AngloAmerican

PEA DRAYTON SOUTH COAL PROJECT

Preliminary Environmental Assessment ▸▸ March 2011

Hansen Bailey
ENVIRONMENTAL CONSULTANTS

DRAYTON SOUTH COAL PROJECT

PRELIMINARY ENVIRONMENTAL ASSESSMENT

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March 2011

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PRELIMINARY ENVIRONMENTAL ASSESSMENT

for
Anglo American

1 INTRODUCTION

Drayton Mine commenced production in 1983 and currently holds Project Approval 06_0202 (approved 1 February 2008) to provide predominantly steaming coal to export and domestic markets at a maximum of 8 Million tonnes per annum (Mtpa) of Run-of-Mine (ROM) coal. Drayton Mine's Project Approval expires in 2017; however, based on current production schedules the coal resources at Drayton Mine are expected to be exhausted by 2015 at which time the operation will have to close.

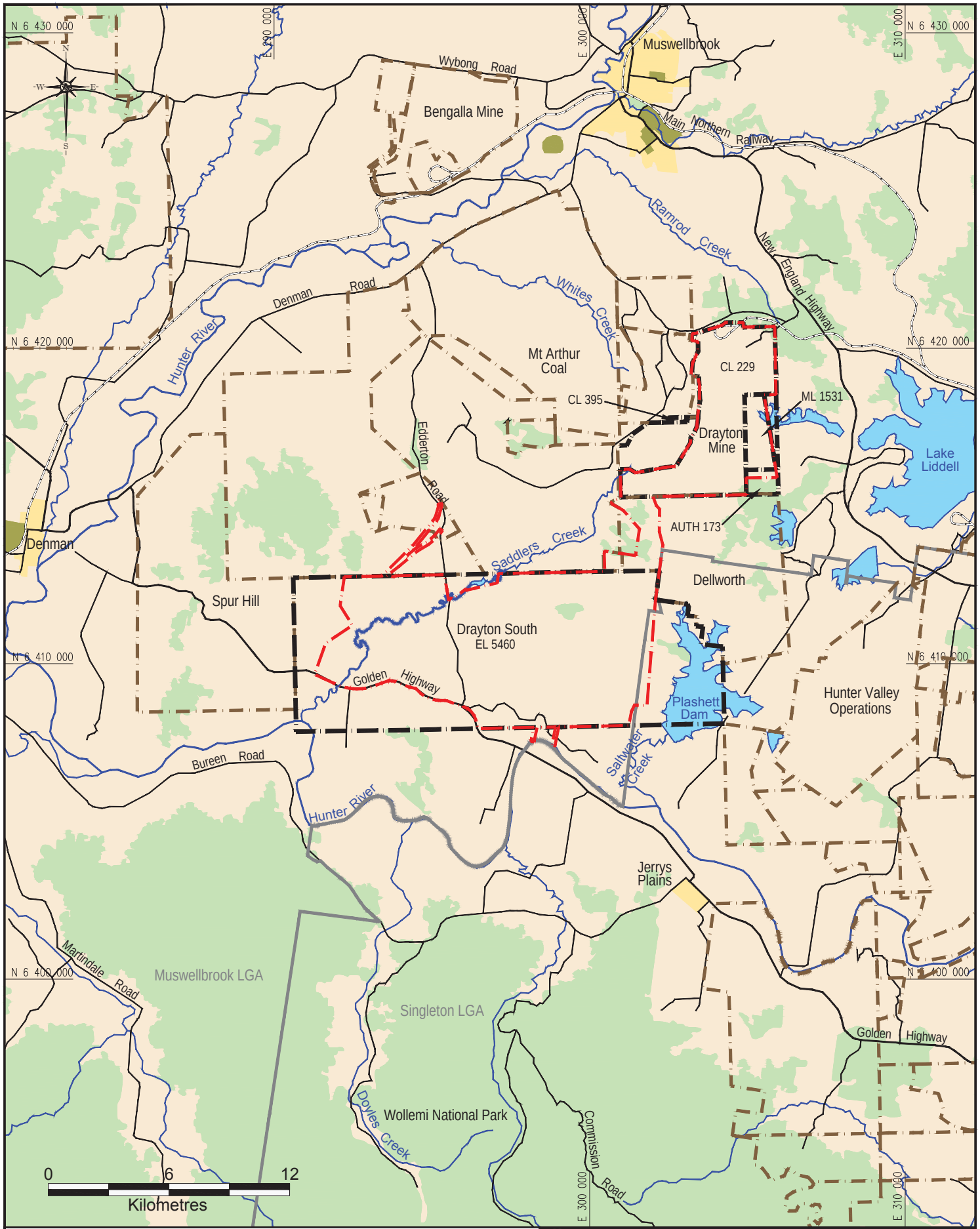
The Drayton South Coal Project (the Project) will allow for the continuation of mining at Drayton Mine by the development of open cut and highwall mining operations within the Drayton South area (Drayton South) while continuing to utilise the existing infrastructure and equipment from Drayton Mine. Collectively the Project encompasses Drayton Mine, Drayton South and the transport corridor which will link the two operational areas.

The Project is located approximately 10 km north-west of the village of Jerrys Plains and approximately 13 km south of the township of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW). The Project is predominately situated within the Muswellbrook Shire Local Government Area (LGA), with the south-west portion falling within the Singleton LGA. **Figure 1** illustrates the location of the Project. The Project is located within close proximity to two thoroughbred horse studs, two power stations and several existing coal mines.

The Project will extend the life of Drayton Mine by a further 26 years ensuring the continuity of employment for its workforce, the ongoing utilisation of its infrastructure and the orderly rehabilitation of Drayton Mine's completed mine areas.

Anglo American is seeking Project Approval under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act) to facilitate the extraction of coal by both open cut and highwall mining methods within Exploration Licence (EL) 5460 for a period of 26 years. The Project Application Boundary (Project Boundary) is shown on **Figure 1**.

This Preliminary Environmental Assessment (PEA) has been prepared by Hansen Bailey Environmental Consultants (Hansen Bailey) on behalf of Anglo American. The PEA supports a Project Application being made under Section 75E of the EP&A Act.



- Project Boundary
- Drayton South EL Boundary
- Other Mining Tenements
- Roads
- Railways
- Creeks
- Local Government Boundary

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DRAYTON SOUTH

Regional Locality

Cad File: 07186C.dwg	Date: 24.02.11	Drawn: CP	Figure 1

1.1 PROPONENT

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1.2 PROJECT OVERVIEW

The Project generally comprises:

- The development of an open cut and highwall mining operation extracting up to 7 Mtpa of ROM coal over a period of 26 years;
- The utilisation of the existing Drayton Mine workforce and equipment fleet (with an addition of a highwall miner and coal haulage fleet);
    - The Drayton Mine fleet consists of at least a dragline, excavators, fleet of haul trucks, dozers, graders, water carts and associated supporting equipment.
- The use of Drayton Mine's existing voids for rejects and tailings disposal and water storage to allow for the optimisation of the Drayton Mine final landform;
- The utilisation of the existing Drayton Mine infrastructure including the Coal Handling and Preparation Plant (CHPP), rail loop and associated loadout infrastructure, workshops, bath houses and administration offices;
- The construction of a transport corridor between Drayton South and Drayton Mine;
- The utilisation of the Antiene Rail Spur off the Main Northern Railway to transport product coal to the Port of Newcastle for export;
- The realignment of a section of Edderton Road;
- The installation of water management and power reticulation infrastructure for Drayton South; and

Drayton Mine will continue to operate under and in accordance with the existing Project Approval 06_0202 and there will be a period when Drayton Mine and Drayton South operate concurrently.

Currently all of the land required for the Project is owned by Anglo American with the exception of a parcel of land required for the proposed relocation of Edderton Road. This is owned by Hunter Valley Energy Coal Pty Limited (HVEC) who is the owner of the Mount Arthur Coal Mine. The Project description is discussed further in **Section 3**.

1.3 DOCUMENT PURPOSE AND STRUCTURE

The PEA describes the key social and environmental issues associated with the Project and its proposed assessment methodology for consideration by the Department of Planning (DoP) and other relevant Government authorities at the Planning Focus Meeting (PFM) which is proposed to be held in April 2011.

The Environmental Assessment Requirements (EARs) for the Project will be sought from DoP following the PFM, stakeholder consultation and discussions with key Government regulators.

The PEA is structured as follows:

- **Section 2** provides an overview of the history of Drayton Mine, the Project and the surrounding environment;
- **Section 3** provides a detailed description of the Project;
- **Section 4** summarises the planning legislation relevant to the Project;
- **Section 5** describes the stakeholder engagement program to be undertaken to ensure all interested parties are consulted regarding the Project;
- **Section 6** provides an overview of the preliminary environmental risk assessment conducted for the Project which is provided in full in **Appendix A**;
- **Section 7** describes the potential impacts and proposed assessment methodology for all key environmental issues identified in the preliminary environmental risk assessment for the Project;
- **Section 8** provides a preliminary justification for the Project; and
- **Section 9** lists the relevant references.

2 BACKGROUND

This section provides a brief discussion on the history of the existing Drayton Mine and the Project. It also includes a description of the current environmental monitoring programs at Drayton South and discusses the relevant components of the existing environment surrounding the Project including climate, topography, geology, land use and land ownership.

2.1 DRAYTON MINE

Drayton Mine is managed by Anglo Coal (Drayton Management) Pty Ltd (ACDM), which is owned by Anglo American.

Drayton Mine commenced production in 1983 and currently holds Project Approval 06_0202 to provide predominantly steaming coal to export and domestic markets at a maximum of 8 Mtpa of ROM coal to 2017. The supporting document to the Project Approval is the *Drayton Mine Extension Environmental Assessment* (Drayton Mine EA) dated August 2007 (Hansen Bailey, 2007). An overland conveyor transports domestic coal to Macquarie Generation for electricity production, whilst the Antiene Rail Spur (approved under Development Consent (DC) 106-04-00) is utilised to transport export steaming coal to the Port of Newcastle via the Main Northern Railway Line.

A modification to Project Approval 06_0202 (MOD 1) was granted by the Minister for Planning on 16 October 2009 to allow an 8 hectare (ha) extension of the approved mining disturbance footprint to the north and the establishment of a new conservation area to provide an appropriate offset for this additional disturbance. The supporting document to the Project Approval is the *Drayton Mine Project Approval Modification Environmental Assessment* (Drayton Mine Modification EA) dated July 2009 (Hansen Bailey, 2009).

Drayton Mine holds three mining authorities relevant to the mining operation, being Mining Lease (ML) 1531 and Coal Leases (CL) 229 and CL 395 as shown on **Figure 1**. Drayton Mine currently employees approximately 450 personnel including permanent contractors with mining conducted 24 hours per day, 7 days per week.

Drayton Mine is serviced by surface facilities, which include an administration office, bathhouse, workshop, warehouse facilities, CHPP, stacker, stockpile reclaimers, rail facilities and an overland conveyor to Bayswater Power Station.

2.1.1 Drayton Mine Existing Licences and Approvals

Table 2 outlines the status of licences and approvals with regard to the existing Drayton Mine.

Table 1
Drayton Mine Existing Licences and Approvals

Approval Document	Approval Authority	Approval Term
ML 1531	DII	26/02/2003 - 25/02/2024
CL 229	DII	03/02/1982 - 02/02/2024
CL 395	DII	23/06/1992 - 21/01/2029
A 173	DII	31/08/1979 - 31/08/2013
Drayton Mine Extension PA 06_0202	DoP	01/02/2008 - 31/12/2017

Approval Document	Approval Authority	Approval Term
Drayton Mine Extension PA 06_0202 MOD1	DoP	16/10/2009 - 31/12/2017
Antiene Joint User Rail Facility (DA) 106-04-00	DoP	02/11/2000 - 02/11/2025
Bore Licence 20BL111869	NOW	24/04/2005 - 23/04/2010
Bore Licence 20BL171953	NOW	27/08/2008 - Perpetuity
Bore Licence 20BL171954	NOW	27/08/2008 - Perpetuity
Bore Licence 20BL171955	NOW	27/08/2008 - Perpetuity
Bore Licence 20BL171956	NOW	27/08/2008 - Perpetuity
Bore Licence 20BL171957	NOW	27/08/2008 - Perpetuity
Fixed Radiation Gauge Registration: 10952	DECCW	01/07/2009 - 20/06/2011
Fixed Radiation Gauge Registration: 11555	DECCW	29/02/2008 - 08/03/2010
Fixed Radiation Gauge Registration: 939	DECCW	29/02/2008 - 02/02/2010
Licence to Sell / Possess Radioactive Substances 31157	DECCW	29/02/2008 – 10/03/2011
Environmental Protection Licence 1323	DECCW	Expires 01/05/2011
Dangerous Goods Notification Acknowledgement 35/019387	WorkCover NSW	Expires 19/02/2010
Dangerous Goods Licence to Store 07-100017-001	WorkCover NSW	Expires 08/05/2011
Emplacement Area Approval 317541026001	DII	23/04/2007 - Not applicable
Prescribed Dams (Liddell Ash Dam Levee, Access Road Dam, Delpah Dam)	DSC	Not applicable

Drayton Mine operates under an Environmental Management System (EMS) accredited to ISO 14001. It has a Community Consultative Committee (Drayton CCC) and since its inception has been an invaluable socio-economic contributor to the Muswellbrook LGA.

2.2 DRAYTON SOUTH

The Drayton South area, which has previously been known as Mount Arthur South and Saddlers Creek, has been identified as a coal resource area since the 1940s.

Prospecting for coal in the Drayton South area commenced in the late 1940s with exploration intensifying during the 1960s and 1970s. In 1979, the NSW Government issued a prospecting authority for coal (Authority 169) to the Electricity Commission of NSW with respect of the Drayton South area.

In 1982, the Mount Arthur South Coal Company Pty Ltd submitted an application for planning approval for coal mining in the area with development consent granted by the Minister for Planning on 22 September 1986. A ML was then issued on 22 August 1989. The development consent and ML lapsed in 1991 and 1994 respectively due to failure to physically commence the project.

Anglo American was granted EL 5460 in August 1997 and was recently renewed until 1 April 2013. During this time extensive exploration activities have been undertaken to determine the extent and economic value of the coal resource present.

2.2.1 Drayton South Existing Licences and Approvals

Table 2 outlines the status of existing licences and approvals with regard to Drayton South.

Table 2
Drayton South Existing Licences and Approvals

Approval Document	Approval Authority	Approval Term
EL 5460	DII	Expires 1 April 2013
WAL 491	NOW	Perpetuity
WAL 1066	NOW	Perpetuity
Bore Licence 20BL106334	NOW	Perpetuity

2.3 ENVIRONMENTAL MANAGEMENT

Anglo American has developed and implemented an Environmental Monitoring Program (EMP) for the Project since 1998 for the purposes of securing background monitoring data and to satisfy the requirements of EL 5460. The EMP has involved the collection of a range of environmental monitoring aspects, including:

- Meteorological data;
- Air quality data (including depositional dust and suspended dust concentration);
- Background noise data;
- Surface water data; and
- Groundwater data.

A summary of the components of the EMP is provided in **Table 3** with monitoring locations shown on **Figure 2**.

Table 3
Environmental Monitoring Program

Aspect	Mechanism	Monitoring Location	Parameters Monitored
Meteorology	Meteorological station	Plashett (MS)	Rainfall, temperature, relative humidity, solar radiation, wind speed, wind direction and deviation of wind direction
Air quality (Depositional dust)	Dust deposition gauges	Edderton (D8)	Depositional dust (g/m2/month)
		Drayton (D9)	
		Jerrys Plains School (D10)	
Air quality (Dust	High Volume Air Samplers (HVAS)	Llanillo (D11)	Total Suspended Particulate (TSP) (µg/m3)
		Randwick Park (D12)	

Aspect	Mechanism	Monitoring Location	Parameters Monitored
concentration)		Llanillo (HV2a)	
		Edderton (HV4)	
		Jerrys Plains (HV5)	TSP and PM10 (µg/m3)
Noise	Environmental noise loggers (unattended) and noise monitoring surveys (attended)	Arrowfield Winery (N1)	dB(A) (Laeq, LA1, LA10, LA90)
		Randwick Park (N2)	
		Llanillo (N2a)	
		Jerrys Plains Post Office (N6)	
Surface water	Sample collection	Saddlers Creek (W1)	Range of water quality parameters including EC, pH, TDS and TSS
		Saddlers Creek (W3)	
		Bowfield / Saddlers Creek (W4)	
Surface water (Storm event)	Sample collection (following storm event)	Tributaries entering Hunter River (S1 & S2)	EC, pH, TDS, TSS
Groundwater	Sample collection and piezometer loggers	13 Sites (DD)	Water quality (range of parameters), depth and speciation analysis

The EMP will continue to be enhanced and revised as required for the Project to ensure proactive and ongoing environmental monitoring and management.

2.4 EXISTING ENVIRONMENT

2.4.1 Regional Setting

The closest urban centre to the Project is the village of Jerrys Plains, which is situated 10 km to the south-west of the Project Boundary. The town of Muswellbrook is the main regional centre located 13 km to the north (see **Figure 1**). The Golden Highway is located south of the Project Boundary and provides access throughout the region from Jerrys Plains to Denman and then on through Merriwa to Dubbo. Edderton Road, a minor rural road that currently runs through EL 5460, links Jerrys Plains and the immediate area to Muswellbrook in the north.

The Wollemi National Park is situated approximately 10 km south of the Project Boundary. This park forms the largest wilderness area in NSW and is part of the recently declared Greater Blue Mountains World Heritage Area (DECCW, 2009).

There are numerous small creeks, which drain the area and feed into the larger creeks (see **Figure 1**). The main water courses are Saddlers Creek, which has a low flow and poor water quality due to groundwater discharge (except in times of high run-off events); and the Hunter River, which flows constantly and provides water to the majority of the agricultural pursuits in the area. All of the smaller creeks are ephemeral. The Hunter River is located to the south of the Project Boundary and meanders from north-west to south-east.

The Drayton South area comprises the central reaches of the Saddlers Creek catchment area. Saddlers Creek flows in a south-easterly direction, eventually discharging into the Hunter River to the south-west of the Project Boundary. Plashett Dam, located to the south-east of the Project Boundary, was purposely built to supply water to the nearby Bayswater Power Station. It is situated on Saltwater Creek which only flows during times of dam discharge into the Hunter River.

DRAYTON SOUTH

Environmental Monitoring Program

Cad File: 07199C.dwg	Date: 24.02.11	Drawn: CP	Figure 2

2.4.2 Topography

The topography of the Drayton South area consists of moderate undulating foothills to steeply sloping hills over open paddock grazing land. The topographic elevation ranges from approximately RL 100 m near the Hunter River to RL 200 m where a distinct ridgeline dissects the Drayton South area in a north-east south-west trend. The land surface within the Drayton South area is primarily cleared, open paddock grazing land, with minimal tree cover and good grass cover.

The ground adjacent to Saddlers Creek is flat; however, away from the creek bed, the land is undulating to hilly, with slopes between 20% and 30%.

2.4.3 Climate

As shown in **Table 4**, temperatures range from an average maximum of 31.7°C in summer down to an average minimum of 3.8°C in the winter months. It is common for temperature inversions to occur in the Upper Hunter Valley, based on experience with nearby mining developments during the study of noise enhancing conditions.

Humidity levels vary throughout the year and are dependent on seasonal variations; however, there is a mean annual humidity of 70% at 9:00 am and 47% at 3:00 pm. Typically, extreme heat wave conditions can be expected between October and March, and frosts between May and August.

The most common winds are from the north-west and south-east quadrants. The winds from the north-west and west are present throughout the year, and are strongest during spring. Winds from the south-east are predominant throughout the year, except during winter when winds arrive typically from a north-west direction.

