phillip
Potential Borefields	Borefields may also be located within the boundary of the identified open cut, emplacements and infrastructure areas as above.		Coggan, Murrumbo	Phillip
Powerline Easements	1	DP755421	Coggan	Phillip
Powerline Easements	1	DP430885	Coggan	Phillip
Powerline Easements	90	DP755420	Bylong	Phillip
Powerline Easements	1	DP223632	Coggan	Phillip
Powerline Easements	1	DP430512	Coggan	Phillip
Powerline Easements	310	DP851752	Coggan	Phillip
Powerline Easements	58	DP755421	Coggan	Phillip
Powerline Easements	7001	DP1068900	Coggan	Phillip
Powerline Easements	1	DP810449	Coggan	Phillip
Powerline Easements	1	DP431442	Bylong	Phillip
Powerline Easements	1	DP512025	Coggan	Phillip
Powerline Easements	3	DP431442	Bylong	Phillip
Powerline Easements	1	DP803563	Bylong	Phillip
Powerline Easements	1	DP126187	Coggan	Phillip
Powerline Easements	146	DP755421	Coggan	Phillip
Powerline Easements	2	DP431442	Bylong	Phillip
Powerline Easements	154	DP755421	Coggan	Phillip
Powerline Easements	2	DP1075816	Bylong	Phillip
Powerline Easements	2	DP222796	Bylong	Phillip
Powerline Easements	3	DP222796	Bylong	Phillip
Powerline Easements	7002	DP1068900	Coggan	Phillip
Powerline Easements	7303	DP1140010	Coggan	Phillip
Powerline Easements	2	DP800233	Coggan	Phillip
Powerline Easements	194	DP755421	Coggan	Phillip
Powerline Easements	311	DP851752	Coggan	Phillip
Powerline Easements	30	DP828835	Coggan	Phillip
Powerline Easements	30	DP828835	Murrumbo	Phillip
Powerline Easements	Powerline Easements may also be located within the boundary of the identified open cut, emplacements and infrastructure areas as above.		Coggan, Murrumbo	Phillip