Table 4
Average Climatic Conditions Measured by BoM from 1884 to 2010

Month	Mean Daily Temperature (°C)		Mean Rainfall (mm)	Mean Rain Days	Mean Relative Humidity (%)		Mean Daily Evaporation (mm)
	Min	Max			9 am	3 pm	
January	17.1	31.7	77.0	6.5	67	47	7.1
February	17.1	30.9	72.4	5.9	72	50	6.0
March	15.0	28.9	58.3	5.7	72	49	5.0
April	11.0	25.3	44.5	4.9	72	49	4.0
May	7.5	21.3	40.6	4.9	77	52	2.9
June	5.3	18.0	47.5	5.4	80	54	2.0
July	3.8	17.4	43.8	5.3	78	51	2.3
August	4.4	19.4	36.4	5.2	71	45	2.6
September	7.0	22.9	41.5	5.2	65	43	3.7
October	10.3	26.2	52.1	5.9	59	42	5.3
November	13.2	29.1	60.3	6.2	60	42	6.5
December	15.7	31.3	68.2	6.4	61	42	6.6
Annual	**10.6**	**25.2**	**642.8**	**67.5**	**70**	**47**	**4.5**

Source: BoM (January 2011)

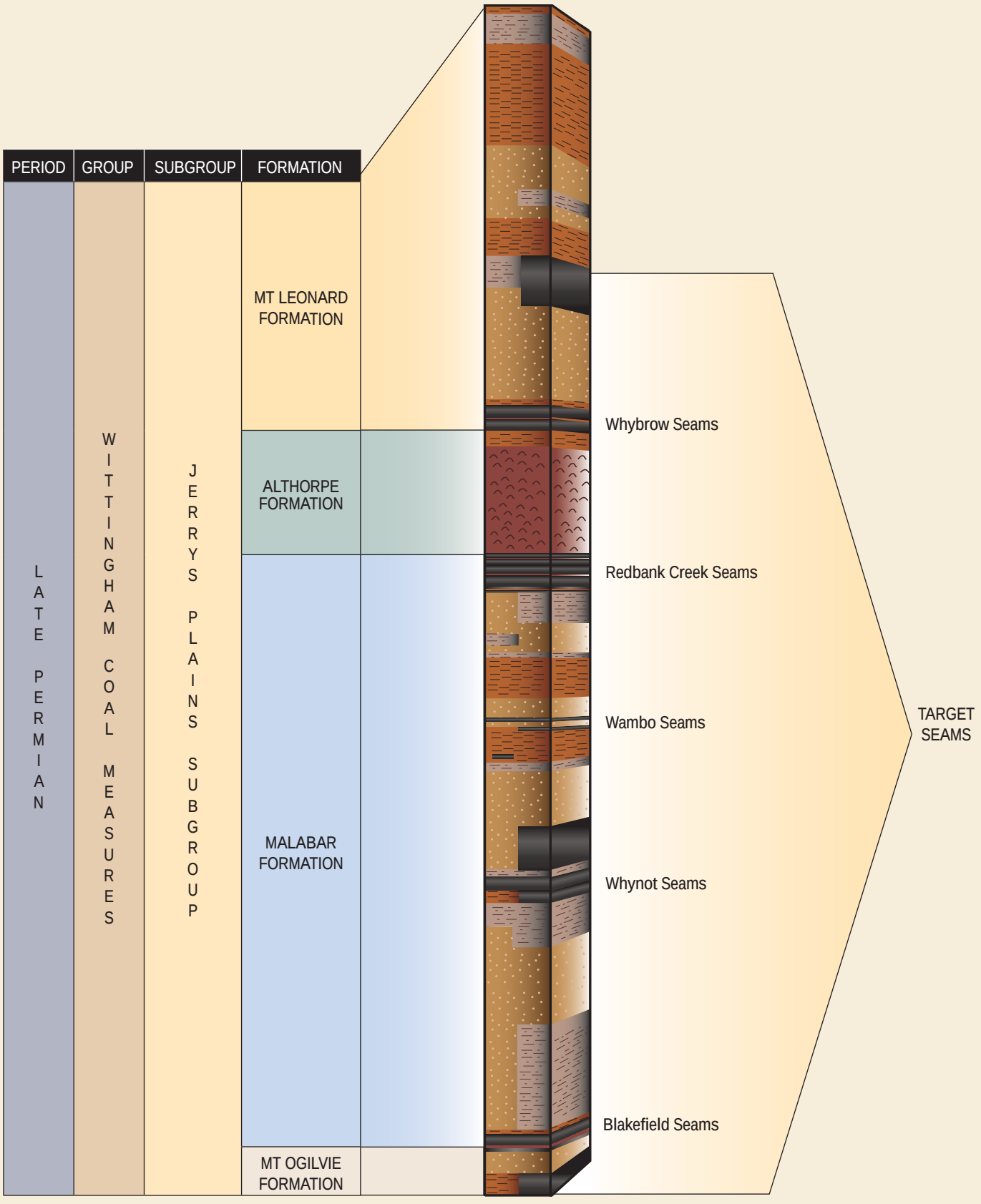
Jerrys Plains has an average annual rainfall of 642.8 mm, which predominantly falls in the warmer months of the year (November to February), with January being the wettest month. Mean daily pan evaporation is consequently higher in the warmer months, reaching 7.1 mm in January, compared to 2.0 mm in June. There is an average daily evaporation of 4.5 mm/day. This exceeds the mean rainfall throughout the year, with the highest moisture deficit occurring during summer.

2.4.4 Geology

The stratigraphic sequence across the Drayton South area comprises of two distinct units; namely, a Permian coal seam sequence unconformably overlain by thin Quaternary alluvial deposits. The Quaternary alluvial and colluvial deposits consist of sand and gravel, and occur along parts of Saddlers Creek and Saltwater Creek.

2.4.5 Coal Resource

The Project area is located in the northern Hunter Coalfield on the western side of the Muswellbrook Anticline. Strata of the Late Permian Wittingham Coal Measures outcrop in the area and generally dip gently to the south-west. The coal measures include a sequence of coal seams, siltstones, sandstones and claystone. The five main coal seams targeted are located in the upper part of the Jerrys Plains subgroup of the Wittingham Coal Measures. A typical stratigraphic column of the Project area is shown in **Figure 3**.



Coal
Tuff
Claystone
Siltstone
Sandstone

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Sources: Anglo American 2011

DRAYTON SOUTH

Indicative Stratigraphic Column

Filename: 1049_DraytonSTHstrat.indd	Date: 23.2.11	Drawn: MB	Figure 3

2.5 LAND USE

The Upper Hunter region has a long history of rural land use for a variety of agricultural and industrial activities, predominantly grazing and coal mining. The current dominant land uses within and adjacent to the Project area include open cut coal mining, power generation, thoroughbred horse breeding, viticulture, cattle grazing and rural residential areas. The Hunter River plays an important role in the region's mining, power generation and agricultural enterprises.

The Project is located largely within an industrial setting; however, it is in close proximity to two of the premier thoroughbred horse studs in NSW – Coolmore Stud and Woodlands Stud. Coolmore Stud at Jerrys Plains is located immediately adjacent to and shares a common boundary with the Project (see **Figure 4**). Darley Australia owns and operates Kelvinside Stud (located near Aberdeen) and Woodlands Stud which is located immediately adjacent to the Project and also shares a common boundary. Arrowfield Estate is also located to the south of the Project (see **Figure 4**).

Open cut coal mining is a common land use in the area surrounding the Project, as shown in **Figure 1**. Drayton Mine is located approximately 3 km to the north-east of the Drayton South area, while Mount Arthur Coal adjoins the Project area to the north. Hunter Valley Operations are also located approximately 3 km to the south-west of the Project Boundary.

The Dellworth EL 6812 adjoins the Project area to the immediate north-east and east, while the Spur Hill EL 7429 adjoins the Project area to the immediate west (see **Figure 1**).

Macquarie Generation's Bayswater and Liddell Power Stations are located to the north-east of the Project. Macquarie Generation's buffer lands are also located to the immediate north-east of the Project, between the MLs and Power Stations. In March 2010, the NSW State Government granted 'Concept Approval' to Macquarie Generation for the development of a new gas or coal fired power station (known as Bayswater B Project) on its landholdings adjacent to the Project area.

The small rural township of Jerrys Plains is located approximately 10 km to the south-east, with the nearest regional centre, Muswellbrook, approximately 13 km to the north. In addition, there are private freehold lands to the north of the existing Drayton Mine, including the Antienne Estate. Small rural and rural-residential properties are also located to the south-west and south-east of the Drayton South mining area.

The Wolfgang family are prominent graziers in the area, with extensive properties located within EL 5460 and adjacent to the western extent of the Project Boundary (see **Figure 4**).

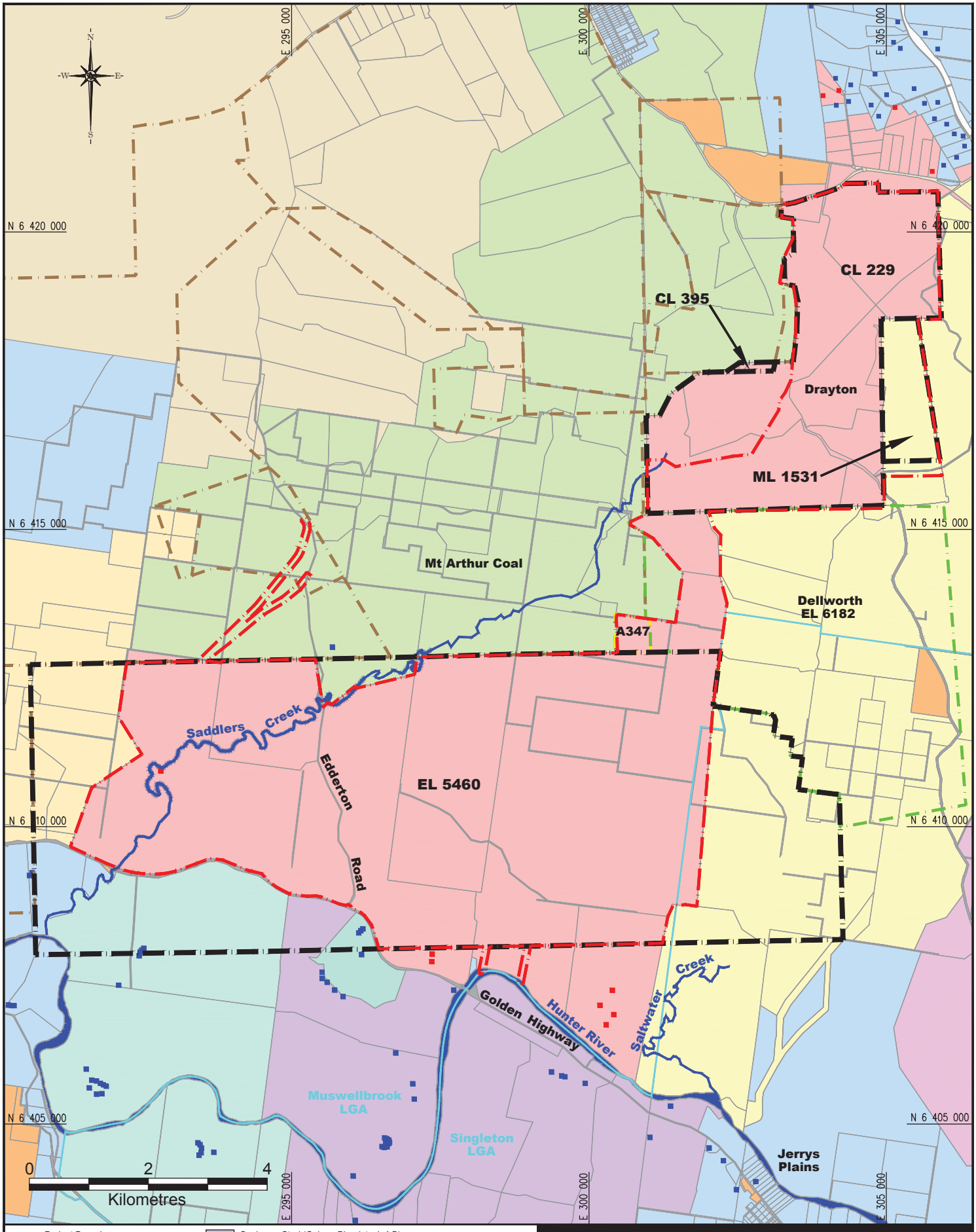
2.6 LAND OWNERSHIP

Land ownership within and surrounding the Project Boundary is shown on **Figure 4**. Currently all of the land required for the Project is owned by Anglo American with the exception of a parcel of land required for the proposed relocation of Edderton Road. This land is owned by HVEC which also own the majority of land to the immediate north of the Project while land to the east is owned by Macquarie Generation.

Darley Australia and Coolmore Australia have considerable land holdings to the south of the Project and the Wolfgang family has extensive land holdings to the west and south-west.

2.7 MINING AUTHORITIES

Mining authorities within and surrounding the Project Boundary are shown on **Figure 4**. The majority of the Project is within Anglo American's EL 5460 and the existing Drayton Mine tenements ML 1531 and CL 229. Part of the Project Boundary pertaining to the required transport corridor between Drayton Mine and Drayton South falls within EL 6182 which is subject to a renewal application. Part of the Project Boundary also falls within Authorisation 347 which is currently held by HVEC. The specific requirements for mining authorities associated with the Project are discussed further in **Section 4.2**.



Project Boundary
Drayton South EL Boundary
Other Mining Tenements
Delworth EL Boundary
Mt Arthur Authorisation Boundary
LGA Boundary
Private Freehold
Saddlers Creek Joint Venture
Mt Arthur Coal
Coal & Allied
Macquarie Generation
Woodlands Stud (Darley)
Coolmore Stud (Calago Bloodstock AG)
Arrowfield Estate
Wolfgang Property
Crown Land
State Forest
Not Searched
Private Residences
Saddlers Creek Joint Venture Residences

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DRAYTON SOUTH

Land Ownership & Tenements

Cad File: 07198C.dwg	Date: 24.02.11	Drawn: CP	Figure 4

3 PROJECT DESCRIPTION

This section provides a detailed description of the Project and a discussion of the key alternatives that were considered during the formulation of the Project description.

3.1 MINING OPERATIONS

The Project will require a new Project Approval under Part 3A of the EP&A Act for the extraction of coal by both open cut and highwall mining operations to the south of the existing Drayton Mine within EL 5460. The Project has the potential to recover at least an additional 100 million tonnes (Mt) of ROM coal.

The Project is required to provide a replacement resource for the existing Drayton Mine. Drayton Mine's current Project Approval expires in 2017; however, due to a higher than predicted mining rate current resources are set to be fully exhausted by 2015. As such the Project seeks approval for open cut and highwall mining with a production rate of up to 7 Mtpa ROM coal over a 26 year period. This will be achieved by:

- Utilising the existing Drayton Mine workforce and equipment fleet (with the addition of a highwall miner and coal haulage fleet) to extract coal reserves down to the Blakefield Seam;
- Utilising the existing Drayton Mine infrastructure, including:
    - CHPP and associated facilities;
    - Rail loop and associated load out infrastructure;
    - Workshops;
    - Bath houses;
    - Mining void water and waste storages; and
    - Administration offices.
- The construction of a transport corridor between Drayton South and Drayton Mine;
- The construction of mine site facilities at Drayton South;
- The capability to process the ROM coal through the existing Drayton Mine CHPP and / or bypass coal directly to market;
- Transport of product coal by rail via the Antiene Rail Spur on the Main Northern Railway to the Port of Newcastle for export consistent with Drayton Mine's current operations; and
- The use of Drayton Mine's existing voids for rejects and tailings disposal and water storage. Use of such voids will be consistent with any agreements at foot with Macquarie Generation.

The Project is seeking approval to transport product coal by rail via the Antiene Rail Spur on the Main Northern Railway to the Port of Newcastle for export. If the Project is approved, it is intended that the existing Antiene Rail Spur DC 106-04-00 will be surrendered and all operations

pertaining to the Antiene Rail Spur by Drayton Mine and Drayton South will be approved under the new Project Approval.

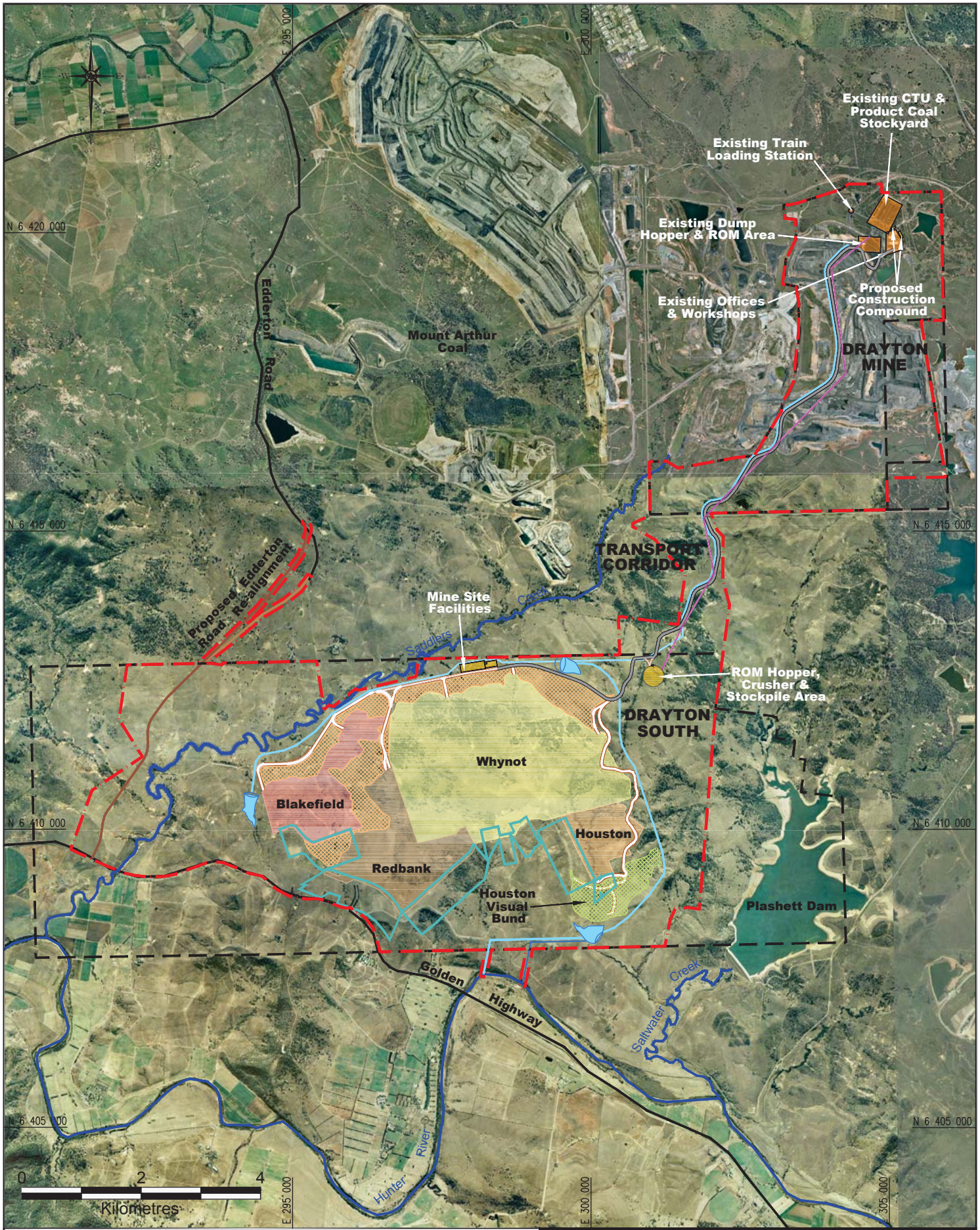
There will be a period when Drayton Mine and Drayton South will operate concurrently as coal mining operations phase from the existing mine to the Drayton South area.

The overall Project layout is shown below on **Figure 5**. The conceptual mine plan layout for the Project is shown on **Figure 6** to **Figure 11** for years 2, 5, 10, 15, 21 and 26 respectively.

During the construction phase, the transport corridor, mine site facilities and all initially required water management and power reticulation infrastructure will be established, along with the realignment of Edderton Road. Following the completion of construction there will be a period where mining ramps down at Drayton Mine and commences at Drayton South. During this period personnel and equipment will be progressively transferred from Drayton Mine to Drayton South up until the stage when mining is completed at Drayton Mine and all mining operations will be undertaken at Drayton South.

Mining operations at Drayton South will commence in the Whynot, Blakefield and Redbank mining areas generally progressing north to south (see **Figure 6**). Between year 2 and year 5 the Houston visual bund will be constructed to shield views into the Houston mining area. During this period, mining in Whynot, Blakefield and Redbank will also progress as these mining areas start to come together with the commencement of progressive rehabilitation works (see **Figure 7**).

From year 5, highwall mining operations commence, initially in the Redbank mining area and then by year 10 in the Houston mining area. In approximately year 15, highwall mining will also be undertaken in the Blakefield mining area and finally, by year 26 in the Whynot mining area (see **Figure 8** to **Figure 11**). Open cut mining and progressive rehabilitation continues throughout the life of the operation. By year 15 the majority of rehabilitation for the Redbank mining area will be complete with all rehabilitation in the Blakefield mining area completed by year 21 and the remainder of Drayton South scheduled to be rehabilitated to final landform by year 26 (see **Figure 8** to **Figure 11**).



Project Boundary
Mining Authorisation Boundaries
Mine Haul Roads
Haul Road & Light Vehicle Access Road
Conveyor Option
Proposed Edderton Road Re-alignment Option 1
Proposed Edderton Road Re-alignment Option 2
Water Pipeline
Discharge Pipeline

Highwall Mining Areas
Overburden Emplacement
Existing Infrastructure
Proposed Infrastructure
Dams

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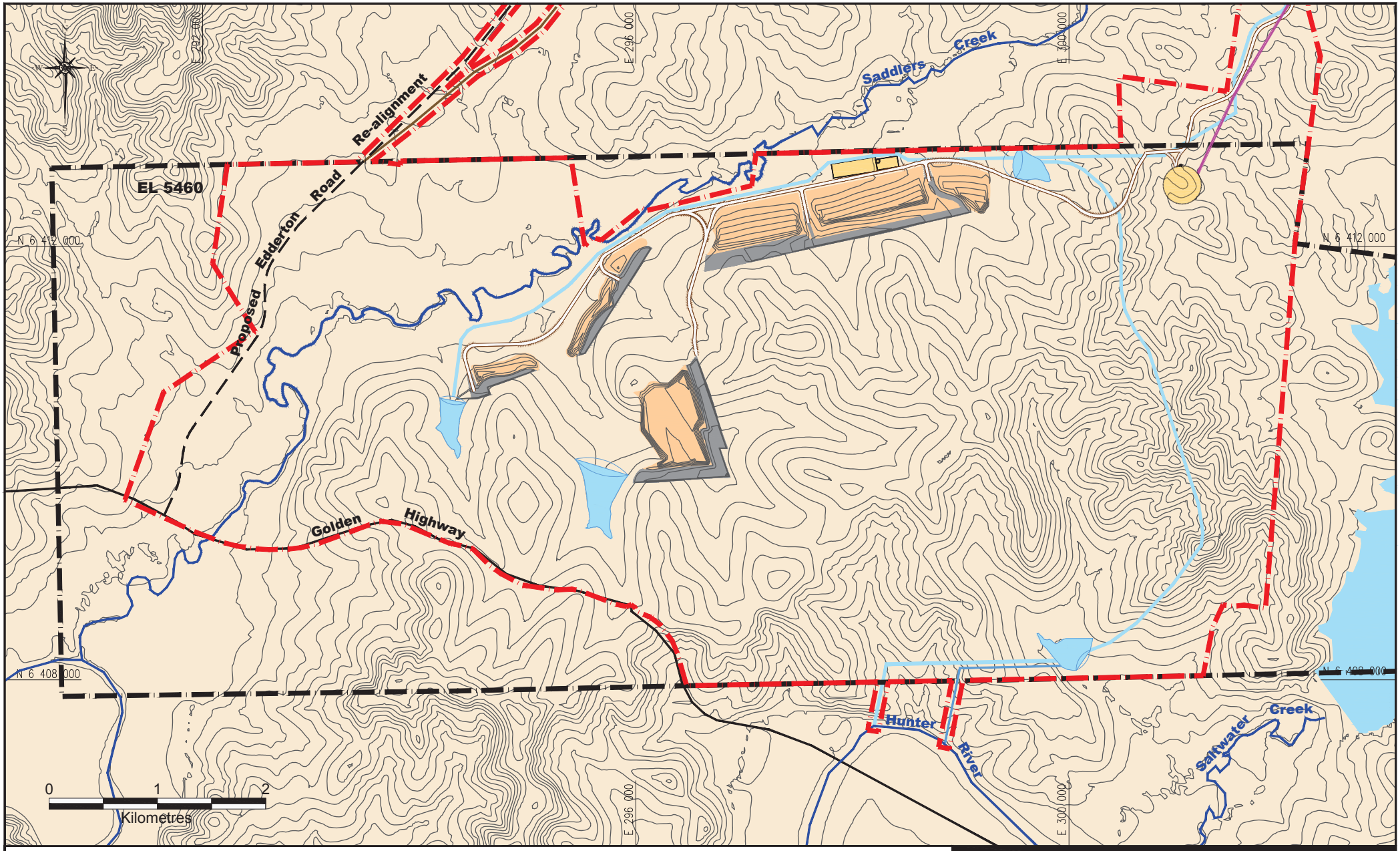
DRAYTON SOUTH

Conceptual Project Layout

Cad File: 07181G.dwg	Date: 24.02.11	Drawn: CP	Figure 5



- Project Boundary
- Drayton South EL Boundary
- Haul Roads
- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Water Pipeline
- Discharge Pipeline
- Conveyor Option
- Active Mining
- Spoil
- Proposed Infrastructure
- Dams

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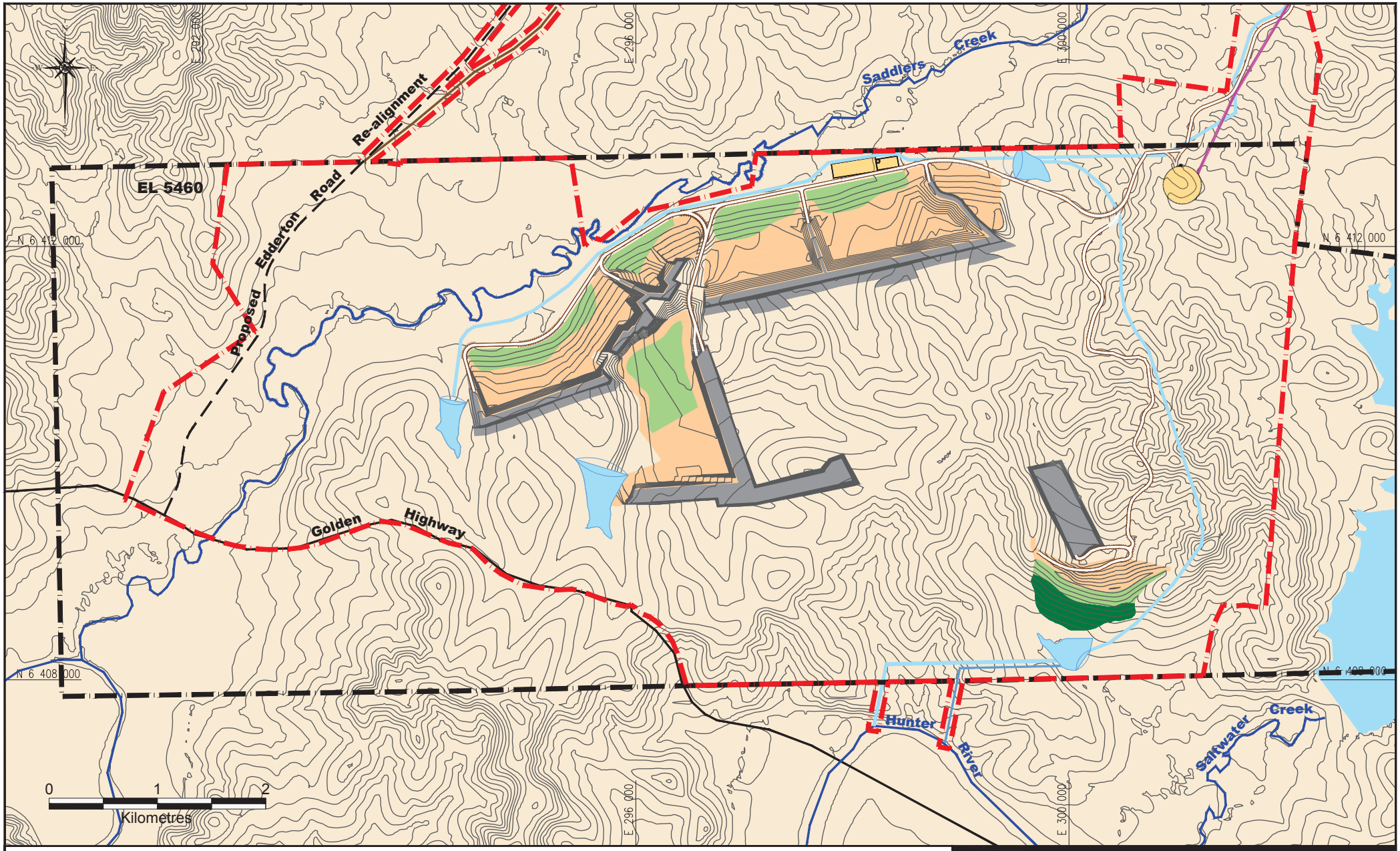
DRAYTON SOUTH

Conceptual Year 2 Mine Plan

Cad File: 07172E.dwg	Date: 24.02.11	Drawn: CP	Figure 6



- Project Boundary
- Drayton South EL Boundary
- Haul Roads
- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Water Pipeline
- Discharge Pipeline
- Conveyor Option
- Active Mining
- Spoil
- Proposed Rehabilitation
- Previous Rehabilitation
- Proposed Infrastructure
- Dams

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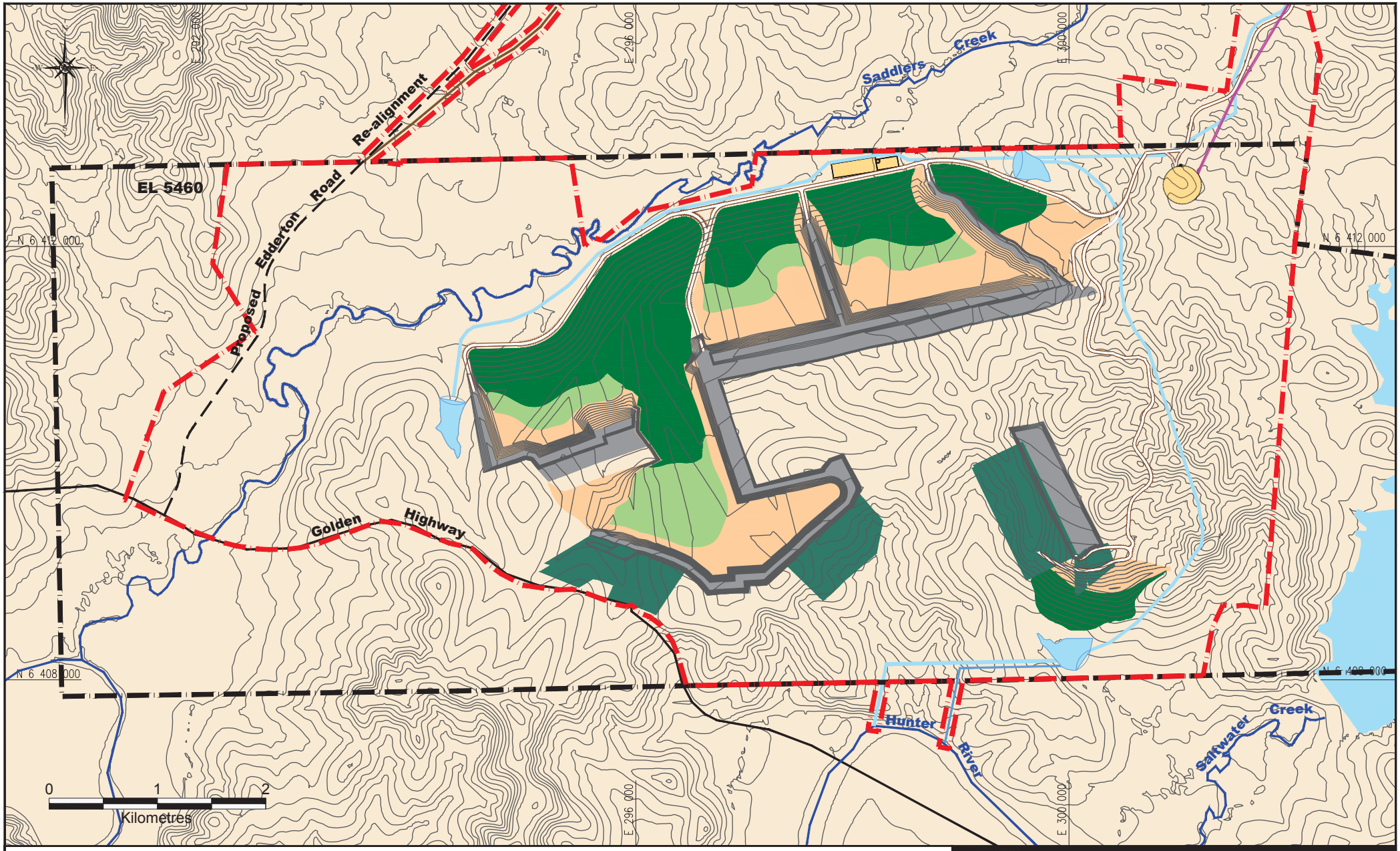
DRAYTON SOUTH

Conceptual Year 5 Mine Plan

Cad File: 07173E.dwg	Date: 24.02.11	Drawn: CP	Figure 7



- Project Boundary
- Drayton South EL Boundary
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- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Water Pipeline
- Discharge Pipeline
- Conveyor Option
- Active Mining
- Spoil
- Proposed Rehabilitation
- Previous Rehabilitation
- Highwall Mining
- Proposed Infrastructure
- Dams

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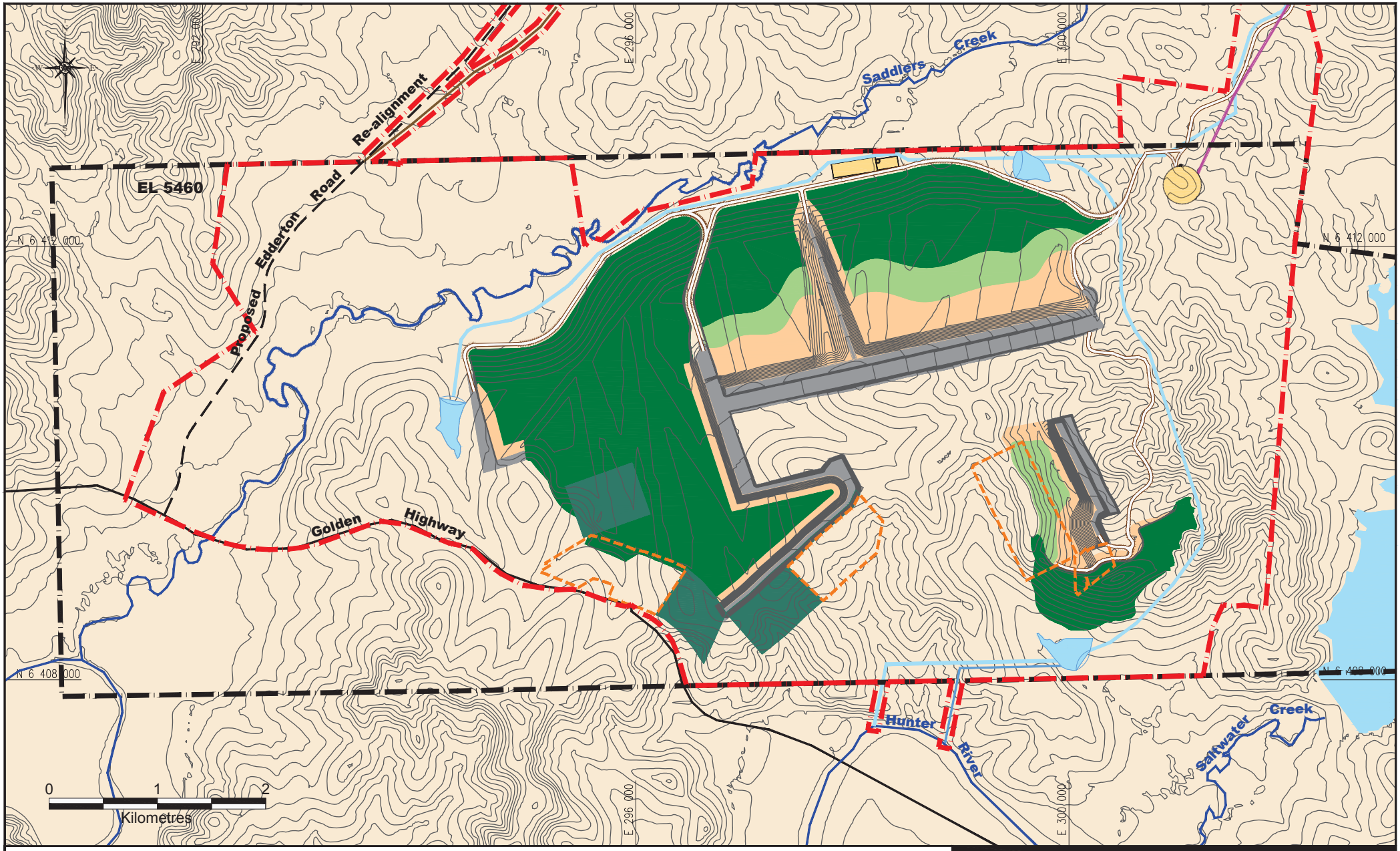
DRAYTON SOUTH

Conceptual Year 10 Mine Plan

Cad File: 07174F.dwg	Date: 24.02.11	Drawn: CP	Figure 8



- Project Boundary
- Drayton South EL Boundary
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- Proposed Edderton Road Re-alignment Option 2
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- Discharge Pipeline
- Conveyor Option
- Active Mining
- Spoil
- Proposed Rehabilitation
- Previous Rehabilitation
- Highwall Mining
- Previous Highwall Mining
- Proposed Infrastructure
- Dams

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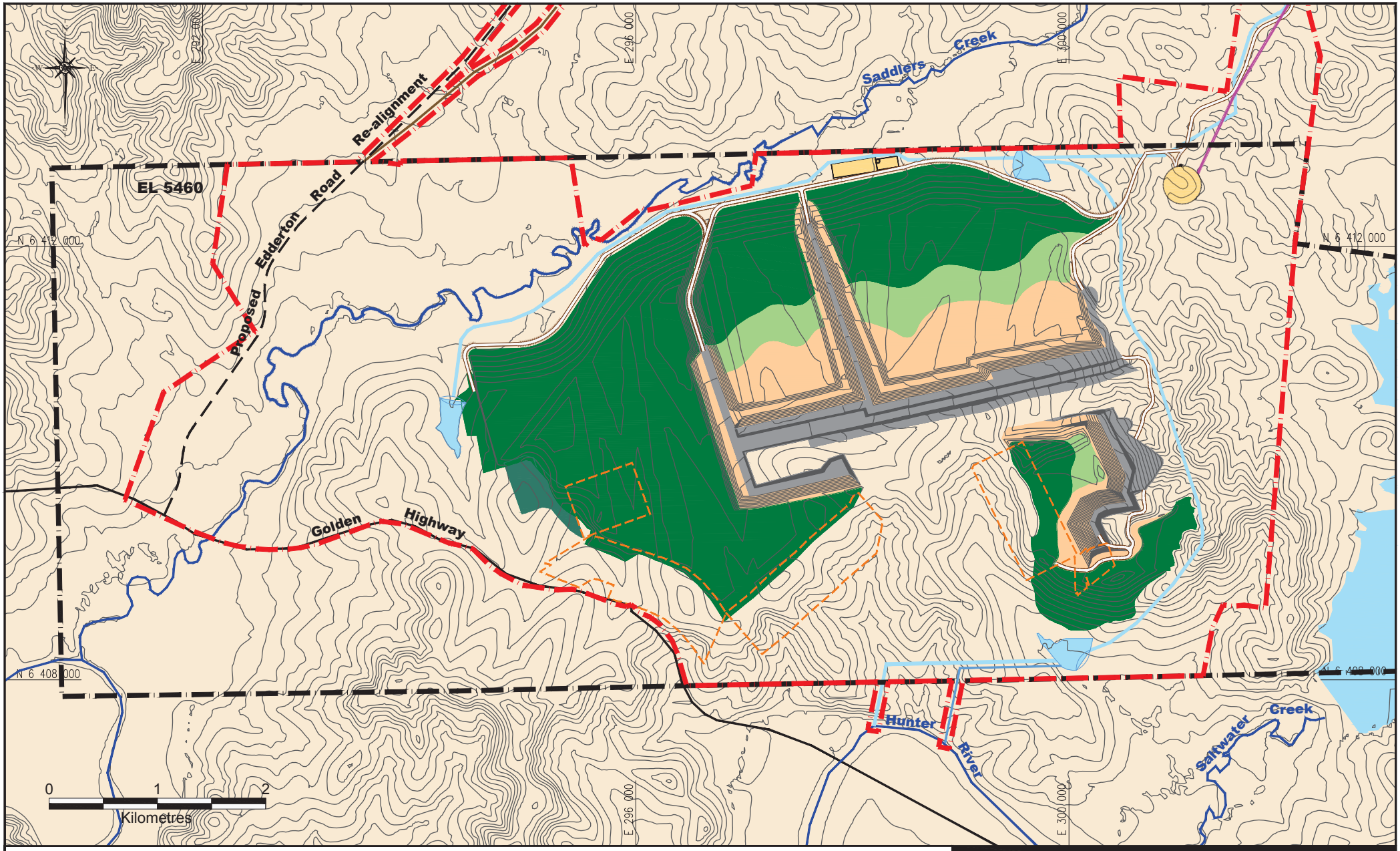
DRAYTON SOUTH