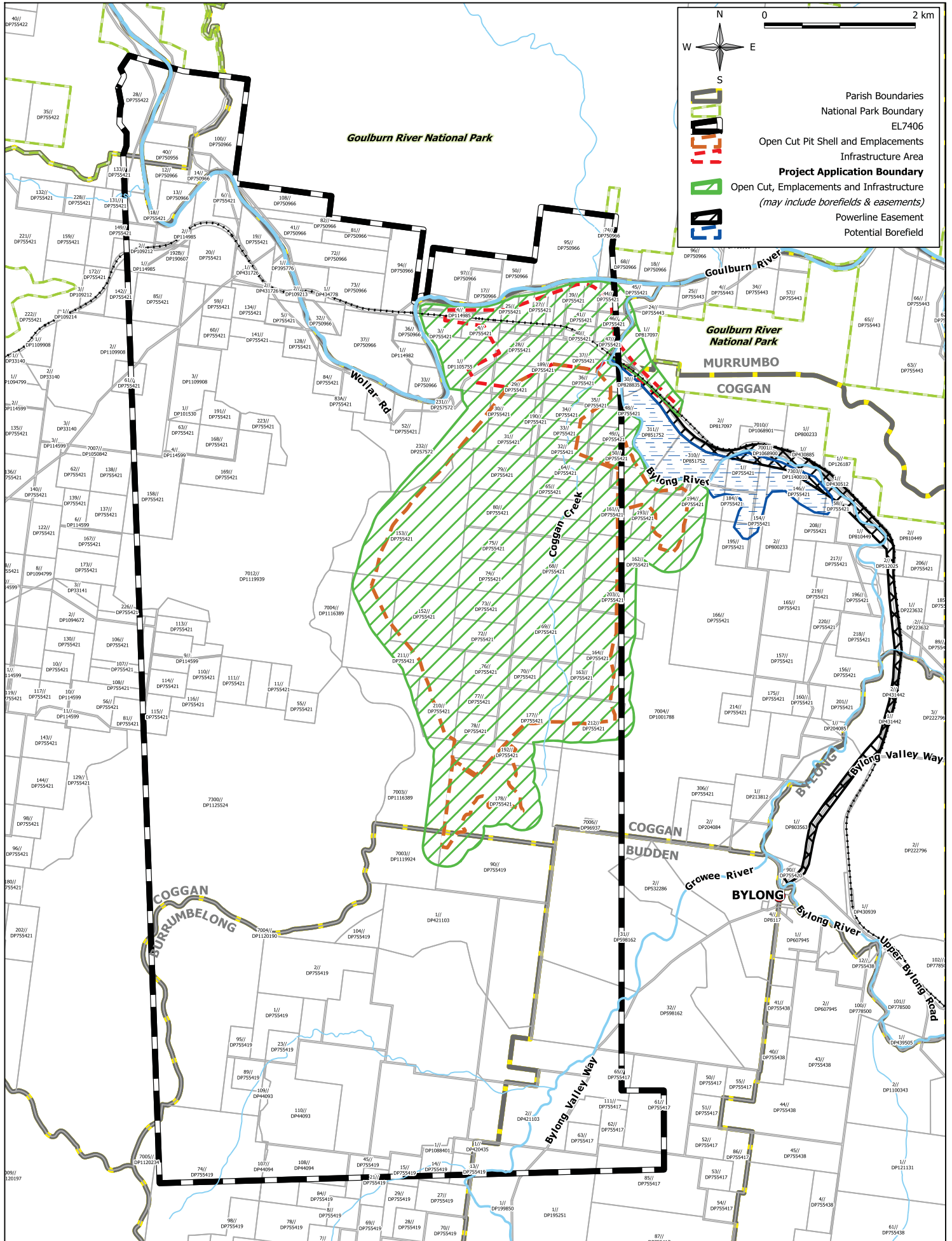
Rev.	Drawn	Description	Approved

<b>MT PENNY COAL PTY LTD</b>		<b>Wells Environmental Services</b>	
File Name: 2010111_PEN_fig_Location		Projection: Australia MGA94 (56)	
Date: Thursday, 18 November 2010		Scale: 1:45000@A3	
Drawn: PB		Revision: 1	
Date:		Sheet Size: A3	

**Mt Penny Coal Project**  
Location Plan

FIGURE NO: **1**



Rev.	Drawn.	Description.	Approved.
B	PB	Addition of parishes & open cut boundaries	JB
C	PB	Alterations to Project Boundary	JB
D	JB	Refinement of Project Boundary and Footprint	JB

**MT PENNY COAL PTY LTD**

File Name: 20101123\_Project Application Boundary\_REV.D

**Mt Penny Coal Project**  
Property Schedule Map

Projection: Australia MGA94 (56)  
Date: 30/11/2010  
Drawn: PB  
Scale: 1:45000

FIGURE NO: **A**

REVISION: D  
SHEET SIZE: A3

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# **APPENDIX 2**

## **Risk Assessment**



		Hazard Type				Probability				
		People (P)	Community (C)	Environment & Heritage (E&H)	Operation & Assets (O&A)	A Almost certain <i>(weekly / monthly)</i>	B Likely to happen <i>(Once a year)</i>	C Possible <i>(every 5 years)</i>	D Unlikely <i>(every 20 years)</i>	E Rare <i>(every 100 years)</i>
<b>Severity</b>	<b>1 Catastrophic</b>	Single or multiple fatalities.	International public attention. Major breakdown of social order in community. <i>(&gt;50 dwellings).</i>	Disastrous/long term environmental impact of national / international significance. Or significant irreparable damage or loss of structures / items of cultural significance.	Extreme damage, unplanned mine closure <i>(&gt;\$40M or 10% of the Project value).</i>	<b>H1</b>	<b>H2</b>	<b>H4</b>	<b>H7</b>	<b>M11</b>
	<b>2 Major Negative Impact</b>	Permanent injuries.	National public attention. Degradation of community structure and viability, <i>(20-50 dwellings).</i>	Major environmental impact on district or area(s) of regional significance. Or significant permanent damage to structures/items of cultural significance.	Major damage. Substantial disruption <i>(&gt; 1 Month, or \$10M-\$40M).</i>	<b>H3</b>	<b>H5</b>	<b>H8</b>	<b>M12</b>	<b>M16</b>
	<b>3 Moderate Negative Impact</b>	Serious bodily injury or health effects – lost work day(s).	Regional public attention and wide spread community complaints <i>(5-20 dwellings).</i>	Serious environmental impact to local area(s) of local significance. Or permanent damage to items of cultural significance.	Moderate damage. disruption <i>(1 week – 1 month, or \$5M-\$10M).</i>	<b>H6</b>	<b>H9</b>	<b>M13</b>	<b>M17</b>	<b>L20</b>
	<b>4 Negative Impact</b>	Minor injury or health effects – restricted work or minor loss of work time.	Adverse local public attention and localised community complaints <i>(3-5 dwellings).</i>	Minor environmental impact to local area(s). Or damage or loss of items of low cultural significance.	Minor damage. Disruption to Project <i>(1 day – 1 week, or \$1M-\$5M).</i>	<b>H10</b>	<b>M14</b>	<b>M18</b>	<b>L21</b>	<b>L23</b>
	<b>5 Minor Negative Impact</b>	Slight injury or health effect – first aid no/minimal (< then 1 day) loss of work time.	Slight negative impact on individuals in local community <i>(&lt;3 dwellings).</i>	Minimal environmental impact to local area(s). Environmental nuisance. Or damage of items of low cultural significance.	Slight damage. Minor disruption to project <i>(Less than 1 shift disruption, Or &lt;\$1M).</i>	<b>M15</b>	<b>M19</b>	<b>L22</b>	<b>L24</b>	<b>L25</b>

Risk Rating	Risk Level
1-10	<b>(H) High</b>
11-19	<b>(M) Moderate</b>
20-25	<b>(L) Low</b>

## Mt Penny Coal Project - Preliminary Risk Analysis

This preliminary risk analysis was undertaken by the Project Team on 25 October 2010.

The Project team consisted of:

- James Mcguigan - Cascade Coal - Project Coordinator.
- Michael Johnstone - Cascade Coal - Project Geologist.
- Alan Wells - Wells Environmental Services - Principal.
- Jonathan Berry - Wells Environmental Services - Senior Environmental Officer.

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> <i>(See Table above)</i>			Future Actions	Key Issue? (yes/no)
				S	P	R		
Water Related								
Contamination (e.g. sediment, acid, hydrocarbons, salt) of the Goulburn River or Bylong River.	PROJECT	<ul style="list-style-type: none"> <li>• Investigate ARD potential.</li> <li>• Collect baseline water quality.</li> <li>• Avoid infrastructure on alluvial soils.</li> <li>• Filter press in CHPP avoids need for tailings dams and associated contamination risks.</li> </ul>	E&H	3	C	M13	<ul style="list-style-type: none"> <li>• Implement appropriate hydrocarbon controls on fuel storages.</li> <li>• Implement erosion and sediment controls.</li> </ul>	Yes
Insufficient water to meet operational requirements	PROJECT	<ul style="list-style-type: none"> <li>• Prepare water balance for life of mine operations.</li> <li>• Acquire WALs sufficient for Project.</li> <li>• Incorporate filter press in CHPP to save water.</li> <li>• Conduct site investigations on aquifers and expected yield</li> </ul>	O&A	2	C	H8	<ul style="list-style-type: none"> <li>• Investigate option arrangement with neighbouring farms for WALs.</li> <li>• Reduce production throughput of CHPP.</li> <li>• Investigate diversification of water sources.</li> </ul>	Yes
Drawdown of water from borefield operations and impact to users upstream/downstream.	INFRA	<ul style="list-style-type: none"> <li>• Undertake census of groundwater use.</li> <li>• Model borefield impacts.</li> <li>• Include water efficiencies in design.</li> <li>• Incorporate filter press in CHPP to save water.</li> </ul>	E&H C	2	C	H8	<ul style="list-style-type: none"> <li>• Investigate acquisition of impacted WALs.</li> <li>• Investigate diversification of water sources.</li> <li>• Implement monitoring program.</li> </ul>	Yes