Conceptual Year 15 Mine Plan

Cad File: 07175F.dwg	Date: 24.02.11	Drawn: CP	Figure 9



- Project Boundary
- Drayton South EL Boundary
- Haul Roads
- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Water Pipeline
- Discharge Pipeline
- Conveyor Option
- Active Mining
- Spoil
- Proposed Rehabilitation
- Previous Rehabilitation
- Highwall Mining
- Previous Highwall Mining
- Proposed Infrastructure
- Dams

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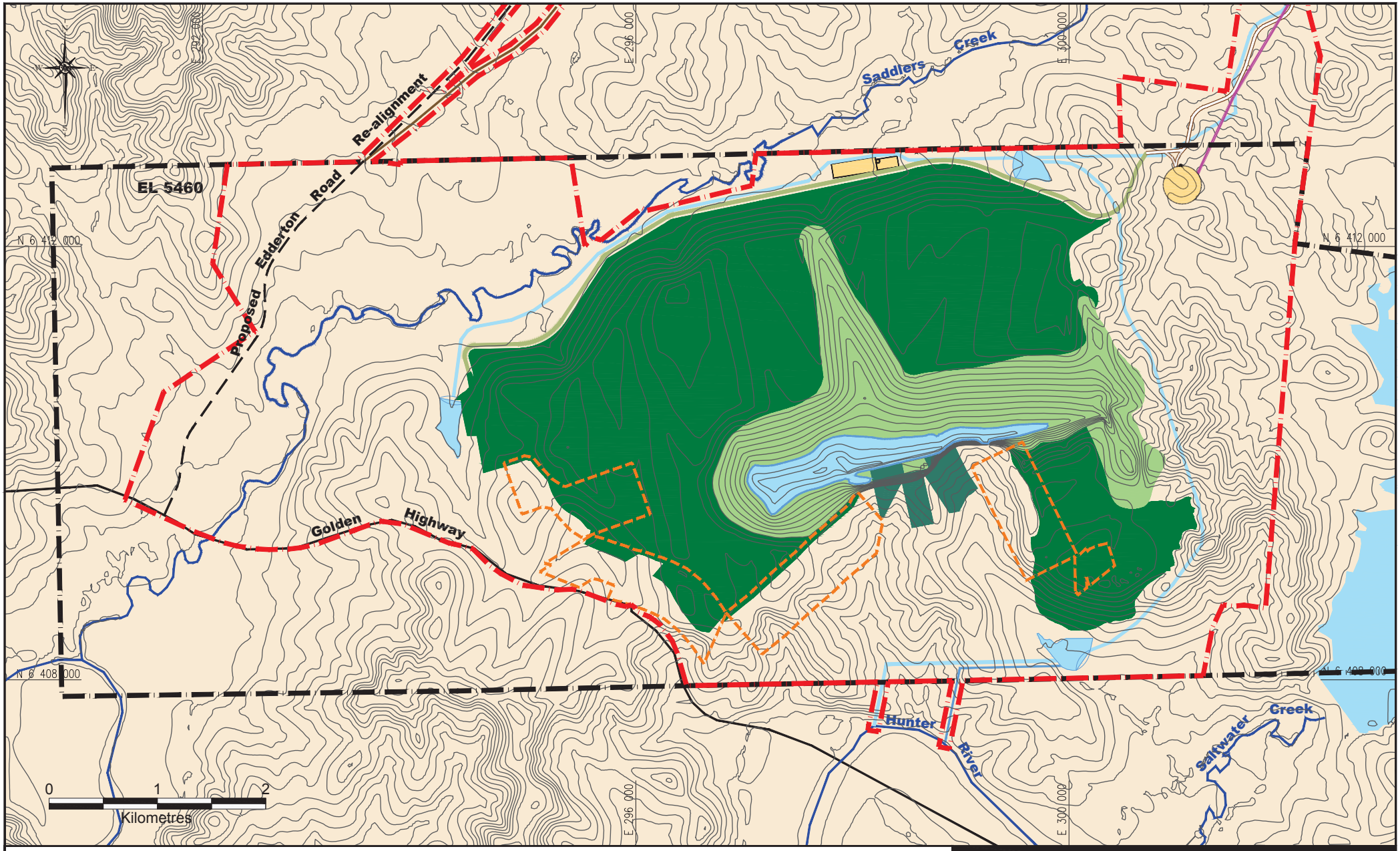
DRAYTON SOUTH

Conceptual Year 21 Mine Plan

Cad File: 07176F.dwg	Date: 24.02.11	Drawn: CP	Figure 10



- Project Boundary
- Drayton South EL Boundary
- Haul Roads
- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Water Pipeline
- Discharge Pipeline
- Conveyor Option
- Proposed Rehabilitation
- Previous Rehabilitation
- Road Rehabilitation
- Highwall Mining
- Previous Highwall Mining
- Proposed Infrastructure
- Dams

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DRAYTON SOUTH

Conceptual Year 26 Mine Plan

Cad File: 07185E.dwg	Date: 24.02.11	Drawn: CP	Figure 11

3.2 MINE INFRASTRUCTURE

The Project will utilise the existing Drayton Mine infrastructure including:

- CHPP and associated infrastructure;
- Rail loop and associated loadout infrastructure;
- Workshops;
- Bathhouse;
- Mining void water and waste storages; and
- Administration offices.

Coal from Drayton South will be transported to the Drayton Mine CHPP facilities along the transport corridor either by haul truck along a new haul road, or via an overland conveyor system.

The Project will require the construction of mine site facilities at Drayton South. The mine site facilities will be limited to satellite site offices and amenities to support mining activities and mining equipment services.

3.2.1 Coal Handling and Preparation Plant

The Project will include minor upgrading of the Drayton Mine CHPP to allow washing of Drayton South coal at an average rate of 800 t/hr. Minor modifications will also be made to the existing coal stockpiles.

3.2.2 Rail Load Out

An upgrade to the rail load out system is included as part of the Project. The upgrades include:

- Installation of a new reclaimer, designed to operate either independently or concurrently with an existing reclaimer on an adjacent product stockpile; and
- Upgrades to the existing train load out conveyors.

3.2.3 Mine Site Facilities

As the Project is intended to replace the current mining operations at Drayton Mine, minimal changes are required to the existing surface facilities. The current administration office, bath house and workshops will be utilised for the Project. The only new facilities required to be developed are the Drayton South mine site facilities.

The proposed location of the Drayton South mine site facilities is shown on **Figure 5**.

The mine site facilities will comprise of:

- Parking for heavy and light vehicles;
- A vehicle maintenance workshop with supporting services;
- Administration, training, crib and amenities building;
- Light and heavy vehicle wash station incorporating a catch dam, sediment control pond and oil separator;

- Raw and fire water tanks;
- Septic system; and
- A helipad.

These facilities will be linked to Drayton Mine via the transport corridor.

3.2.4 Transport Corridor

The Project includes two options for the transport of coal from Drayton South to Drayton Mine CHPP. These include:

Option 1 Road transport along a dedicated haul road; and

Option 2 Overland conveyor from a ROM pad and crushing station located at Drayton South.

The proposed alignment of the haul road is shown on **Figure 5**. A light vehicle access road will generally run parallel to the haul road to allow safe separation between light and heavy vehicles. An overpass for the haul road and required dragline relocation from Drayton Mine to Drayton South will be required to pass over the existing overland conveyor servicing Macquarie Generation.

If coal haulage by overland conveyor is to occur, the proposed alignment is shown on **Figure 5**. ROM coal from mining operations at Drayton South will be transported from the mining face, supplied to a ROM hopper and then conveyed to the existing ROM facilities at Drayton Mine. Initially the haul road option will be used for operations with the conveyor system only constructed once coal production reaches a level which makes this option economically feasible.

3.2.5 Site Access

All access to the Project will be via the existing Drayton Mine access road off Thomas Mitchell Drive and will use the transport corridor to travel between Drayton Mine and Drayton South. An emergency entry / exit will be required to be developed and maintained off Edderton Road for health and safety purposes only.

3.2.6 Services

The following services and utilities will be required for the Project:

- Electricity supply;
- Water transfer pipeline;
- Fibre optic cable; and
- Site wide radio telecommunications for communications, monitoring and control activities (including real time environmental monitoring).

These services will generally follow the haul road alignment through the transport corridor.

3.3 MOBILE EQUIPMENT

The existing mining equipment fleet, including a dragline used for Drayton Mine will be adequate for Drayton South mining operations. The fleet will be transitioned to Drayton South over a period

of time and aligned with the transfer of mining operations from the Drayton Mine to Drayton South. As the existing mining equipment is transferred, equipment that requires retrofitting with sound attenuation equipment will be overhauled with fit out prior to moving to Drayton South.

Additional coal loading, haulage and highwall mining equipment will be required for the mining operations at Drayton South.

Table 5
Indicative Project Equipment List

Equipment	Number
Excavators and Loaders	10
Dozers	15
Trucks	40
Water Trucks	3
Grader	4
Scraper	1
Drills	4
Highwall Miner	1

3.4 MINE WATER MANAGEMENT

The proposed Drayton South water management system will be integrated with the existing Drayton water management system to enable optimal collection, use, recovery and recycling of water within the Project Boundary.

The initial catchment areas above the Drayton South mining area will require a system of catch dams, bunds, piped transfers and diversion drains to ensure the water upstream does not inundate the mining area during large rainfall events. The storage locations will evolve as the Project develops, and the catchment areas shift from pre-existing ground surface to rehabilitated mine spoil areas. Key water management infrastructure is shown on **Figure 6** to **Figure 11**.

It is also proposed that a portion of the existing southern void at Drayton Mine will be used as a water storage dam for the Project.

3.5 REJECT AND TAILINGS DISPOSAL

At the completion of coal mining operations at the existing Drayton Mine voids will remain. It is proposed that all coarse rejects and tailings from the Drayton South operation will be deposited in these voids. Use of such voids will be consistent with any agreements at foot with Macquarie Generation.

The proposed emplacement methods are consistent with those currently employed at Drayton Mine. Coarse rejects will be trucked from the CHPP rejects bin and deposited within an existing void. Thickened tailings will then be pumped from the CHPP via a pipe line and also stored in an existing void. Decant water will be recovered for re-use within the site water management system.

3.6 WORKFORCE AND HOURS OF OPERATION

The Project will utilise the existing Drayton Mine workforce with hours of operation remaining unchanged at 24 hours a day, seven days per week.

Workforce requirements and hours of operation for the construction phase of the project are discussed in **Section 3.7**.

3.7 CONSTRUCTION PHASE

The majority of construction activities will be undertaken over a 15 month period prior to commencement of mining operations at Drayton South. The proposed construction hours for the realignment of Edderton Road are 7.00am to 5.00pm Monday to Saturday (except in the case of emergency). Construction activities onsite, including CHPP and train load out upgrades and work at Drayton Mine are proposed to be undertaken on a 24 hours a day, seven days a week schedule consistent with operational rosters.

A construction workforce of approximately 300 employees will be required during the peak construction phase of the Project.

Access to the Drayton Mine and Drayton South sites for construction activities will be via the existing Drayton Mine from Thomas Mitchell Drive. A series of construction roads will be created to provide access to the various work fronts required for the Project. Construction site facilities will be established predominately in the existing Drayton Mine infrastructure area, with temporary satellite facilities positioned adjacent to the work fronts at the Drayton South mine facilities and at the construction site adjacent to the Macquarie Generation haul road conveyor overpass.

Materials for road construction are expected to be sourced from within the existing Drayton Mine site and the Drayton South area. The existing quarry located within the transport corridor for the Project is proposed to be re-established and utilised for the purpose of road construction. Limited quarry blasting and crushing will be required for the production of material from the construction quarry.

3.7.1 Edderton Road Realignment

A 7 km realignment is required to Edderton Road around the western limits of the Project. Approximately 4 km of the existing road passes through the Project Boundary, with the remaining 3 km located within HVEC owned land.

The realigned section of road will be designed in accordance with the Road and Traffic Authority's (RTA) Road Design Guide for a typical two-lane, two-way rural road with a nominal speed limit of 100 km per hr, providing an improved transport route.

The proposed realignment of Edderton Road will be designed in consultation with Muswellbrook Shire Council (MSC). It will complement the already approved realignment of the northern section of Edderton Road.

3.8 PROJECT ALTERNATIVES

Anglo American has undertaken detailed pre-feasibility studies into the Project, which included the consideration of numerous mine plan and operational alternatives. The primary objective of the pre-feasibility study was to minimise environmental and social impacts related to the Project

whilst maximising resource recovery and operational efficiency in order to justify the extension of the life of Drayton Mine.

The various Project alternatives that were considered during this process, included:

- Closure of the existing Drayton Mine as per schedule in 2015, with no development at Drayton South. This would result locally in the loss of approximately 450 jobs and associated future employment opportunities. It would also lead to the loss of local socio economic benefits that are created by Drayton Mine in addition to the loss of ongoing benefits and royalties and other payments to both the Federal and NSW State Government;
- The potential to mine the open cut mineable resource by underground mining methods has been investigated and deemed unviable as there are only a limited number of coal seams within the sequence that have any potential for underground mining. This approach would result in the sterilisation of significant non renewable coal reserves;
- Development of Drayton South for maximum resource recovery. This option includes a mine plan focusing on maximum resource recovery for the project in the absence of any environmental and stakeholder amenity constraints, mining further south and through the ridgeline towards key stakeholders located south of the Golden Highway. This approach would result in greater environmental and social impacts to local stakeholders, particularly with regard to air quality, noise and visual amenity; or
- The fourth alternative is the Project as it is proposed. Development of Drayton South with an environmentally sensitive, co-existent mine plan for stakeholders, with mining operations remaining behind the ridgeline, producing up to 7 Mtpa ROM coal for 26 years from open cut and highwall mining methods and utilising the existing infrastructure at Drayton Mine. This is considered the most economic and efficient alternative for all stakeholders. It will maximise the number of social and economic benefits associated with the Project and ensure that a significant coal resource is not sterilised in an area that has been set aside for mining since the late 1970s.

4 REGULATORY FRAMEWORK

The Project will require a new Project Approval under Part 3A of the EP&A Act to enable the operations as proposed to be conducted at Drayton South. The existing Drayton Mine PA 06_0202 will continue to be relied upon for the approved operations at Drayton Mine until its expiry. At this time the new Project Approval as sought for Project will be solely relied upon for the operations as described within the Project Boundary.

Both the existing operations at Drayton Mine and Drayton South as proposed will continue to utilise the Antiene Rail Spur facility consistent with the existing DC 106-04-00. However given that the current approval for the Antiene Rail Spur facility expires in 2025 it is proposed that the approval to use this facility be assessed and incorporated into the new Part 3A Project Approval for the Project. If the Project is approved, it is intended that the existing Antiene Rail Spur DC 106-04-00 will be surrendered.

This Section provides a discussion on the major relevant State and Commonwealth planning and environmental legislation applicable to the Project. In addition to gaining Project Approval, the Project may also require ancillary approvals under a number of additional Acts and / or applicable State Environmental Planning Policies (SEPP) as discussed below.

4.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Anglo American will seek Project Approval under Part 3A of the EP&A Act from the Minister for Planning. DoP has indicated that the Project is likely to be a Project to which Part 3A applies and as such will be determined by the Minister for Planning.

Section 75J (3) of the EP&A Act provides that in deciding whether or not to approve the carrying out of a Project, the Minister for Planning may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of Section 75R of the EP&A Act) apply to the Project if approved.

4.1.1 NSW State Environmental Planning Policies

SEPP (Major Development) 2005

SEPP (Major Development) 2005 defines certain developments which are classified as Major Projects under Part 3A of the EP&A Act for determination by the Minister for Planning.

In accordance with Schedule 1 of the *SEPP (Major Development) 2005* the Project is required to be assessed under Part 3A of the EP&A Act.

SEPP (Mining, Petroleum Production and Extractive Industries) 2007

- **Permissibility**

  SEPP (Mining, Petroleum Production and Extractive Industries) 2007 (SEPP (Mining)) was gazetted on 16 February 2007. Under SEPP (Mining) open cut mining is permissible with development consent:

  - On land where development for the purposes of agriculture or industry may be carried out (with or without development consent); or
  - On land that is, immediately before the commencement of this clause, the subject of a mining lease under the *Mining Act 1992* (Mining Act).

Facilities for the processing or transportation of minerals are permissible with development consent on land on which mining may be carried out, if the minerals were mined from that land or adjoining land.

In regard to that land within the Muswellbrook LGA, the Project area is located primarily on lands classified under the Muswellbrook Local Environmental Plan (LEP) as Zone RU1 Primary Production. Part of the Project area also contains lands listed under Zone E3 Environmental Management with regard a small section of the land required for the realignment of Edderton Road. Mining is permissible in lands of Zone RU1 with consent (see **Section 4.1.2**).

Mining is not a permissible use in Zone E3. However, development for the purpose of agriculture is permissible on land subject to this zoning and, accordingly, under Clause 7 of the Mining SEPP, development for the purpose of mining is permissible on these lands.

In regard to that land within the Singleton LGA, the Project area occurs entirely within land Zone 1(a) (Rural Zone) in the Singleton LEP. Mining is permissible in lands of this zoning with consent (see **Section 4.1.2**).

Anglo American holds EL 5460 over the majority of the Project Boundary, which was granted prior to the commencement of SEPP (Mining) (see **Table 2**).

- **Compatibility**

  Clause 12 of SEPP (Mining) provides
  "Before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:
  (a) consider:
  (i) the existing uses and approved uses of land in the vicinity of the development, and
  (ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and
  (iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and
  (b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and
  (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii)."

Land uses in the vicinity of the Project Boundary are described in **Section 2.5**. The respective public benefits of the Project and whether the Project is likely to have any significant impact on the adjoining lands preferred land uses and any potential incompatibility therewith will be examined and analysed in the EA. Further, measures proposed by Anglo American to avoid or minimise any incompatibility will be described and evaluated in the EA.

SEPP No 33 - Hazardous and Offensive Development

SEPP 33 requires the consent authority to consider whether an industrial Project is a potentially hazardous industry or a potentially offensive industry.

A Preliminary Hazardous Analysis will be carried out for inclusion in the EA.

SEPP No 44 - Koala Habitat Protection

SEPP 44 encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure there is ongoing protection of koalas and their habitat. An assessment of koala populations and habitat will be conducted as part of the EA ecological assessment.

4.1.2 Muswellbrook Local Environmental Plan 2009

The Project is located primarily on land zoned within the Muswellbrook LEP 2009 as within Zone RU1 (Primary Production). Part of the Project Boundary is also within Zone E3 (Environmental Management) with regard to a small section of the required Edderton Road realignment. Land Zoning within the Project Boundary is shown on **Figure 12**.

Zone RU1 (Primary Production)

As shown on **Figure 12** all of the works proposed by the Project occur within the RU1 zoning. In this zoning:

- Mining is a permissible land use; and
- The objectives of the zone are as follows:
  - *"To encourage sustainable primary industry production by maintaining and enhancing the natural resource base;*
  - *To encourage diversity in primary industry enterprises and systems appropriate for the area;*
  - *To minimise the fragmentation and alienation of resource lands;*
  - *To minimise conflict between land uses within the zone and land uses within adjoining zones;*
  - *To protect the agricultural potential of rural land not identified for alternative land use, and to minimise the cost to the community of providing, extending and maintaining public amenities and services;*
  - *To maintain the rural landscape character of the land in the long term;*
  - *To ensure that development for the purpose of extractive industries, underground mines (other than surface works associated with underground mines) or open cut mines (other than open cut mines from the surface of the floodplain), will not:*
    - *(a) Destroy or impair the agricultural production potential of the land or, in the case of underground mining, unreasonably restrict or otherwise affect any other development on the surface, or*
    - *(b) Detrimentally affect in any way the quantity, flow and quality of water in either subterranean or surface water systems, or*
    - *(c) Visually intrude into its surroundings, except by way of suitable screening.*
  - *To protect or conserve (or both):*
    - *(a) Soil stability by controlling development in accordance with land capability, and*
    - *(b) Trees and other vegetation, and*

(c) Water resources, water quality and wetland areas, and their catchments and buffer areas, and

(d) Valuable deposits of minerals and extractive materials by restricting development that would compromise the efficient extraction of those deposits."

Zone E3 (Environment Protection)

As shown on **Figure 12,** a small part of the required Edderton Road realignment is located on land classified as Zone E3 (Environmental Protection).

Extensive agriculture (for the purposes of livestock grazing or bee keeping) is permitted without development consent within Zone E3 and therefore, development for the purpose of mining on land within this zoning is permissible, pursuant to Clause 7 of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries)* (SEPP Mining) with development consent because "agriculture" is permissible.

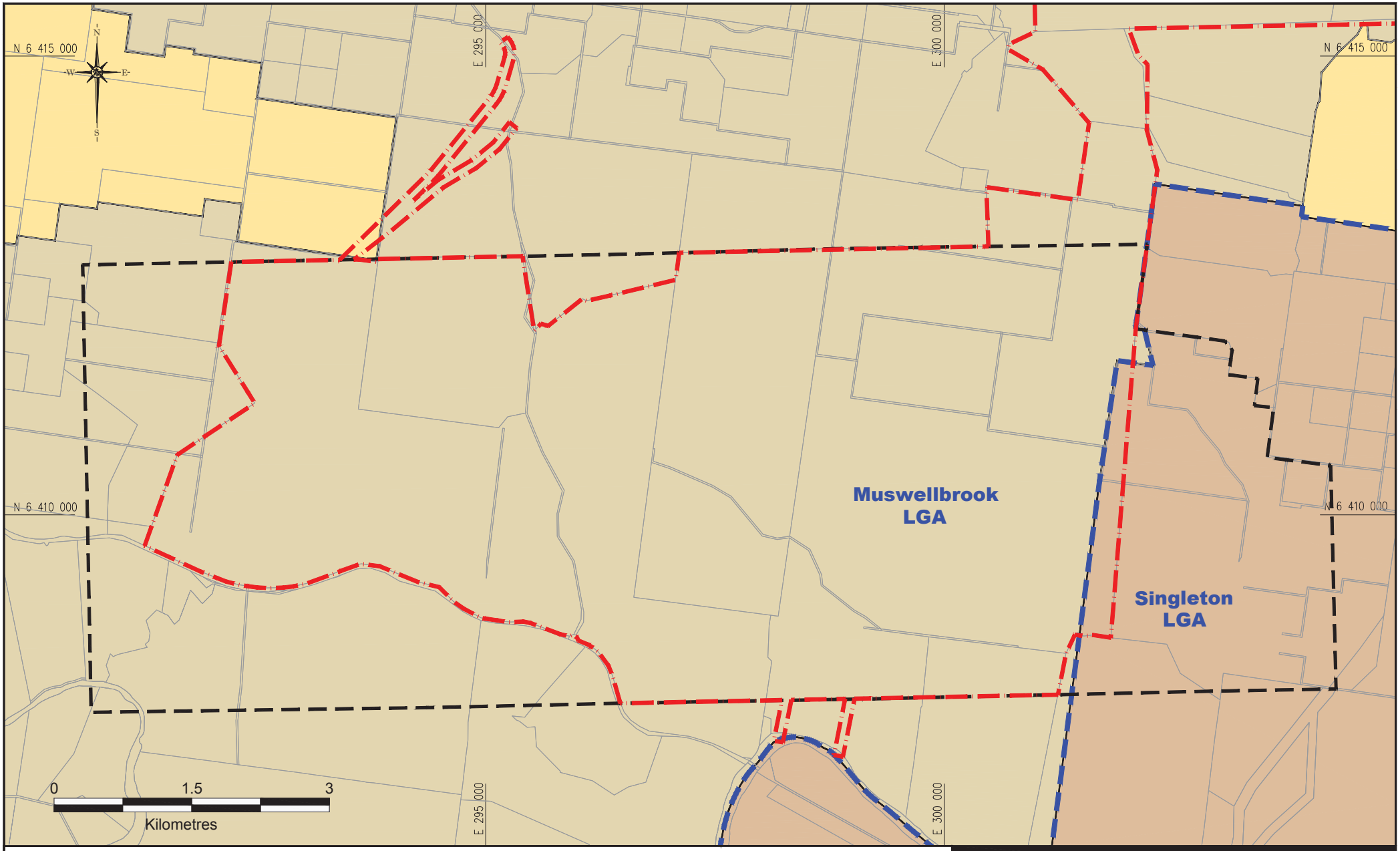
The EA will examine whether the Project achieves the objectives of these zones which will be relevant in the event that the Minister exercises his discretion to take into account the provisions of the Muswellbrook LEP.

4.1.3 Singleton Local Environmental Plan 1996

In regard to the portion of the Project Boundary that is within the Singleton LGA, this is entirely within land Zone 1(a) (Rural Zone) under the Singleton LEP (see **Figure 12**).

In this zoning:

- Mining is a permissible land use;
- The objectives of the zone are as follows:
    - *"To protect and conserve agricultural land and to encourage continuing viable and sustainable agricultural land use;*
    - *To promote the protection and preservation of natural ecological systems and processes;*
    - *To allow mining where environmental impacts do not exceed acceptable limits and the land is satisfactorily rehabilitated after mining;*
    - *To maintain the scenic amenity and landscape quality of the area;*
    - *To provide for the proper and co-ordinated use of rivers and water catchment areas; and*
    - *To promote provision of roads that are compatible with the nature and intensity of development and the character of the area."*



Project Boundary
Drayton South EL Boundary
LGA Boundary
Zone E3 - Environmental Management (Muswellbrook LEP 2009)
Zone RU1 - Primary Production (Muswellbrook LEP 2009)
Zone 1(a) - Rural (Singelton LEP 1996)

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Project Land Zoning

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4.2 MINING ACT 1992

A ML will be required for Drayton South mining activities. It should be noted that the application for a ML over the area in question may invoke the Native Title Act 1993. Legal advice will be sought in this regard. Section 75V of the EP&A Act requires the granting of a mining lease consistent with any Project Approval. Existing mining leases held to support existing Drayton mining and infrastructure will be renewed as required.

4.3 COAL MINE HEALTH AND SAFETY ACT 2002

The establishment of any emplacement areas or tailings disposal areas for the Project will require an approval under Section 100 of the *Coal Mine Health and Safety Act 2002* (CMHS Act).

4.4 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Drayton Mine's Environment Protection Licence held under the *Protection of the Environment Operations Act 1997* (POEO Act) will be modified to incorporate the Project.

4.5 THREATENED SPECIES CONSERVATION ACT 1995

The *Threatened Species Conservation Act 1995* (TSC Act) defines and lists endangered species, populations, communities and critical habitat within NSW and key threatening processes. It also provides a framework for their protection and a methodology for the assessment of the effects of development on threatened species. This methodology will be partly relied upon in the preparation of the EA.

Under Part 8A of the *National Parks and Wildlife Act 1974 NSW* (NPW Act) it is an offence to harm a member of a threatened species, population or ecological community or to damage critical habitat.

Under Sections 118A and 118C of the NPW Act it is a defence to the above offence if the harm or damage resulted from activity which was essential to the carrying out of a Project approved under Part 3A EP&A Act.

4.6 WATER ACT 1912 AND WATER MANAGEMENT ACT 2000

The Project Boundary lies within the Hunter-Central Rivers Catchment of NSW. The Water Sharing Plan for the Hunter Regulated River Water Source 2003 (Hunter River WSP) and the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009 (Hunter unregulated WSP) as established under the Water Management Act 2000 (WM Act) apply to the Project.

To the extent that the Project is located in an area that is affected by a WSP, it is subject to the approvals and licensing provisions of the WM Act. To the extent that it is located outside of a WSP the Project is subject to the *Water Act 1912*.

Drayton South will need to apply for a Water Access Licence (WAL), as required from the NSW Office of Water (NOW) for any additional groundwater/surface water extracted as part of the Project.

In addition to licences under the WM Act, the Water Act also requires licensing of any incidental water made from groundwater or surface water run-off.

4.7 DAMS SAFETY ACT 1978

The *Dams Safety Act 1978* (Dams Safety Act) requires the NSW Dams Safety Committee (DSC) to "*formulate measures to ensure the safety of dams*" and to "*maintain a surveillance of prescribed dams*". A "*prescribed dam*" is one listed in Schedule 1 of the Dams Safety Act. The water dams required for the Project may be required to be licensed by the DSC, dependent on the sizes and usage.

4.8 ROADS ACT 1993

The *Roads Act* 1993 (Roads Act) provides for the dedication of classified and unclassified roads and confers certain functions to MSC in relation to the management of roads. Under Section 138 of the Roads Act, consent from MSC is required to erect a structure or carry out work in, on or over a public road.

Section 75V of the EP&A Act provides "an authorisation of the following kind cannot be refused if it is necessary for carrying out of an approved Project and is to be substantially consistent with the approval under this part…". The authorisations referenced include an approval under Section 138 of the Roads Act.

An approval under Section 138 of the Roads Act will need to be sought from MSC prior to the realignment of the required section of Edderton Road.

4.9 COMMONWEALTH LEGISLATION

4.9.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection & Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas of national significance. It also provides a mechanism for national environment protection and biodiversity conservation. The EPBC Act is administered by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and provides protection for listed Matters of National Environmental Significance (MNES) including:

- Listed species and communities (e.g. listed threatened species and ecological communities and migratory species);
- Protected areas (e.g. World heritage properties, Ramsar wetlands of international significance, conservation zones); and
- National, Commonwealth and Indigenous heritage.

Species and communities listed under the EPBC Act that are present or are likely to be present in the vicinity of the Project must be identified. A referral including a supporting assessment of significance for each species must be made to DSEWPaC to obtain confirmation of whether or not a Project constitutes a *"Controlled Action"*. The Project will be referred to DSEWPaC for a decision under Section 68. The Minister for DSEWPaC has the power to accredit the NSW EP&A Act to meet the requirements of the EPBC Act.

4.10 LICENCES AND APPROVALS REQUIRED

A list of the key subsidiary leases, licences and approvals that are required for this Project and where they are derived from are set out in **Table 6** below.

Table 6
Expected Leases, Licences and Approvals for the Project

	APPROVAL REQUIRED	LEGISLATIVE ORIGIN	SEPARATE or PART 3A
1	Mining Lease	Mining Act	Section 75V EP&A Act
2	Section 87 - Permit to disturb, move or take possession of an Aboriginal object	Section 87 of the NPW Act	Section 75U EP&A Act
3	Section 90 Consent to Destroy an Aboriginal object	Section 90 of the NPW Act	Section 75U EP&A Act
4	Environment Protection Licence	Chapter 3 of the POEO Act	Section 75V EP&A Act
5	Development consent to clear Native Vegetation	Section 12 of the *Native Vegetation Act 2003 NSW*	Section 75U EP&A Act
6	Water Use Approval	Section 89 of the WM Act	Section 75U EP&A Act
7	Water Management Work Approval	Section 90 of the WM Act	Section 75U EP&A Act
8	Activity Approval	Section 91 of the WM Act	Section 75U EP&A Act
9	Bore Licence	Part 5 of the *Water Act 1912*	Licence to be separately acquired
10	Licence Under Threatened Species Act	NPW Act	Exemption under Section 118A and 118C NPW Act
11	Consent to carry out a work in on or over a public road	Section 138 of the Roads Act	Section 75V EP&A Act
12	Approval for the carrying out of a "Controlled Action"	EPBC Act	Separate approval, adopting Part 3A assessment process if so decided under Section 87 of the EPBC Act
13	Construction Certificates	EP&A Act	Separate Approval
14	Notification of Dangerous Goods	*Occupational Health and Safety Regulation 2001*	Separate Approval
15	Approval for Emplacement Area	*Coal Mine Health and Safety Act 2002*	Separate Approval
16	Radiation Licences	*Radiation Control Act 1990*	Separate Approval
17	Mine Operations Plan	Mining Lease	Separate Approval
18	Environment Management Plans	Project Approval	Separate Approval

* *Section 75U of the EP&A Act* lists the authorisations required under other legislation that do not apply to a Project that is approved under Part 3A.

† *Section 75V of the EP&A Act* lists the authorisations that cannot be refused *if it is necessary for carrying out an approved project and is to be substantially consistent with the approval under Part 3A.*

5 STAKEHOLDER ENGAGEMENT

This section includes a description of Anglo American's stakeholder engagement undertaken for the Project to date and a summary of the key consultation activities proposed for the EA.

5.1 INTRODUCTION

Anglo American is committed to undertaking best practice social assessment and stakeholder engagement activities with the local communities in which they operate. Further, Anglo American has identified key community, regulatory and industry stakeholders relevant to the Project to achieve these goals and will constantly endeavour to build strong and effective relationships.

5.2 EXISTING COMPANY ENGAGEMENT

As part of the exploration and project planning phase to date, Anglo American has initiated consultation with key local stakeholders and government agencies. Consultation has included various briefings, presentations and site visits with the neighbouring horse studs, wineries and some private landowners, initial briefings with MSC and Singleton Shire Council (SSC) and formal consultation with relevant State and Local Members of Parliament.

As part of the project planning phase a series of working group meetings have also been held with the local horse studs in order to adequately scope their key issues and work towards developing a co-existent mine plan for the Project. The feedback received from these meetings has been used to design the Project as described in **Section 3**.

A structured consultation engagement program has also now commenced in line with the EA process. This involves the following key phases:

- Phase 1 - Interim Stakeholder Engagement;
- Phase 2 - Stakeholder Identification and Profiling;
- Phase 3 - Issue Scoping;
- Phase 4 - Issue Response and Feedback; and
- Phase 5 - Ongoing Stakeholder Engagement.

Currently the Project has completed Phase 1 and 2 and has now commenced Phase 3.

5.3 PROJECT ENGAGEMENT

The objectives of the stakeholder engagement program for the Project include:

- To provide stakeholders with information on the Project to facilitate meaningful participation;
- To identify potential impacts associated with the Project to inform the social impact assessment and broader EA program; and
- To identify potential strategies for impact management, mitigation and community enhancement.

Relevant engagement methods will be utilised for different stakeholders as summarised in **Table 7**.

Table 7
Stakeholder Communication Methods

Stakeholder	Method
DoP	Briefings, PFM, Newsletters
DII	Briefings, PFM, Newsletters
NOW	Briefings, PFM, Newsletters
DECCW	Briefings, PFM, Newsletters
MSC Mayor, Councillors and Officers	Briefings, PFM, Newsletters
SSC Mayor, Councillors and Officers	Briefings, PFM, Newsletters
DSEWPaC	Briefings, PFM, Newsletters
RTA	Briefings, PFM, Newsletters
Land and property	Briefings, PFM, Newsletters
Relevant State and Federal MPs	Briefings, Newsletters
Drayton employees and contractors	Toolbox Talks, Newsletters
Non-Government Organisations	Media releases, website, Newsletters
Individual neighbours (including miners, power generators, horse studs, vigneron & graziers)	Newsletters, briefings & joint working parties as required
Aboriginal community	Newspaper notices, briefings, Newsletters
Local service providers	Personal meetings as required
Local business and industry associations	Personal meetings as required
Local community (including Jerrys Plains)	Newsletters, Personal meetings and open forums as required
Special interest groups	Briefings
Media	Briefings, Press Releases

In addition to the above, Project updates and other relevant information will be placed on the Anglo American Drayton Mine website.

Relationships will continue to be developed with key stakeholders during preparation of the EA. Anglo American will facilitate stakeholder feedback on the Project in order to ensure that stakeholder issues are adequately addressed through the social impact assessment and EA.

5.3.1 Regulatory Engagement

Face to face briefings and group presentations to State and Local Government agencies will take place throughout the approval process for the Project. Initial presentations will be designed to provide Government stakeholders with an initial overview of the Project and to identify issues that will require assessment in the EA.

5.3.2 Community Engagement

Engagement with the local community will be undertaken for the Project during preparation of the EA, with all relevant issues raised to be addressed, as required. Information gathered during

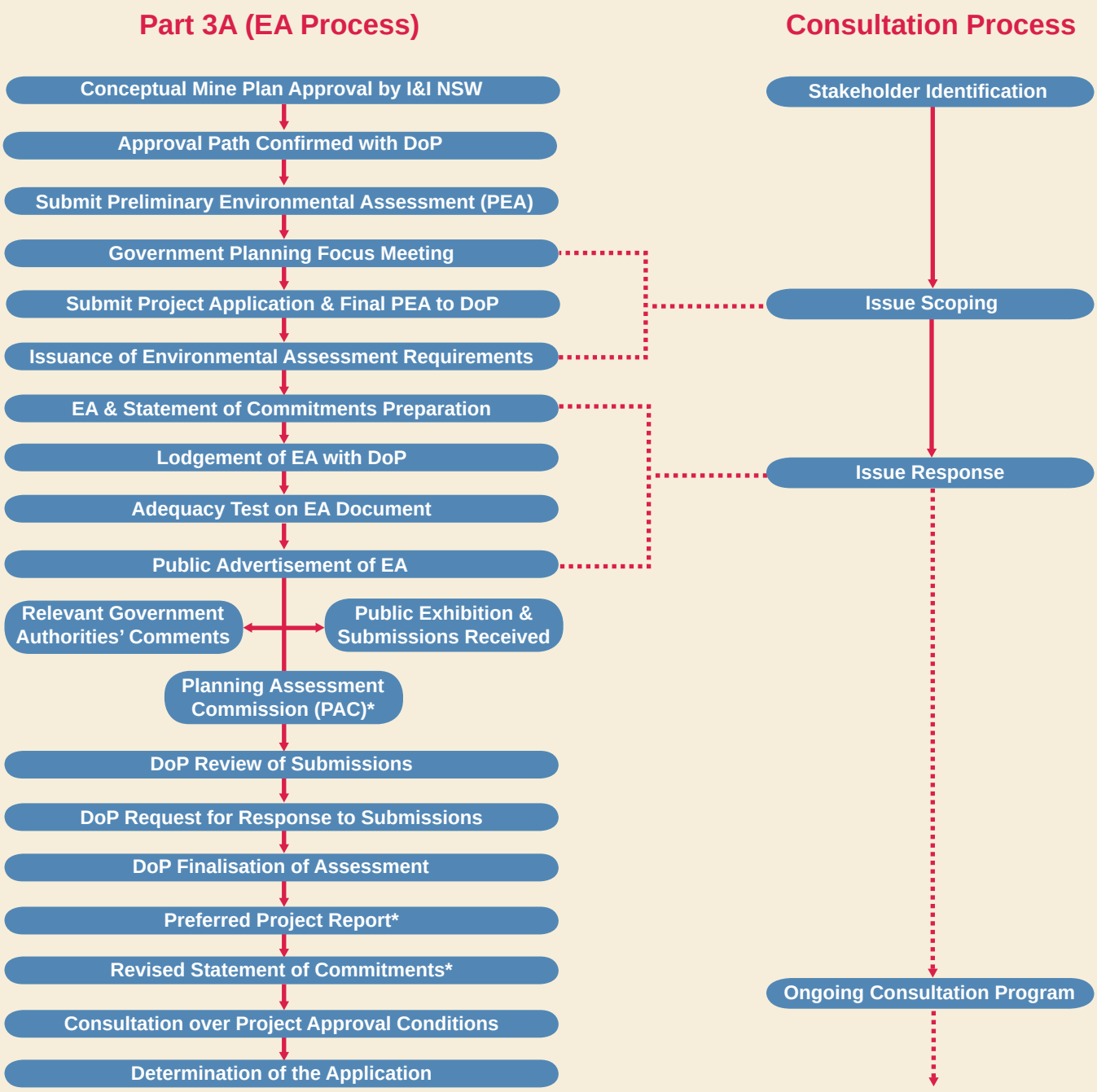
community engagement regarding the Project will assist in informing project planning and developing appropriate management and mitigation strategies to address issues of concern and relevance to the local community.

Initial briefings will be offered to near neighbours to discuss the Project, where information will be provided to assess issues of concern to the community. Where required, further consultation meetings will be offered to provide feedback on the EA and to obtain additional community input. Community engagement has commenced with an offer of personal meetings to near neighbours.

The analysis of community issues and responses through the EA process is essential in ensuring that relevant issues are identified and evaluated in the assessment program. During this process appropriate strategies are developed to minimise negative impacts and / or enhance the positive impacts associated with the Project.

Project newsletters will be regularly distributed to key community stakeholders to complement the engagement program and provide regular updates on key Project and EA milestones.

A flowchart showing the planning approvals and consultation process relevant to the Project is shown on **Figure 13**.



* Avenue(s) available to the Minister

HansenBailey

AngloAmerican

DRAYTON SOUTH

Planning Approvals and Consultation

Filename: DRAYTONPA_fig1.indd	Date: 1.2.11	Drawn: MB	Figure 13

6 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

To assist in identifying the key environmental and social issues for the Project, a preliminary environmental risk assessment was completed utilising the Anglo American Risk Assessment Tools. This risk assessment is presented in **Appendix A**.