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> <i>(See Table above)</i>			Future Actions	Key Issue? (yes/no)
				S	P	R		
Loss of water from the Goulburn River or Bylong River alluvium, or surface water into the open cut and reduction in environmental flows.	PROJECT	<ul style="list-style-type: none"> <li>Define alluvium and regolith boundaries.</li> <li>Model groundwater drawdown and impacts to alluvium.</li> <li>Model the reduction in surface water runoff from Coggan Creek and impacts to river flows.</li> <li>Modify pit shell if necessary as result of modelling and/or investigate the installation of a barrier wall between the open cut and Bylong River alluvium.</li> </ul>	E&H C	3	C	M13	<ul style="list-style-type: none"> <li>Implement monitoring program.</li> <li>Develop appropriate strategy to offset adverse impacts to environmental flows and their associated impacts.</li> </ul>	Yes
Management of water in consecutive wet seasons.	PROJECT	<ul style="list-style-type: none"> <li>Prepare Water Management Strategy.</li> <li>Mine design to incorporate water management structures.</li> <li>Clean water bypass for excess clean water.</li> <li>Develop strategies for management of excess 'dirty' water, e.g. water discharge and/or reverse osmosis plant etc.</li> </ul>	E&H O&A	3	D	M17	<ul style="list-style-type: none"> <li>Preferential use of stormwater as opposed to use WALs.</li> <li>Clean water bypass of mine to Bylong River.</li> </ul>	No
Unsuccessful re-construction of Coggan Creek.	OPEN CUT	<ul style="list-style-type: none"> <li>Include detailed creek design in EA.</li> <li>Assess geomorphology of reconstructed creek and receiving rivers and alluvium.</li> <li>Include vegetation rehabilitation plan in EA.</li> <li>Designing mine progression to include creek reconstruction.</li> </ul>	E&H	3	C	M13	<ul style="list-style-type: none"> <li>Monitoring.</li> <li>Progressive mine design and reconstruction provides opportunity for continuous improvement.</li> </ul>	Yes
Flooding of Project (pit and infrastructure) and changes to flooding characteristics.	PROJECT	<ul style="list-style-type: none"> <li>Undertake Flood Study.</li> <li>Incorporate results of flood study into mine design (open cut levee, rail stanchions and infrastructure area).</li> </ul>	E&H O&A C	3	D	M17		No
<b>Flora &amp; Fauna</b>								
Clearing of native vegetation (including threatened flora, EEC & CEEC) and removal of habitat for woodland birds.	PROJECT	<ul style="list-style-type: none"> <li>Undertake seasonality surveys.</li> <li>Investigate avoidance through modifications to mine design.</li> <li>Investigate offset properties for inclusion within the EA and develop offset strategy.</li> <li>Minimize advance pre-stripping and introduce early and progressive rehabilitation.</li> </ul>	E&H	2	A	H3	<ul style="list-style-type: none"> <li>Purchase offsets and implement offset strategy.</li> <li>Collection of provenance seed from local area.</li> </ul>	Yes
Impacts to aquatic habitat and associated species.	PROJECT	<ul style="list-style-type: none"> <li>Undertake aquatic ecology assessment of the Coggan Creek Valley, Goulburn River and Bylong River.</li> <li>Develop strategy to offset impacts as appropriate.</li> </ul>	E&H	4	A	H10	<ul style="list-style-type: none"> <li>Implement offset strategy.</li> </ul>	
Reduction in connectivity to adjoining lands.	PROJECT	<ul style="list-style-type: none"> <li>Pit design maintains connectivity (east to west) across mine.</li> <li>Rehabilitation to incorporate connectivity.</li> </ul>	E&H	4	B	M14		No