Each of the potential environmental issues was ranked in accordance with the Anglo American Risk Matrix as either being of low, medium or significant risk. The initial findings of the risk assessment were used to prioritise and focus the required environmental assessments for the Project to ensure that each of the environmental issues was addressed to the extent relevant and that appropriate management and mitigation options are developed. The resulting scope of assessment to be included in the EA is discussed in further detail in **Section 7**.

As shown in **Appendix A** and **Table 8**, the majority of activities are rated as low or medium level risks, with several significant risks but no high risks. It is anticipated that with the completion of detailed assessment as outlined in **Section 7**, any significant risks will be reduced to medium or low, due to the identification and implementation of appropriate controls and mitigation measures.

Table 8
Summary of Preliminary Environment Risk Assessment

Category	Issues
High	None
Significant	Ecology, Aboriginal Archaeology and Cultural Heritage, Air Quality and Greenhouse, Noise and Blasting, Visual
Medium	Surface Water, Groundwater, Traffic and Transport, Social
Low	Soils and Land Capability, Rehabilitation, Final Land use, Final Landform, Non-Aboriginal Heritage, Economics

7 KEY ENVIRONMENTAL AND COMMUNITY ISSUES

7.1 ECOLOGY

7.1.1 Background

A recent flora and fauna assessment compiled by Cumberland Ecology (2010) provides background into the existing ecological environment. This assessment identified that a number of vegetation communities present within the Drayton South area are protected under legislation. This includes Commonwealth and State listed Box Gum Woodland. The habitats that remain are highly modified as a result of many years of agricultural use but they still retain considerable value for threatened species. Although degraded, the riparian habitat of Saddlers and Saltwater Creeks provide foraging habitat and also serve as movement corridors for fauna. **Figure 14** shows preliminary vegetation mapping for the Project.

Four threatened flora species have been identified in the Drayton South area. These include the *Diuris tricolor*; *Cymbidium canaliculatum*, *Acacia pendula*, and the *Bothriochloa biloba.* These species are represented by a few individuals in discrete locations but additional specimens are likely to be present elsewhere in the Project area.

The assemblage of listed or preliminary-listed faunal species that was observed for Drayton South is represented by highly mobile species that include two Commonwealth-listed migratory birds, a number of State-listed birds (particularly woodland birds), and five State-listed bats. The Squirrel Glider is also considered highly likely to occur in the Drayton South area along with the Green and Golden Bell Frog which has the potential to occur in fringing aquatic vegetation. The Drayton South area provides roosting, foraging and some nesting habitats for these species.

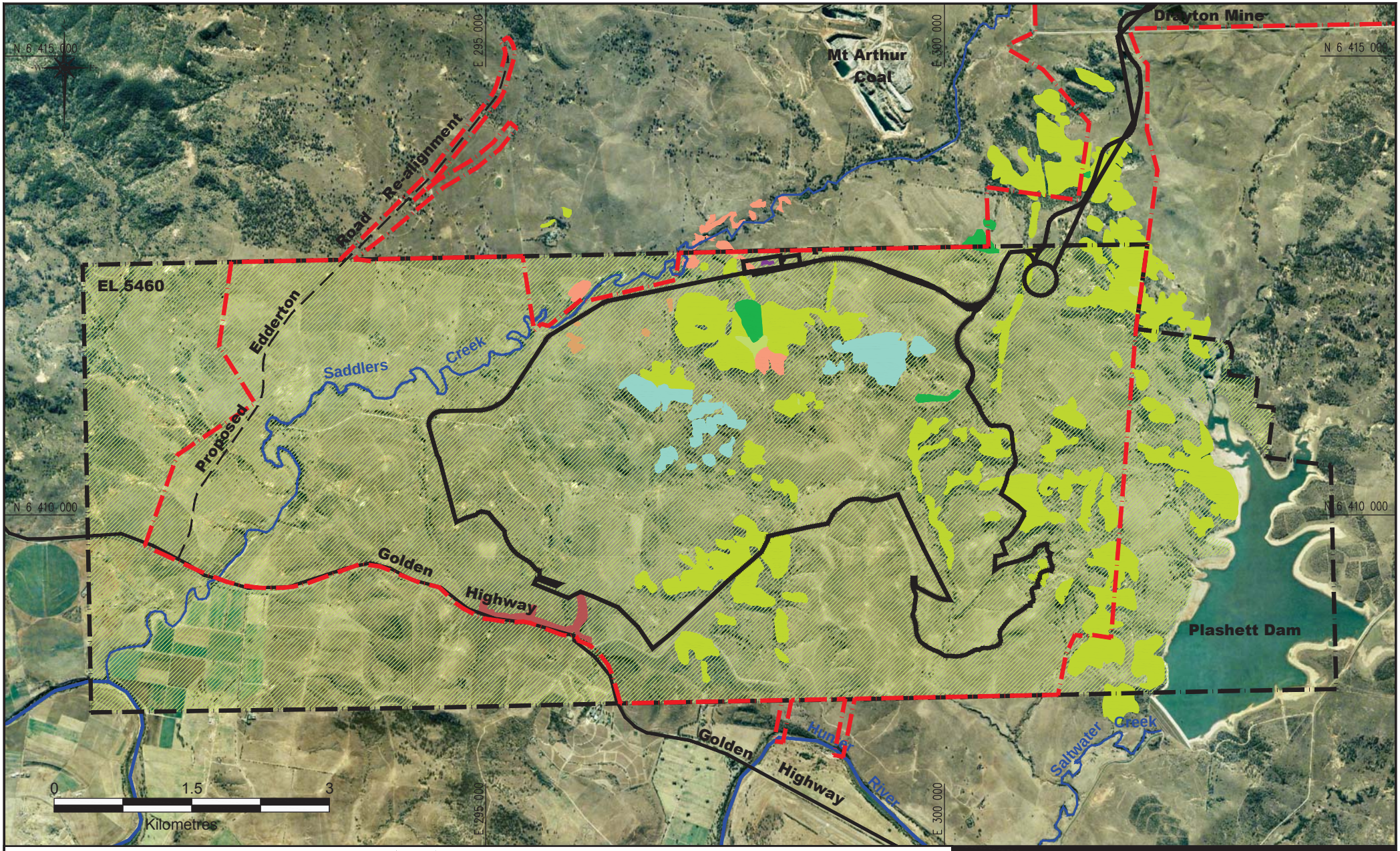
The Drayton South area is not considered to be core koala habitat as defined under the SEPP 44; hence the preparation of a Koala Plan of Management is not anticipated to be required. SEPP 44 is not anticipated to place any constraints on the Project.

The aquatic habitat present within the Drayton South area does not currently support any significant freshwater fish communities and as such no significant freshwater fish communities are likely to be impacted as part of the Project.

7.1.2 Potential Impacts

The majority of the woodland vegetation that once covered the Project area has been cleared for agriculture; however, there are still a number of areas of remnant vegetation that occur within the area. Some areas of remnant vegetation occur within the proposed mining area for the Project and will be directly impacted. Specific flora and fauna impacts identified in the preliminary environmental risk assessment (see **Appendix A**) include:

- Clearance of vegetation within the proposed mining areas, including threatened ecological communities;
- Clearance of threatened plant species and hence impacts on the size and persistence of local populations; and
- The displacement of faunal communities and therefore increased competition for habitat in the surrounding environment.



- Project Boundary
- Drayton South EL Boundary
- Mine Disturbance Footprint
- Proposed Edderton Road Re-alignment
- Conveyor Option
- Central Hunter Box-Ironbark Woodland
- Central Hunter Buloak Forest Regeneration
- Hunter Floodplain Red Gum Woodland Complex
- Hunter Valley River Oak Forest
- Narrabeen Footslopes Slaty Gum Woodland
- Planted Vegetation
- Upper Hunter White Box-Ironbark Grassy Woodland
- Derived Native Grassland

Source: Cumberland Ecology (2009)

Hansen Bailey

AngloAmerican

DRAYTON SOUTH

Preliminary Vegetation Mapping

Cad File: 07219C.dwg	Date: 24.02.11	Drawn: CP	Figure 14

7.1.3 Assessment Methodology

A flora and fauna impact assessment will be completed for the Project by Cumberland Ecology in accordance the *DECC Draft Guidelines for Threatened Species Assessment* (DEC, 2005b).

The scope of the flora and fauna impact assessment will include:

- A desktop review of relevant databases and extensive available relevant literature to identify flora and fauna species and communities potentially found within the Project Boundary;
- Seasonal surveys to comply with DECCW's recommendations for survey;
- Mapping the distribution of vegetation communities in the Project Boundary by ground survey and air photo interpretation;
- Listing of flora species and descriptions of vegetation communities within the Project Boundary;
- Targeted searches for threatened flora species, threatened ecological communities and critical habitat (as listed under the schedules to the TSC Act and EPBC Act) that may potentially occur in the Project Boundary;
- An aquatic survey at the proposed Hunter River pumping station;
- Habitat assessment of the Project Boundary;
- Assessment of impacts on listed vegetation communities and threatened flora and fauna species;
- Preparation of a BioBanking Assessment for the Project; and
- Identification of any impact mitigation measures necessary for the Project.

As noted in **Section 4.9.1**, an EPBC Referral will be submitted to DSEWPaC for determination.

7.2 ABORIGINAL ARCHAEOLOGY AND CULTURAL HERITAGE

7.2.1 Background

A previous Aboriginal Archaeology assessment has been compiled by SKM (2000) for the area within EL 5460. This report provides background to the existing archaeology known to be present within the area.

The survey identified 33 Aboriginal heritage sites comprising of 29 open camp sites, two scarred trees and two stone procurement (quarry) sites. In addition, the length of the lower reaches of the major and minor tributaries of the Saddlers Creek contained continuous artefact scatter.

7.2.2 Potential Impacts

Potential impacts on Aboriginal archaeology and cultural heritage identified in the preliminary environmental risk assessment include the removal of archaeological sites and items within the proposed disturbance areas of Drayton South (see **Appendix A**). This will include any sites which may be identified during further proposed surveys for the Project.

Further assessment will be completed for inclusion in the EA to determine the impacts of the Project upon Aboriginal archaeology and cultural heritage. The community will be engaged in strict accordance with the DECCW Guidelines (2010) to ensure community involvement and recommendations are recorded and encompassed within management and mitigation measures.

7.2.3 Assessment Methodology

The Aboriginal archaeology and cultural heritage impact assessment for the Project will be by AECOM Australia Pty Ltd (AECOM) and will be conducted in accordance with the *National Parks & Wildlife Act 1974* and DECCWs *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

The proposed scope of the Aboriginal archaeological and cultural heritage impact assessment includes:

- Desktop review, including Aboriginal Heritage Information Management System (AHIMS) database search, Native Title Search, and a review of previously completed studies conducted in the area to assist in the development of a predictive model;
- A field-based archaeological and Aboriginal cultural heritage impact assessment with members of the local Aboriginal community. The fieldwork will focus on identifying any additional sites of Aboriginal cultural heritage within the disturbance area and revisiting existing sites that were previously classified as being of high significance with members of the Aboriginal community;
- Preparation of an Aboriginal archaeology and cultural heritage impact assessment to meet the DECCW guidelines and the expectations of the local Aboriginal community. This will include an assessment of any additional Aboriginal cultural heritage issues or places identified during the site visit;
- Aboriginal stakeholder consultation in accordance with the DECCW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*; and
- Development of appropriate management and mitigation strategies for any Aboriginal heritage sites that are identified to be disturbed.

7.3 NON-ABORIGINAL HERITAGE

7.3.1 Background

An extensive desktop study has been conducted to identify any potential non-Aboriginal heritage present within a 10km radius of the Project. A number of non-Aboriginal heritage sites associated with the agricultural settlement of the area were identified, none of which fall within the Project Boundary.

7.3.2 Potential Impacts

The Drayton South pre-feasibility study has identified three potential non-Aboriginal heritage sites that may be impacted by the Project including Edderton Homestead Complex, Plashett Homestead and Woodlands Stud.

The Edderton Homestead is located approximately 200 m north of the boundary of EL 5460 on

lands held by HVEC for Mount Arthur Coal Mine. Given the close proximity of this site to the Project, an assessment of cumulative blasting impacts to this site will be required. It should be noted that, under the approval for the Mount Arthur Underground Project (PA 06_0091), Mount Arthur Coal has committed to a full archival recording of this site prior to any potential disturbance. Further, HVEC has publicly noted that the site may need to be demolished, should subsidence impacts from the Mount Arthur Underground Project cause significant structural damage.

Plashett Homestead is located approximately 2 km to the south of the proposed mining areas and therefore has the potential to be disturbed by blasting impacts associated with the Project.

Woodlands Stud Homestead is located approximately 5 km south of the proposed mining areas and is therefore not expected to be disturbed by blasting associated with mining activities for the Project.

Further assessment will be completed for inclusion in the EA to determine the impacts of the Project upon non-Aboriginal archaeology.

7.3.3 Assessment Methodology

A non-Aboriginal heritage impact assessment will be completed by AECOM for the Project in accordance with relevant guidelines, legislation and in particular the standards of the NSW Heritage Council. The scope of assessment will include:

- A review of any relevant existing heritage assessment reports and other sources of information pertaining to heritage items in the region;
- A field survey of the area within the Project Boundary with an emphasis on sites identified during preliminary research and areas with archaeological potential and the recording of any items located;
- Assessment of the heritage significance of identified items within the proposed disturbance areas;
- Preparation of a heritage impact assessment for the Project which considers the potential for impact on any significant adjacent heritage items; and
- Identification of any necessary impact mitigation measures.

7.4 SURFACE WATER

7.4.1 Background

The Project lies within the catchment of the Hunter River in the upper reaches of some first and second order ephemeral creeks which drain into this main watercourse. The Hunter River flows from west to east, immediately to the south of the Project. The Hunter River supplies water to the Hunter Valley region for domestic, industrial (including mining), environmental, irrigation and stock-watering purposes.

Saddlers Creek lies within the Project Boundary to the north-west of Drayton South, flowing from north-east to south-west, where it joins the Hunter River. Saltwater Creek is an ephemeral creek on which Plashett Dam has been constructed. It is situated outside of the Project Boundary to

the south-east of Drayton South. In periods of heavy rain fall, Saltwater Creek also flows into the Hunter River.

Surface water monitoring has been undertaken at a number of locations within the Project Boundary since 1998. The surface water monitoring program has recorded pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS) and Total Suspended Solids (TSS) within Saddlers Creek (see **Figure 2**).

Saddlers Creek has previously been identified by the Catchment Management Authority (CMA) as deleteriously impacting on the water quality within the Hunter River downstream of its confluence. In partnership with Anglo American, the CMA has undertaken stream line restoration works on this creek, with the potential remaining for further works to be collaboratively funded by Anglo American in the future.

A preliminary surface water assessment has been undertaken to determine the potential impacts that may result from the Project on the local surface water environment. The surface water assessment has not identified any 'fatal flaws' in regard to the potential impacts on surface water surrounding the Project area.

Further assessment will be completed for inclusion in the EA to determine the impacts of the Project upon surface water.

7.4.2 Potential Impacts

Potential surface water impacts as a result of the Project (as identified in the preliminary environmental risk assessment (**Appendix A**)) include:

- Potential for increased turbidity impacting on downstream water quality;
- Potential for discharge of surplus water and / or additional demands on existing water sources;
- Changes to the catchment area, with consequent impacts on catchment yields and drainage downstream of the site; and
- Post-mining surface water impacts on catchment yields, water quality and drainage.

7.4.3 Assessment Methodology

A surface water impact assessment (including mine water management and sediment and erosion control) will be conducted for the Project by WRM Water and Environment, the scope of which will include:

- A review of any existing surface water assessment reports, including mine water balances;
- Identification of surface water resources or usage in the vicinity of the site which could be impacted by the Project;
- Assessment and description of the existing surface water hydrology, including drainage, surface water quality and downstream water usage;
- A relevant flood assessment for the Project. This will include identification of relevant mitigation measures as required;

- Assessment of the potential for any other surface water impacts both on and off-site resulting from the Project;
- Brief assessment of post-mine surface water impacts such as drainage, rainfall runoff and a description of the predicted final void water levels as determined by the groundwater consultant in their final void predictive modelling;
- The development of appropriate surface water management strategies for all water types generated by the Project (including the existing Drayton Mine) including mine pit water, process water and runoff from disturbed and undisturbed areas;
- The development of a daily time step water balance model for the life of the Project which incorporates the existing Drayton Mine; and
- Identification of any surface water impact mitigation measures necessary for the Project.

7.5 GROUNDWATER

7.5.1 Background

A recent hydrogeological assessment has been undertaken for the Drayton South area by Australasian Groundwater and Environmental Consultants (AGE) (2010) to provide an understanding of the existing groundwater regime of the area within and surrounding Drayton South. The study involved the development of a conceptual groundwater model for Drayton South , based on geological and topographical maps of the area, and on the results of previous studies.

From the model, the groundwater system is considered to consist of three aquifer systems:

- Alluvium along the Hunter River, Saddlers Creek and Plashett Dam / Saltwater Creek;
- Weathered bedrock (regolith); and
- The coal seams of the Permian Wittingham Coal Measures.

The Permian Wittingham Coal Measures are not considered to be a significant aquifer and, while some coal seams may show an elevated hydraulic conductivity, the dominant interburden sections are of very low hydraulic conductivity. Only the weathered bedrock (regolith) directly below the ground surface may have a higher hydraulic conductivity, due to weathering. Recharge to the aquifers is assumed to occur at varying rates over the entire conceptual model area.

The shallow alluvial sands and gravel deposits associated with the ephemeral creeks that traverse the site are quite thin and irregular in occurrence, and do not appear to contain a permanent groundwater resource. The Hunter River alluvial deposits are significant sources of groundwater, however these deposits do not occur within the proposed mining area.

Anglo American has also been collecting monitoring bore data across EL 5460 as part of their EMP since 1998 (see **Figure 2**).

Regional aquifer pressures support a flow regime consistent with topography. Elevated pressures occur in topographically high areas while low pressures are evident along the more significant

drainage pathways, this being towards the south-west. The potentiometric surface in the Permian coal measures grades from RL160m in the north-east to RL115m in the south.

The Hunter River alluvial aquifer has a variable electrical conductivity in the range of 644 µS/cm – 6700 µS/cm. This reflects the dominant recharge at the time, being either more saline from the underlying coal measures or slightly improved quality from rainfall or the river itself. The pH ranges from 6.9 (slightly acidic) to 8.4 (slightly alkaline). Surface water in Saddlers Creek is brackish, which indicates recharge from underlying coal measures.

The groundwater contained within the Permian coal measures is typical of hard, coal seam water. Maximum Australian Drinking Water Standards (ADWS) are exceeded for TDS, chlorine and a range of metals. It is of poor quality and not suitable for drinking or freshwater aquatic ecosystems. The TDS content ranges from approximately 300 mg/L to 8920 mg/L and the pH is near neutral (median 7.1).

7.5.2 Potential Impacts

Potential groundwater impacts as a result of the Project (as identified in the preliminary environmental risk assessment (**Appendix A**)) include:

- Groundwater drawdown effects, changes to groundwater flow directions and changes to groundwater quality;
- Potential for depressurisation of aquifer systems in the area through mine void dewatering;
- Increased groundwater inflows to the pits;
- Loss of groundwater yield at existing bore locations; and
- Long term changes (post mine closure) to groundwater levels, groundwater quality and flow direction.

7.5.3 Assessment Methodology

A groundwater impact assessment will be conducted for the Project by AGE. The scope of assessment will include:

- Identification of groundwater resources (including the location of all privately owned groundwater bores) in the vicinity of the site which could be impacted by the Project;
- Assessment of the potential for any groundwater impacts resulting from the Project, including modelling the cumulative groundwater impacts of the Project with existing industry or approved mining Projects (including groundwater impacts on each identified privately owned bore);
- Development of a MODFLOW SURFACT Groundwater Model for the Project which incorporates the Project, the completion of mining at Drayton Mine and all relevant adjacent proposed mining activity;
- An assessment of the potential for contamination from tailings dam leachate / co-disposed materials to enter and impact on the local and regional groundwater system;
- Assessment of post-mine groundwater impacts including predicted final void water levels;

- A high level cumulative assessment which will include comments on other, not yet approved but potentially relevant adjacent mining Projects;
- Confirmation of alluvium limits and extent of mining impacts;
- The development of groundwater management strategies;
- Identification of any groundwater impact mitigation measures necessary for the Project; and
- A recommended post approval groundwater monitoring and management program.

7.6 NOISE AND BLASTING

7.6.1 Background

The Project is situated in an area with various land uses. These include open cut mining (to the north), power stations to the north-east and horse studs and various other agricultural uses in the south-east and west. These land use activities that surround the Project influence the background noise environment upon which further assessments for the Project will be based.

As part of the existing EMP, Anglo American has been monitoring background noise levels in the area surrounding the Project Boundary (see **Figure 2**). Additional attended and unattended noise monitoring will be undertaken as part of the EA for inclusion in the noise assessment for the Project.

7.6.2 Potential Impacts

Potential noise and blasting impacts as a result of the Project (as identified in the preliminary environmental risk assessment (**Appendix A**)) include:

- Noise generation from operational activities associated with open cut mining;
- Noise associated with the loading and transport of coal along the existing rail spur and rail loop;
- Traffic noise associated with the transport of construction materials, personnel, consumables, and waste materials to and from the site;
- Noise generation associated with short term construction activities;
- Cumulative noise impacts with surrounding industry; and
- Blasting vibration and overpressure impacts at near neighbours.

7.6.3 Assessment Methodology

A noise and blasting impact assessment will be conducted for the Project by Bridges Acoustics. The scope of assessment will include:

- Assessment of site meteorology and background noise levels to determine likely criteria for the Project;
- Assessment of construction and operation noise impacts (including sleep disturbance, low frequency vibration and traffic noise);
- Blasting assessment for the Project including comment on the potential effects of blasting on horses;
- Assessment of train movements on Antiene Rail Spur;

- Assessment of cumulative impacts for both those Projects currently being assessed and at a higher level for future potential coal mining and power station developments; and
- The development of suitable mitigation and management measures including any required modifications to existing monitoring networks.

7.7 AIR QUALITY AND GREENHOUSE GAS

7.7.1 Background

The Project is situated in an area with various land uses. These include open cut mining (to the north), power stations to the north-east and horse studs and various other agricultural uses in the south-east and west. These land use activities that surround the Project influence the background air quality environment upon which further assessments for the Project will be assessed as required.

As part of the existing EMP, Anglo American has been monitoring background concentrations of dust deposition and PM_{10} in the area surrounding the Project Boundary (see **Figure 2**). This background data will be included in the air quality assessment for the Project.

7.7.2 Potential Impacts

Potential air quality and greenhouse gas impacts as a result of the Project (as identified in the preliminary environmental risk assessment (**Appendix A**)) include:

- Dust generation from land disturbance (vegetation clearing and topsoil stripping);
- Dust generation from open cut mining activities (blasting, loading and movement of haul trucks, overburden emplacement and in-pit activities);
- Short term dust impacts associated with construction activities;
- Greenhouse gas emissions (Scope 1 and 2) as result of the actual mining operations and the associated use of energy by mining equipment and coal processing infrastructure; and
- Greenhouse gas emissions (Scope 3) as a result of non-mining activities at the site and in the combustion of product coal in the energy generation process.

7.7.3 Assessment Methodology

An air quality and greenhouse gas impact assessment will be conducted for the Project by PAE Holmes in accordance with DECCWs Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC, 2005a) and the Australian Greenhouse Office's (AGO) *Factors and Methods Workbook* (AGO, 2005).

The scope of assessment will include:

- Review of air quality monitoring data to confirm background levels;
- Assessment of site meteorology and background air quality levels to determine likely criteria for the Project;
- Assessment of construction and operational air quality impacts;

- Determination of scope 1, 2 and 3 greenhouse gas emissions for the Project as required by latest, best practice methodology;
- Assessment of the air quality impacts with approved industry as point source;
- Assessment of cumulative impacts for both those Projects currently being assessed and at a higher level for future potential coal mining and power station developments;
- Literature review and development of a scope for a study into the effects of dust on horse health and their athletic performance; and
- The development of suitable mitigation and management measures including any required modifications to existing monitoring networks.

7.8 TRAFFIC AND TRANSPORT

7.8.1 Background

The principal road network adjacent to the Project area is shown on **Figure 1** and includes:

- Thomas Mitchell Drive (north east of Drayton Mine providing access to Drayton Mine, the Mount Arthur Coal complex, the Muswellbrook Industrial Estate, and smaller local roads and private properties);
- New England Highway (North east of the Drayton Mine intersecting Thomas Mitchell Drive with a T junction configuration);
- Drayton Mine access road (A private road intersecting Thomas Mitchell Drive approximately 1.1 km from the New England Highway);
- Golden Highway (Also known as Jerrys Plains Road, is situated to the south of the Project area) is a significant rural road that serves vehicular traffic travelling from the lower Hunter to Denman and the central west of NSW;
- Edderton Road (Intersects Denman Road approximately 10 km south-west of Muswellbrook and runs in a north-south direction through the middle of Drayton South);

The proposed realignment of the Edderton Road / Golden Highway intersection will be undertaken in consultation with the MSC and RTA, the respective asset owners of the two roads. All design and construction work associated with the realignment will be undertaken in accordance with applicable design guidelines and standards.

7.8.2 Potential Impacts

Specific traffic and transport impacts identified in the preliminary environmental risk assessment include an increase in local traffic flows along Thomas Mitchell Drive during the construction and ongoing operational phases of the Project. The upgrade of local roads and the proposed realignment of the Edderton Road / Golden Highway intersection will also require the management of traffic around the road works.

Both Coolmore Stud and Woodlands Stud have noted that Edderton Road is critical to their operations, as it provides an important transport link to the Scone Vet Services, upon which they rely. On this basis, the proposed realignment will need to be carefully designed to consider

stakeholder requirements (both local stakeholders, such as Woodlands Stud and Coolmore Stud, but also MSC and the RTA) and constructed so as not to impede quick, reliable access.

A key Project requirement is that traffic generated by the site are not permitted to use Edderton Road This effectively addresses a major stakeholder concern regarding increased traffic movements and interactions with Coolmore Stud and Woodlands Stud thoroughbred horse traffic and through traffic at Jerrys Plains.

7.8.3 Assessment Methodology

A traffic and transport impact assessment will be completed for the Project by DC Traffic Engineering in accordance with the *Guide to Traffic Generating Developments* (RTA, 2002). The scope of assessment will include:

- Review of any previous traffic impact assessments undertaken for the surrounding area;
- Assessment of site traffic and transport levels to determine likely criteria for the Project;
- Design of traffic counts program and its implementation, if required;
- Assessment of existing, construction and operation traffic impacts (including cumulative) and the performance on the key intersections;
- Assessment of traffic movements on existing road networks adjacent the Project;
- Relevant assessment in relation to realignment of Edderton Road including quantification of impacts on road users; and
- Mitigation and management measures including any required modifications to existing traffic networks.

7.9 VISUAL

7.9.1 Background

The topography of the Project area consists of moderate undulating foothills to steeply sloping hills over open paddock grazing land. The topographic elevation ranges from approximately RL 100 m near the Hunter River, up to RL 200 m where a distinct ridgeline dissects the Project Boundary in a north-east south-west trend. The land surface within is primarily cleared, open-paddock grazing land, with minimal tree cover and good grass cover.

Visually sensitive receivers are located to the south of Drayton South. These include the thoroughbred horse studs of Darley Australia and Coolmore Australia and the Arrowfield Estate vineyard. The Wolfgang property is located to the west. These key stakeholders have verbally or formally documented their concerns in relation to the visual impacts of the Project, focusing on views of the active mining areas, overburden emplacement areas (OEA), infrastructure and night lighting impacts from key vantage points, both on and off their properties.

Potential visual impacts and the concerns of the key stakeholders have driven the development of the mine plans for the Project. This has ultimately resulted in the development of a co-existent mine plan which carefully considers and attempts to screen the proposed mining area from sensitive receptors, using a combination of natural features and topography, bunding and tree screening. Of note is that the development of the co-existent mine plan has resulted in the

requirement for substantial bunding to be constructed within the initial years of development, in advance of mining, to successfully screen the mining operations from Coolmore stud.

7.9.2 Potential Impacts

During the early stages of the Project planning phase, a landscape architect worked with the mine planners and engineers to refine the mine plan to be as visually pleasing to sensitive receptors, as far as is practicable.

Despite this, some views of the Project will be available from areas surrounding the Project; however, it is considered that with ongoing consultation, technical review and liaison, additional mitigation strategies can be developed and implemented to result in an acceptable visual impact.

Further assessment will be completed for inclusion in the EA to determine the level of potential visual impacts resulting from the Project. As necessary a landscape architect will also work with some of the key stakeholders (i.e. neighbouring horse studs) to develop Property Landscape Management Plans to further assist in visual mitigation at the receiver.

7.9.3 Assessment Methodology

A visual impact assessment will be completed for the Project by JVP Visual Planning and Design and Greenpond. The scope of assessment will include:

- An assessment of the existing visual setting within and surrounding the Project area;
- A review of the mine plan to recommend any suggested additional 'engineering required' mitigation measures for visual impacts;
- Defining preliminary visual impacts and developing mitigation measures for the Project (to include lighting assessment);
- Preparation of representative photomontages from surrounding locations;
- Drive by model for the realigned Edderton Road and Golden Highway; and
- Identify and describe mitigation and management measures.

7.10 SOCIAL IMPACT ASSESSMENT

7.10.1 Background

A social assessment has recently been completed to assess the existing social environment surrounding the Project and to identify any potential impacts. The Project area lies within the LGAs of Muswellbrook and Singleton in the Hunter Valley of NSW. The Muswellbrook LGA encompasses the townships of Muswellbrook, Denman, Sandy Hollow, Wybong, McCully's Gap, Kayuga, Baerami and Merriwa. The Singleton LGA comprises the townships of Singleton, Broke, Bulga, Belford, Camberwell and Jerrys Plains. Jerrys Plains is the closest township to the Project area and is located approximately 10 km to the south-east.

The Muswellbrook LGA contains a population of approximately 15,200 persons, while the Singleton LGA comprises of approximately 21,900 persons. Both areas have relatively young populations with growth rates of 3% and 7%, respectively, between the 2001 and 2006 census period. A diverse range of sporting, cultural and recreational activities (including wineries and horse studs) are available for tourists visiting the Muswellbrook and Singleton LGAs. A number

of establishments provide accommodation within the LGAs, many of which are located within or associated with the vineyard areas across the region.

Employment-generating industry within the Muswellbrook and Singleton LGAs is dominated by mining, with 16.3% to 19.3% of the total labour force employed in this sector. Other major industry sectors include: retail sector (9.8-10.1%); agriculture, forestry and fishing (5.0-9.1%); manufacturing sector (7.1-7.3%); and accommodation and food service providers employing (6.4-7.0%) of the total labour force. The Muswellbrook LGA had an unemployment rate of 5.4% and 4.2 % for the Singleton LGA.

7.10.2 Potential Impacts

The Project has the potential to have significant positive impacts on the local and regional economy as a result of the capital costs of the Project, contractor and employee salaries, associated local spending and contributions to community enhancement programs.

There is the potential for new large mining projects to dominate the existing local economy and employment within the region. As the location of the Project is in close proximity to Arrowfield Estate and two major horse stud operations owned by Coolmore Australia and Darley Australia, concerns have been raised by these stakeholders in terms of the impact of the Project on their current economic viability. However, given that the Project will be relying on the existing workforce of Drayton Mine this is not anticipated to be a material issue.

The estimated population growth to the region during the operation phase of the Project is expected to provide additional economic impetus to improve the regional prosperity of the Muswellbrook and Singleton LGAs. There are potential social impacts as a result of additional ongoing demand for community services and infrastructure.

7.10.3 Assessment Methodology

Hansen Bailey will complete a comprehensive social impact assessment which will identify any potential impacts of the Project on the local and regional community, paying particular attention to the demand it may generate for the provision of additional infrastructure and services.

The assessment will also identify the beneficial and potential adverse impacts of the Project from a social perspective. The assessment of impacts will take into account the relevant demographic, social, cultural and economic profiles and will include an estimation and analysis of the Project's economic parameters. The social amenity and use of the Project Boundary and adjacent areas for rural, agricultural, equine, tourism, fishing, recreational, industrial, education or residential purposes will be described.

7.11 ECONOMICS

7.11.1 Background

The commencement of mining within the Project Boundary will involve significant capital investment, ongoing operational expenditure and the continued employment of the existing Drayton Mine workforce. The Project will contribute to flow on economic effects such as the creation of indirect employment opportunities and significant expenditure at a local and State level.

7.11.2 Potential Impacts

The Project will ensure the continuation of mining at Drayton Mine and will rely upon the existing Drayton Mine workforce over 26 years. In doing so, it will further strengthen the local economy and create significant revenue at both State and Federal levels. The Project will provide revenue to the State government through the payment of royalties and taxes contributing to the NSW economy.

The Project will also result in additional and ongoing demands on community infrastructure and services (such as skill levels, trade, health and educational opportunities and population demographics) and impacts to the immediate environment. Preliminary investigations have confirmed that the Project will provide a net production benefit to society of several billion dollars.

7.11.3 Assessment Methodology

The economics impact assessment will be completed for the Project by Gillespie Economics in accordance with DoPs '*Guideline for economic effects and evaluation in EIA*' (2002).

The scope of assessment will include:

- An assessment of the economic impacts of the Project including both a benefit cost analysis and regional economic impact analysis;
- An economic justification for the use of the required land and water resources required by the Project;
- Any necessary mitigation measures, as required.

The economic analysis will assess the potential incremental economic costs and benefits of the Project to the community (i.e. consideration of economic efficiency). This will not only include a consideration of the regional economic impact or economic activity generated by the Project but also any incremental costs and benefits to the environment.

7.12 GEOCHEMISTRY

7.12.1 Background

A recent desktop geochemical assessment of overburden / interburden and potential coal reject materials has been completed for Drayton South. The findings of this assessment included the following:

- Overburden / interburden material of Drayton South is likely to be geochemically benign, with very low total sulphur content and therefore, negligible acid generating potential. This material should contain low concentrations of total metals and is likely to generate alkaline surface runoff/seepage with relatively low concentrations of soluble salts and trace metals;
- Whilst it is possible that material associated with uneconomic coal seams could be less benign than bulk interburden / overburden from Drayton South, this material is likely to make up a very small proportion of the total overburden / interburden volume reporting to storage facilities;
- Some overburden / interburden is likely to be sodic, prone to dispersion and erosion, and unlikely to be suitable for rehabilitation purposes without amelioration measures;

- There is likely to be a lack of suitable topsoil material at Drayton South, due to its shallow nature and the potential presence of sodic / dispersive material;
- Coal rejects derived from the target seams are likely to contain relatively low concentrations of total sulphur, a significant proportion of which is likely to be present as (non-acid forming) organic sulphur. It is expected that the risk of acid generation from coal rejects will be low; and
- The concentration and solubility of environmentally significant metals in coal rejects is likely to be low and within applicable soil and water quality guideline concentrations.

Further assessment will be completed for inclusion in the EA to determine any potential geochemical issues related to the Project.

7.12.2 Assessment Methodology

Further geochemical assessment will be completed for the Project by RGS Environmental Pty Ltd. The scope of assessment includes:

- A brief review of any additional data from exploration drilling programs and an updated sampling and geochemical testing specification including sampling locations, methodology and proposed geochemical testing;
- A site visit providing additional rigour to the geochemical assessment and to ensure that final conclusions are robust and based on a sound sampling and testing methodology;
- A geochemical test program designed to assess the degree of risk from oxidation of pyrite, acid generation and leaching of soluble metals and salts. The assessment will include characterisation of standard soil parameters including salinity, cation exchange capacity, potential nutrients and major metal compositions; and
- Identification of any impact mitigation measures necessary.

7.13 SOILS AND LAND CAPABILITY

7.13.1 Background

The Soil Landscapes of Singleton, 1:250 000 sheet, prepared by Kovac (1991) was reviewed as to identify the soil types and land capability of the Project area. The land capability of the Drayton South area was assessed in accordance with the NOW rural land capability assessment system, which classifies land on soil erosion hazard and versatility of use. The system allows for land to be allocated into eight potential classes (with land capability decreasing progressively from Class I to Class VIII).

The following soil types were identified by Kovac to be present within the proposed mining area:

- Brays Hill (br);
- Liddell (ld);
- Bayswater (bz); and
- Hunter (hu).

Further as described in **Section 7.12** there is likely to be a lack of suitable topsoil material for Drayton South, due to its shallow nature and the potential presence of sodic / dispersive material.

Land required to be disturbed as a result of the Drayton South will be required to be rehabilitated to a stable, self-sustaining condition. At a minimum, rehabilitation will plan to achieve the same classification as prior to commencement of mining. In order to achieve this, effective conservation and management of the existing topsoil and sub-soil resource will be facilitated so as to ensure its effectiveness as a rehabilitation medium.

7.13.2 Potential Environmental Impacts

Many of the soil types within the Project Boundary include soil horizons with a slight to high potential for dispersion. Consequently such soils are likely to be subject to sheet, rill and gully erosion if left unprotected during construction or mining operations.

Potential impacts on soil structure, integrity and fertility may occur as a consequence of extended periods of topsoil storage. This would potentially affect rehabilitation success and the long term sustainability of rehabilitated areas.

The post mining land capability of the Project will be modified from its original condition and will need to be addressed as part of the assessment. The land capability will be largely influenced by the mine plan, post mining land use plans and the final landform design. The presence of final voids or water storage areas will also influence the final land use potential and capability.

7.13.3 Assessment Methodology

A soils and land capability impact assessment will be completed for the Project by Environmental Earth Sciences. The scope of assessment includes:

- Review of previous relevant assessments;
- Completion of soil test pit excavations and other site investigations to determine soil types, nominal depths, land suitability and land capability classifications;
- Soils assessment of areas to be disturbed in accordance with the requirements of the DII guidelines;
- Pre and post mining land capability and classes assessment in accordance with DII and NOW guidelines;
- Pre and post mining agricultural suitability assessment in accordance with DII agriculture guidelines;
- Assessment of available topsoil resources for mining and infrastructure area rehabilitation, management and mitigation measures;
- A detailed description of the proposed mine rehabilitation process of the mine site, including that of washery waste emplacement areas proposed at the existing Drayton Mine;
- Assessment of suitable post-mining land uses for the open cut operations; and
- Identification of any impact mitigation measures necessary.

7.14 REHABILITATION, LAND USE AND FINAL LANDFORM

7.14.1 Background

The Upper Hunter region has a long history of rural land use for a variety of agricultural and industrial activities, predominantly grazing and coal mining. The current dominant land uses within and adjacent to the Project area include thoroughbred horse breeding, open cut coal mining, power generation, viticulture, agriculture and rural residential areas.

Rehabilitation planning for the Project will be undertaken progressively to ensure the total area of disturbance at any one time is minimised to reduce the potential for wind-blown dust, visual impacts and increased sediment-laden runoff.

Rehabilitation will be designed to be compatible with the surrounding landform (with a consideration of the progression of neighbouring mining operations), stable and able to support final land use(s). To ensure a stable final landform, the majority of the overburden emplacement slopes will be shaped to 10 degrees or less; consistent with current industry standards.

Anglo American will aim to restore land disturbed by mining to a condition similar to that which existed prior to mining. It is anticipated that with good land management practices, final rehabilitation of the Project will restore the native vegetation communities to a similar extent of its original coverage.

Rehabilitated land from the Project will be predominantly topsoil and comprised of a mixture of native grasses and native trees representing habitat of the existing grassland and woodland values. Revegetation undertaken will be consistent with the surrounding landscape aiming to link remnant native vegetation communities with re-established habitat areas. The rehabilitation strategy for the Project will focus on biodiversity and the establishment of habitat for threatened species.

7.14.2 Potential Impacts

Throughout its operation, the Project will require the disturbance of large areas of grassland and some small patches of open woodland. As such the requirement for progressive and expedient rehabilitation across the Project Boundary will be employed throughout the life of the Project. In this regard and as discussed in **Section 3.1**, the mine plan has been specifically designed to obtain the maximum area of rehabilitation available throughout the life of the Project.

A long term rehabilitation strategy will be developed to ensure that the disturbed land is returned to as close as possible to its original state once mining operations have ceased.