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> <i>(See Table above)</i>			Future Actions	Key Issue? (yes/no)
				S	P	R		
Insufficient lands available for offset.	PROJECT	<ul style="list-style-type: none"> <li>Investigate opportunities for alternative methods of offset such as: <ul style="list-style-type: none"> <li>Regional biodiversity strategy.</li> <li>Translocation/propagation of threatened plants.</li> <li>Rehabilitation of suitable lands into EEC/CEEC.</li> </ul> </li> </ul>	E&H	2	D	M12	<ul style="list-style-type: none"> <li>Pursue and acquire lands for offset.</li> <li>Rehabilitate portions of open cut to EEC/CEEC.</li> <li>Translocation/propagation of threatened plants.</li> <li>Research projects.</li> </ul>	Yes
Impact to groundwater dependant ecosystems (GDEs).	PROJECT	<ul style="list-style-type: none"> <li>Undertake groundwater census.</li> <li>Search project area for GDEs</li> </ul>	E&H	3	C	M13		No
<b>Air Quality, Noise and Vibration</b>								
Noise and air quality impacts to dwellings in area, including Bylong.	PROJECT	<ul style="list-style-type: none"> <li>Undertake noise assessment, including road and rail.</li> <li>Undertake air quality assessment.</li> <li>Seek to acquire impacted properties.</li> <li>Incorporate dust and noise control measures into mine design.</li> <li>Mine design incorporates topographical features to minimise impacts.</li> <li>Collection of sufficient baseline data &amp; type: <ul style="list-style-type: none"> <li>Dust deposition.</li> <li>PM<sub>10</sub>.</li> <li>PM<sub>2.5</sub>.</li> <li>Ambient noise levels.</li> <li>Install weather station.</li> </ul> </li> </ul>	P C O&A	4 3 3	C C C	M18 M13 M13	<ul style="list-style-type: none"> <li>Seek to acquire impacted properties.</li> <li>Implement dust and noise controls in operations.</li> <li>Monitor noise and dust.</li> </ul>	Yes
Blasting impacts to surrounding properties, utilities, structures and landscape (i.e cliff lines).	OPEN CUT	<ul style="list-style-type: none"> <li>Undertake blast impact assessment.</li> <li>Survey cliff lines surrounding project.</li> <li>Assess NO<sub>x</sub> impacts.</li> </ul>	E&H O&A	2 2	C D	H8 M12	<ul style="list-style-type: none"> <li>Monitor vibration levels and adjust blasts accordingly.</li> </ul>	Yes
Cumulative impacts (air and noise): <ul style="list-style-type: none"> <li>Neighbouring titles.</li> <li>Mt Penny Coal Project.</li> <li>Agriculture / rural land use.</li> <li>Wilpinjong (to small degree).</li> </ul>	PROJECT	<ul style="list-style-type: none"> <li>Include other sources within models/ study where levels are available.</li> </ul>	C	3	C	M13		No
Impacts to equine industry from noise, dust and blasting.	PROJECT	<ul style="list-style-type: none"> <li>Include PM<sub>2.5</sub> in baseline data collection.</li> <li>Include horse studs within air quality assessment.</li> </ul>	C	3	D	M17	<ul style="list-style-type: none"> <li></li> </ul>	Yes