7.14.3 Assessment Methodology

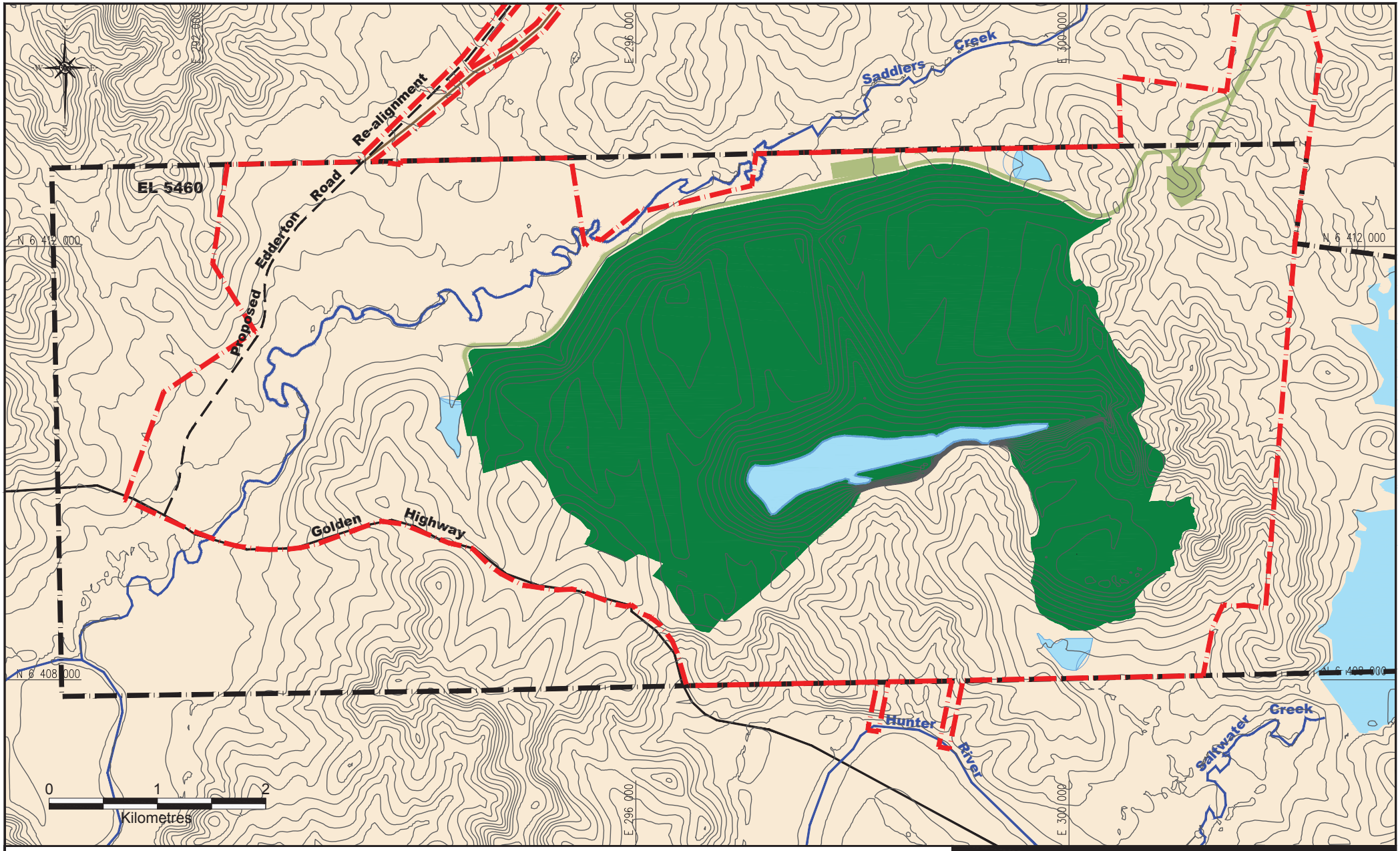
The proposed mine plan and ultimate final landform for Drayton South maintains the development of an undulating, largely free-draining and stable landform consistent with the surrounding environment. Further planning and detail will be provided in the EA with regard to the establishment of existing vegetation communities and the final landform.

A conceptual final landform for the Drayton South is illustrated on **Figure 15**, which will be further refined for inclusion in the EA. The final landform will be developed via progressive rehabilitation

with a focus of developing a stable and undulating, free-draining landform utilising native grasses and native trees representative of the surrounding landscape habitat as far as practical.

The EA will include a detailed description of the proposed rehabilitation strategy for the Project Boundary, having regard to the key principles in the *'Strategic Framework for Mine Closure'* (ANZMEC-MCA, 2000). Detailed descriptions of the following will be included in the EA:

- Rehabilitation objectives, methodology and proposed completion criteria;
- Nominated final land use, having regard to any strategic land use planning or resource management plans or policies; and
- The potential for integrating this strategy with any other offset strategies in the region.



- Project Boundary
- Drayton South EL Boundary
- Proposed Edderton Road Re-alignment Option 1
- Proposed Edderton Road Re-alignment Option 2
- Completed Rehabilitation
- Road & Infrastructure Rehabilitation
- Final Void Water Storage
- Dams

Hansen Bailey

AngloAmerican

DRAYTON SOUTH

Conceptual Final Landform

Cad File: 07223A.dwg	Date: 21.02.11	Drawn: CP	Figure 15

8 PRELIMINARY PROJECT JUSTIFICATION

Society is greatly reliant on coal to meet basic energy needs and steel production. With the continuing increase in population and the fact that there are a number of countries that currently do not benefit from extensive electricity distribution networks, it is expected that the demand for thermal coal for energy production will continue to rise. The Project involves the mining of up to at least 100 Mt of ROM coal by both open cut and highwall mining methods and will contribute to the supply of significant quantities of valuable thermal coal to meet increasing international demand.

The Project will provide Anglo American with a new Project Approval that will ensure the continuation of operations for the existing Drayton Mine which is currently scheduled to close in 2015. This will secure employment for the existing Drayton Mine workforce and ensure that the local, State and Federal socio economic benefits that are created by Drayton Mine continue by enabling the recovery of a valuable coal resource from an area that has long been set aside for mining by the NSW Government.

Drayton South is located south of Muswellbrook within the Hunter Valley Coal Fields. Coal mining within this area has occurred for more than 100 years and the region contains a well known coal deposit. In particular the area in which the Project is proposed has long been set aside for the purposes of coal mining with prospecting initially commencing in the late 1940s and more extensive exploration activities being conducted from the 1960s up until the present day. Previously development consent for a coal mine and associated ML have been granted over the area.

The development of Drayton South is a logical transfer and progression of the existing mining operations at Drayton Mine to extend the life of the operation and to utilise the existing infrastructure and equipment fleet. The existing mine voids will also be utilised for the purpose of disposing coarse rejects and tailings from the CHPP. This will allow the optimisation of the Drayton Mine final landform and will reduce closure liabilities.

Drayton Mine has a proven history of best practice environmental management, which will continue to be applied to the Project. Drayton Mine currently operate their own Safety, Health, Environment and Community Management System (SHECMS) which is certified to ISO 14001 & AS 4800, and will be revised to include the Project to ensure environmental and social impacts are carefully monitored, mitigated and managed. Drayton Mine has continued to meet its environmental monitoring predictions and criteria in all areas.

Extensive consultation with key neighbouring stakeholders during the project planning phase has been positive in developing constructive relationships and has resulted in the development of a co-existent mine plan that maximises resource recovery while minimising environmental and social impacts on stakeholders.

A full EA conducted in accordance with the Director-General's EARs will investigate and report on the social, environmental and economic impacts from the Project in accordance with the objectives of the EP&A Act.

9 REFERENCES

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APPENDIX A

Preliminary Environmental Risk Assessment

DRAYTON SOUTH COAL PROJECT

PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

for

Anglo American

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
Ecology	Vegetation clearing	Loss of biodiversity and disruption to threatened flora and fauna or habitats	3	5	20 (S)	A Flora and Fauna Impact Assessment will be completed for the Project by Cumberland Ecology in accordance with (at least) the *DECC Draft Guidelines for Threatened Species Assessment*. Database analysis, literature review and field surveys will identify threatened flora and fauna which may be impacted by the Project. A referral will be compiled to fulfil requirements of the Environmental Protection and Biodiversity Conservation Act 1999. Offset properties will be investigated. Mitigation measures will be determined as necessary for the Project including the development of an offsets strategy, if required.
		Disturbance to Federally listed species	3	5	20 (S)	
Archaeology and Cultural Heritage	Vegetation clearing, blasting and topsoil stripping	Disturbance of Aboriginal artefacts, sites or places of cultural heritage significance	3	4	17 (S)	An Aboriginal Archaeological and Cultural Heritage Impact Assessment for the Project will be undertaken by AECOM Australia Pty Ltd in accordance with the *National Parks & Wildlife Act 1974: Part 6 Approvals Interim Community Consultation Requirements for Applicants* and DECCWs *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
						The Assessment will include a desktop review, database, Native Title and literature search of previously recorded Aboriginal Cultural Heritage information. A field survey will take place with members of the Aboriginal community and mitigation and management strategies will be developed as appropriate.
		Disturbance of non-Indigenous heritage sites	2	3	8 (M)	AECOM Australia Pty Ltd will complete a Non-Indigenous Heritage Assessment in accordance with the standards required by the Heritage Office of NSW. The Assessment will include a review of existing heritage assessment reports and a field survey of the Project area. Heritage significance will be assessed. Mitigation measures will be identified and implemented as appropriate for potential impacts.
Water Management	Topsoil stripping, haul roads, un-rehabilitated spoil	Dirty water runoff entering local waterways	3	4	17 (S)	A Groundwater Impact Assessment will be conducted for the Project by Australasian Groundwater and Environmental Consultants (AGE). The Groundwater Assessment will include the identification of groundwater resources which may be impacted by the Project, modelling of cumulative groundwater impacts and development of a Modflow Groundwater Model for the Project. The Groundwater
	Coal extraction and overburden removal	Groundwater inflow into pit	2	3	8 (M)	

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
		Drawdown of aquifers on surrounding private water users	2	3	8 (M)	Assessment will additionally include an analysis of contaminant potential from tailings dam leachate of post-mine groundwater impacts, cumulative assessment of future adjacent mine impacts, confirmation of alluvium impacts and extent of mining impacts, as relevant. The Groundwater Assessment will also propose groundwater mitigation and management strategies as required. A Surface Water Impact Assessment will be conducted for the Project by WRM Water & Environment. This Assessment will include a review of existing surface water assessment reports, the identification of surface water resources, assessment of existing surface water hydrology, assessment of potential surface water impacts on and offsite, assessment of post-mine surface water impacts and predicted final void water levels. The Surface Water Impact Assessment will also include the development of surface water management strategies, mitigation measures and development of a water balance model for the life of the Project incorporating cumulative impacts with adjacent operations. A relevant flood water Impact Assessment will be conducted by WRM Water and Environment for Saddlers Creek.
		Cumulative impacts with surrounding users	4	2	14 (S)	
	Coal processing and production	Water demand for dust suppression and coal washing	1	4	7 (M)	
	Water discharges into local waterways	Surface water contamination	3	3	13 (S)	
		Contaminated water from wash down bays, etc	3	3	13 (S)	
	Flooding	Increased flood levels and erosion of catchment	3	2	9 (M)	
Acoustics	Coal, rejects and overburden haulage	Excessive Noise generation at sensitive receivers	3	3	13 (S)	A Noise and Blasting Impact Assessment will be conducted for the Project by Bridges Acoustics in accordance with (at least) the *Industrial Noise Policy 2000*.

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
	Plant and equipment working in-pit and on overburden dumps		3	3	13 (S)	The Assessment will determine likely criteria for the Project and include an assessment of operational and construction noise impacts, a blasting assessment, assessment of the extension of train movements and noise impacts with approved industry as point source and the assessment of cumulative impacts for current proposals. The Noise and Blasting Impact Assessment will also develop appropriate mitigation and management measures.
	Train movements on rail loop and spur		2	3	8 (M)	
	CHPP operation and stockpiles		2	3	8 (M)	
	Coal loading at rail loop		2	3	8 (M)	
	Product Coal Transport		2	4	12 (M)	
	Increased traffic movements		1	4	5 (L)	
	Blasting	Overpressure and ground vibration impacts at sensitive receivers	3	3	13 (S)	A blasting Impact Assessment will be conducted for the Project by Bridges Acoustics as part of the Noise and Blasting Impact Assessment described above.
Visual	Overburden emplacement	Visual impact to surrounding	3	4	17 (S)	A Visual Impact Assessment will be completed for the Project by JVP Visual Planning and Design and Greenpond to assess the visual

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
	Active Mining	receivers	2	3	8 (M)	impacts of the Project and identify mitigation and management measures, as appropriate. The Assessment will include analysis of the existing visual setting, definition of preliminary visual impacts, lighting assessment and comment on potential cumulative impacts.
	Lighting from mobile and fixed equipment, buildings and potential night glow		3	4	17 (S)	
Air Quality	Vegetation clearing, drilling and topsoil stripping	Wind blown dust and machinery exhaust fumes contributing to elevated dust levels	3	3	13 (S)	An Air Quality and Greenhouse Gas Impact Assessment will be conducted for the Project by PAE Holmes in accordance with the '*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*' (DEC, 2005). The Assessment will include confirmation of background levels, determination of site criteria, assessment of construction and operation of air quality impacts, determination of greenhouse gas emissions, assessment of air quality impacts with approved industry, assessment of cumulative impacts and a literature review. The Assessment will also develop any suitable mitigation and management measures needed.
	Overburden emplacement		3	3	13 (S)	
	Uncovering of coal		3	3	13 (S)	
	Coal, rejects and overburden haulage		3	3	13 (S)	
	Coal processing and transport		2	4	12 (M)	
	CHPP operation and stockpiles		2	3	8 (M)	
	Combustion of diesel fuel	Greenhouse gas emissions	2	3	8 (M)	The air quality Impact Assessment will assess greenhouse gas Scope 1, 2 and 3 emissions in accordance with the Australian Greenhouse

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
	Electricity use		2	3	8 (M)	Office's (AGO) '*Factors and Methods Workbook*' (AGO, 2005) as part of the Air Quality and Greenhouse Gas Impact Assessment described above.
	Downstream Impacts from the Burning of Coal		2	3	8 (M)	
	Blasting	Greenhouse gas emissions, fume and dust Generation	3	2	9 (M)	Blasting effects will be assessed as part of the Air Quality and Greenhouse Gas Impact Assessment.
Socio-Economics	Increased Employees residing in local communities	Social Impacts	3	2	9 (M)	Hansen Bailey will prepare a social assessment for the Project considering the stakeholder engagement program and impacts predicted for the Project. Mitigation measures will be determined as required.
		Economic Impacts	2	2	5 (L)	Gillespie Economics will undertake a detailed economics assessment determining both local and regional impacts from the Project.
Geochemical	Overburden Placement	Potentially acid forming materials affecting soil and water resources	3	2	9 (M)	RGS Environmental Pty Ltd will undertake a Geochemical Impact Assessment on the potential for PAF and NAF from overburden and rejects materials of the Project. Management and mitigation measures will be determined as required.
Rehabilitation and Final	Topsoil Stripping and land	Loss of productive topsoil	2	3	8 (M)	A Soils and Land Capability Impact Assessment will be completed for the Project by Environmental Earth Sciences.

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
Landform	preparation	Deterioration of land capability	2	3	8 (M)	The Assessment will include a review of previous relevant assessments, soil test pit excavations, soils assessments of areas to be disturbed, pre and post mining land capability and classes assessment, pre and post mining agricultural suitability assessment, assessment of available topsoil resources, a description of the proposed mine rehabilitation process and an assessment of suitable post-mining land uses. The assessment will also suggest any required impact mitigation measures.
	Rehabilitation	Erosion	2	3	8 (M)	The proposed mine plan and ultimate final landform for the Project is planned to maintain an undulating, free-draining and stable landform consistent with the surrounding environment, as practical. Further planning and detail will be provided in the EA with regard to the establishment of existing vegetation communities and final landform.
		Weed invasion	1	3	4 (L)	
		Feral animal invasion	1	3	4 (L)	
	Final Landform	Unstable landform	2	2	5 (L)	Final rehabilitation objectives and quality will also be assessed in the EA. Further planning and detail will be provided in the EA with regard to the mitigation of unstable landform, poor drainage and erosion.
		Poor drainage	2	2	5 (L)	
		Erosion	2	3	8 (M)	

Issue	Aspect	Impact	Risk Assessment			Environmental Assessment Scope
			C	L	R	
Traffic and Transport	Increased vehicle movements from employees, deliveries and train loading	Increased traffic movements	2	2	5 (L)	A Traffic and Transport Impact Assessment will be completed for the Project by DC Traffic Engineering in accordance with at least the *'Guide to Traffic Generating Developments'*. The Assessment will include a review of previous traffic impact assessments undertaken for the surrounding area, determination of likely criteria for the Project, design of a traffic counts program, assessment of existing, construction and operational traffic impacts, assessment of traffic movements on existing road networks and assessment for the realignment of Edderton Road. The Assessment will also describe any required impact mitigation and management measures.
	Road Upgrades	Public Perception	2	2	5 (L)	
Waste	General waste management	Land contamination	1	2	2 (L)	A relevant assessment waste assessment will be undertaken for inclusion in the EA and an indicative Waste Management System will described for the Project which shall provide management procedures to ensure the environmentally responsible disposal, tracking and reporting of all relevant waste generated on site.
	Rejects management	Water contamination	2	3	8 (M)	
	Sewage management		2	2	5 (L)	
Hazards	Storage and Handling	Soil and water contamination	2	2	5 (L)	A relevant level of hazard assessment in accordance with SEPP33 will be undertaken for the Project, although it is not anticipated that large quantities of hazardous materials will be required for the Project.
	Bushfire	Fire hazard	2	3	8 (M)	A relevant bushfire hazard assessment will be undertaken for the Project with relevant mitigation defined as required.

DRAYTON SOUTH COAL PROJECT

Risk Assessment Tools: Matrix for Determining Level of Risk

Loss Type	Hazard Effect/Consequence				
	1 Insignificant	**2 Minor**	**3 Moderate**	**4 High**	**5 Major**
(S/H) Harm to People (Safety/Health)	First aid case. Exposure to minor health risk.	Medical treatment case. Exposure to major health risk.	Lost time injury. Reversible impact on health.	Single fatality or loss of quality of life. Irreversible impact on health.	Multiple fatalities. Impact on health ultimately fatal.
(EI) Environmental Impact	Minimal environmental harm (L1 incident).	Material environmental harm (L2 incident, remediable short term).	Serious environmental harm (L2 incident remediable with LOM).	Major environmental harm (L2 incident remediable post LOM).	Extreme environmental harm (L3 incident irreversible).
(BI/MD) Business Interruption/Material Damage and Other Consequential Losses	No disruption to operation. Five percent loss of budgeted operating profit.	Brief disruption of operation. Ten percent loss of budgeted operating profit/listed assets.	Partial shutdown. Fifteen percent loss of budgeted operating profit/listed assets.	Partial loss of operation. Twenty percent loss of budgeted operating profit/listed assets.	Substantial or total loss of operation. Twenty-five percent of loss budgeted operating profit/listed assets.
(L&R) Legal and Regulatory	Low level legal issue.	Minor legal issue. Non compliance and breaches of the law.	Serious breach of the law. Investigation/report to authority, prosecution and/or moderate penalty.	Major breach of the law. Considerable prosecution and penalties.	Very considerable penalties and prosecutions. Multiple law suits and jail terms
(R/S/C) Impact on Reputation/Social/Community	Slight impact. Public awareness may exist but no public concern.	Limited impact. Local public concern.	Considerable impact. Regional public concern.	National impact. National public concern.	International impact. International public attention.
Likelihood	**Risk Rating**				
5 Almost Certain	11 (M)	16 (S)	20 (S)	23 (H)	25 (H)
4 Likely	7 (M)	12 (M)	17 (S)	21 (H)	24 (H)
3 Possible	4 (L)	8 (M)	13 (S)	18 (S)	22 (H)
2 Unlikely	2 (L)	5 (L)	9 (M)	14 (S)	19 (S)
1 Rare	1 (L)	3 (L)	6 (M)	10 (M)	15 (S)

Likelihood Rating

Likelihood	Examples
5 **Almost Certain**	The unwanted event has occurred frequently; occurs in order of one or more times per year and is likely to reoccur within one year.
4 **Likely**	The unwanted event has occurred infrequently; occurs in order of less than once per year and is likely to reoccur within five years.
3 **Possible**	The unwanted event has happened in the business at sometime or could happen within 10 years.
2 **Unlikely**	The unwanted event has happened in the business at sometime or could happen within 20 years.
1 **Rare**	The unwanted event has never been known to occur in the business or it is highly unlikely that it will occur within 20 years.

Risk Rating

Risk Rating	Risk Level	Guidelines
21 to 25	(H) High	A high risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised immediately.
13 to 20	(S) Significant	A significant risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised as soon as possible.
6 to 12	(M) Medium	A moderate risk exists that management's objectives may not be achieved. Appropriate mitigation strategy to be devised as part of the normal management process.
1 to 5	(L) Low	A low risk exists that management's objectives may not be achieved. Monitor risk, no further mitigation required.

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