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> <i>(See Table above)</i>			Future Actions	Key Issue? (yes/no)
				S	P	R		
Greenhouse gas emissions and climate change impacts from this Project.	PROJECT	<ul style="list-style-type: none"> <li>Assess emissions and potential impacts.</li> <li>Incorporate energy efficiency into mine design.</li> <li>Assess fugitive emissions from open cut mine workings.</li> </ul>	E&H	5	B	M19	<ul style="list-style-type: none"> <li>Purchase energy efficient equipment.</li> <li>Investigate emission offsets.</li> </ul>	No
<b>Land Use and Rehabilitation</b>								
Impacts to agricultural lands and production.	PROJECT	<ul style="list-style-type: none"> <li>Assess agricultural suitability of project area (pre-mining).</li> <li>Assess agricultural production from land versus the value of mining.</li> <li>Design of mine and infrastructure to minimise impacts to any prime agricultural lands.</li> <li>Assess post mining landscape for most appropriate landuse, e.g.: <ul style="list-style-type: none"> <li>Woodland.</li> <li>Grassland.</li> <li>Mix of woodland/grassland.</li> <li>Agricultural lands.</li> </ul> </li> </ul>	E&H C	5	A	M15	<ul style="list-style-type: none"> <li>Investigate utilisation of lands outside the immediate mining area.</li> <li>Investigate use of post-mining landscape for agriculture.</li> </ul>	No
Dedicating lands for biodiversity offset and their impacts to farming and coal sterilisation.	PROJECT	<ul style="list-style-type: none"> <li>Assess suitability of lands for biodiversity offset, considering potential coal and agricultural utilisation.</li> </ul>	E&H C	5	A	M15	<ul style="list-style-type: none"> <li>Optimisation of acquired lands.</li> </ul>	No
Insufficient topsoil availability & suitability.	PROJECT	<ul style="list-style-type: none"> <li>Assess soil types, characteristics and volumes within project area and its suitability for rehabilitation growth medium.</li> <li>Mine design to incorporate topsoil management measures.</li> </ul>	E&H	4	C	M18	<ul style="list-style-type: none"> <li>Ameliorate soils where needed.</li> </ul>	Yes
Final void size and use.	OPEN CUT	<ul style="list-style-type: none"> <li>Mine design to minimise or eliminate final void.</li> </ul>	E&H O&A	5	C	L22		No
<b>Social-Economic /Community Impacts.</b>								

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> <i>(See Table above)</i>			Future Actions	Key Issue? (yes/no)
				S	P	R		
Insufficient accommodation and facilities for construction and operational personnel, including impacts to rental prices and services for locals and fatigue.	PROJECT	<ul style="list-style-type: none"> <li>Socio-economic assessment of the local and regional area.</li> <li>Assessment of accommodation and facilities for construction and operations.</li> <li>Undertake community consultation program.</li> <li>Investigate and assess a construction camp for the project.</li> </ul>	P C O&A	1 1 2	C C C	H4 H8 H8	<ul style="list-style-type: none"> <li>Investigate housing opportunities in the Mid-Western Regional local area.</li> <li>Fatigue management programs.</li> <li>Car pooling / bus.</li> <li>Staggered shift starts.</li> <li>Negotiate with Mid-Western Regional Council a suitable Voluntary Planning Agreement (VPA).</li> </ul>	Yes
Adverse impact to roads and rail utilisation by community and ability to access project	PROJECT	<ul style="list-style-type: none"> <li>Cumulative impact assessment on roads and rail, including level crossing serviceability.</li> <li>Undertake traffic impact assessment on major transport routes to and from the project.</li> </ul>	P C O&A	1 1 2	C C C	H4 H8 H8	<ul style="list-style-type: none"> <li>Negotiate with Mid-Western Regional Council a suitable Voluntary Planning Agreement (VPA).</li> </ul>	Yes
That the project is not economically viable	PROJECT	<ul style="list-style-type: none"> <li>Undertake cost benefit analysis</li> </ul>	O&A	1	D	H7	<ul style="list-style-type: none"> <li></li> </ul>	Yes
<b>Aboriginal Heritage</b>								
Impacts to Aboriginal Cultural Heritage	PROJECT	<ul style="list-style-type: none"> <li>Undertake Aboriginal Cultural Heritage Assessment in accordance with DECCW guidelines.</li> <li>Undertake consultation with Aboriginal stakeholders for project.</li> </ul>	C	3	B	H9	<ul style="list-style-type: none"> <li>Continue Stakeholder consultation.</li> </ul>	Yes
Impacts on Aboriginal artefacts, sites and areas.	PROJECT	<ul style="list-style-type: none"> <li>Undertake Aboriginal Cultural Heritage Assessment in accordance with DECCW guidelines.</li> <li>Undertake consultation with Aboriginal stakeholders for project.</li> <li>Undertake surveys of impacted areas.</li> </ul>	E&H	2	A	H3	<ul style="list-style-type: none"> <li>Investigate opportunities for avoidance, conservation and salvage of Aboriginal artefacts, sites or areas.</li> </ul>	Yes
Damage to rock shelters.	OPEN CUT	<ul style="list-style-type: none"> <li>Survey cliff lines for shelters and art.</li> <li>Undertake blast assessment of shelters if present.</li> </ul>	E&H	2	C	H3	<ul style="list-style-type: none"> <li>Investigate opportunities for avoidance, conservation and salvage of shelters and art.</li> </ul>	Yes
<b>European Heritage</b>								
Impacts to Cultural Significance including impacts to physical items and setting (e.g. Donnola Creek House).	PROJECT	<ul style="list-style-type: none"> <li>Undertake European Cultural Heritage Assessment in accordance with Heritage Branch guidelines.</li> <li>Undertake surveys of impacted areas.</li> </ul>	E&H	4	B	M14	<ul style="list-style-type: none"> <li>Investigate opportunities for avoidance, conservation and salvage of sites.</li> </ul>	No
<b>Natural Hazards</b>								

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> (See Table above)			Future Actions	Key Issue? (yes/no)
				S	P	R		
Adverse impacts to construction or operations from Bushfire.	PROJECT	<ul style="list-style-type: none"> <li>Undertake assessment of potential bushfire impacts during construction and operations.</li> </ul>	P C O&A	1 3 5	C D D	H4 M17 L24	<ul style="list-style-type: none"> <li>Implement recommendations from study.</li> </ul>	No
Adverse impacts to construction or operations from Flooding.	PROJECT	<ul style="list-style-type: none"> <li>Undertake Flood Study.</li> <li>Incorporate results of flood study into mine design (open cut levee, rail stanchions and infrastructure area).</li> </ul>	E&H O&A C	3	D	M17		
Adverse impacts to construction or operations from Earthquake.	PROJECT		O&A	4	E	L23	<ul style="list-style-type: none"> <li>All buildings to comply with the Building Code of Australia where relevant.</li> </ul>	No
Adverse impacts to construction or operations from Landslip i.e. talus slope.	OPEN CUT	<ul style="list-style-type: none"> <li>Geotechnical assessment of high wall stability.</li> <li>Mine design to consider results of geotechnical assessment in terms of highwall batters, running benches and angle of repose</li> </ul>	P O&A	1 3	C C	H4 M13	Implement highwall monitoring program during mine operations	No
<b>Utilities (rail/ road/ power/ communications)</b>								
Problems with connectivity of rail loop to Ulan-Sandy Hollow rail line.	INFRA	<ul style="list-style-type: none"> <li>Consult with ARTC.</li> <li>Undertake modelling of rail loop connection.</li> </ul>	O&A	3	D	M17		No
Failure to have sufficient rail or port capacity.	PROJECT	<ul style="list-style-type: none"> <li>Consult with PWCS and HVCCLT</li> </ul>	O&A	1	E	M11		No
Insufficient electrical power.	PROJECT	<ul style="list-style-type: none"> <li>Consult with relevant energy supplier.</li> </ul>	O&A	1	D	H7	<ul style="list-style-type: none"> <li>Maximise electrical efficiencies of plant and equipment.</li> </ul>	No
Lack sufficient telecommunication facilities.	PROJECT	<ul style="list-style-type: none"> <li>Consult with relevant telecommunications supplier.</li> </ul>	O&A	4	D	L21		No
<b>Project Design</b>								
Open cut mining limits	OPEN CUT	<ul style="list-style-type: none"> <li>Assess alternative open cut designs based on resource recovery, project economics and constraints.</li> </ul>	E&H O&A	3 4	D D	M17 L21		Yes
Location and design of infrastructure.	INFRA	<ul style="list-style-type: none"> <li>Assess alternative infrastructure designs based on efficiency, project economics and constraints.</li> <li>Undertake visual impact assessment and incorporate bunds or screening into project where appropriate.</li> </ul>	E&H O&A	3 4	D D	M17 L21		No
Location of out of pit emplacements.	OPEN CUT	<ul style="list-style-type: none"> <li>Assess alternative overburden emplacement options based on resource recovery, project economics and constraints.</li> </ul>	E&H O&A	3 4	D D	M17 L21		Yes

Issue	Area	Controls / Measures during design and assessment	Hazard Type	Risk Rating <i>S= Severity</i> <i>P= Probability</i> <i>R= Risk Rating</i> (See Table above)			Future Actions	Key Issue? (yes/no)
				S	P	R		
Adverse impacts to construction or operations from Bushfire.	PROJECT	<ul style="list-style-type: none"> <li>Undertake assessment of potential bushfire impacts during construction and operations.</li> </ul>	P C O&A	1 3 5	C D D	H4 M17 L24	<ul style="list-style-type: none"> <li>Implement recommendations from study.</li> </ul>	No
Adverse impacts to construction or operations from Flooding.	PROJECT	<ul style="list-style-type: none"> <li>Undertake Flood Study.</li> <li>Incorporate results of flood study into mine design (open cut levee, rail stanchions and infrastructure area).</li> </ul>	E&H O&A C	3	D	M17		
Adverse impacts to construction or operations from Earthquake.	PROJECT		O&A	4	E	L23	<ul style="list-style-type: none"> <li>All buildings to comply with the Building Code of Australia where relevant.</li> </ul>	No
Adverse impacts to construction or operations from Landslip i.e. talus slope.	OPEN CUT	<ul style="list-style-type: none"> <li>Geotechnical assessment of high wall stability.</li> <li>Mine design to consider results of geotechnical assessment in terms of highwall batters, running benches and angle of repose</li> </ul>	P O&A	1 3	C C	H4 M13	Implement highwall monitoring program during mine operations	No
<b>Utilities (rail/ road/ power/ communications)</b>								
Problems with connectivity of rail loop to Ulan-Sandy Hollow rail line.	INFRA	<ul style="list-style-type: none"> <li>Consult with ARTC.</li> <li>Undertake modelling of rail loop connection.</li> </ul>	O&A	3	D	M17		No
Failure to have sufficient rail or port capacity.	PROJECT	<ul style="list-style-type: none"> <li>Consult with PWCS and HVCCLT</li> </ul>	O&A	1	E	M11		No
Insufficient electrical power.	PROJECT	<ul style="list-style-type: none"> <li>Consult with relevant energy supplier.</li> </ul>	O&A	1	D	H7	<ul style="list-style-type: none"> <li>Maximise electrical efficiencies of plant and equipment.</li> </ul>	No
Lack sufficient telecommunication facilities.	PROJECT	<ul style="list-style-type: none"> <li>Consult with relevant telecommunications supplier.</li> </ul>	O&A	4	D	L21		No
<b>Project Design</b>								
Open cut mining limits	OPEN CUT	<ul style="list-style-type: none"> <li>Assess alternative open cut designs based on resource recovery, project economics and constraints.</li> </ul>	E&H O&A	3 4	D D	M17 L21		Yes
Location and design of infrastructure.	INFRA	<ul style="list-style-type: none"> <li>Assess alternative infrastructure designs based on efficiency, project economics and constraints.</li> <li>Undertake visual impact assessment and incorporate bunds or screening into project where appropriate.</li> </ul>	E&H O&A	3 4	D D	M17 L21		No
Location of out of pit emplacements.	OPEN CUT	<ul style="list-style-type: none"> <li>Assess alternative overburden emplacement options based on resource recovery, project economics and constraints.</li> </ul>	E&H O&A	3 4	D D	M17 L21		Yes