# Rixs Creek North

## Mining Operations Plan – Amendment A

From 01/12/2018 to 31/12/2020

# Rixs Creek North

Mining Operations Plan

Client: Bloomfield Collieries Pty Limited

ABN: 76000106972

Prepared by

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# Quality Information

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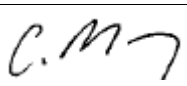
| Prepared by | Dee Murdoch / Chris Knight |
| Reviewed by | Geoff Moore - The Bloomfield Group |

Revision History

| Revision | Revision Date | Details | Authorised | |
|---|---|---|---|---|
| | | | Name/Position | Signature |
| 1.0 | 17 September 2018 | Version 1 | Chris Knight<br>Environment Manager<br>The Bloomfield Group | |
| 2.0 | 12 November 2018 | Version 2 | Chris Knight<br>Environment Manager<br>The Bloomfield Group | |
| 3.0 | 19 November 2018 | Version 3 | Chris Knight<br>Environment Manager<br>The Bloomfield Group | |
| 3.0 A | 1 March 2019 | Version 3A | Chris Moy<br>General Manager<br>Technical Service/ Development<br>The Bloomfield Group |  |

# Rix's Creek North Mine

## Mining Operations Plan

| | |
|---|---|
| Name of Mine: | Rixs Creek North |
| MOP Commencement Date: | 01/12/2018 |
| MOP Completion Date: | 31/12/2020 |
| Mining Authority (Lease Number.): | CL357, ML1630, ML1648, ML1649, ML1650 and ML1651, ML1725. |
| Name of Title Holder(s): | Bloomfield Collieries Pty Limited |
| Name of Mine Operator: | Bloomfield Collieries Pty Limited |
| Name and Contact Details of the Mine Manager (or equivalent): | Brendon Clements<br>Manager of Mining Engineering<br>PO Box 4<br>East Maitland NSW 2323<br>bclements@rixs.com.au |
| Name and Contact Details of Environmental Representative: | Chris Knight<br>Environment Manager<br>Ph. 02 6578 8824 |
| Name of Representative(s) of the Authorisation Holder(s):<br>Title: | Brendon Clements<br>Manager of Mining Engineering |
| Signature: |  |
| Date: | 26 March 2019 |
| Version | 3.0A |

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# Acronyms

| | |
|---|---|
| ACARP | Australian Coal Association Research Program |
| AEMR | Annual Environmental Management Report |
| APZ | Asset Protection Zone |
| BGMOMS | Bloomfield Group Mining Operations Management System |
| BCL | Bloomfield Collieries Pty Limited |
| CCC | Community Consultative Committee |
| CHPP | Coal Handling and Preparation Plant |
| CL | Coal Lease |
| CLWD | Department of Industry- Crown Land and Water Division |
| DA | Development Approval |
| DECC | NSW Department of Environment and Climate Change (now OEH) |
| DG | Director-General |
| DGN | Dangerous Goods Notification |
| DISRD | Department of Industry, Skills and Regional Development |
| DP&E | Department of Planning and Environment |
| DP&I | Department of Planning and Infrastructure (now DP&E) |
| DPI | NSW Department of Primary Industries |
| DPI-MR | NSW Department Of Primary Industries – Mineral Resources Division (now DRE) |
| DRG | NSW Department of Planning and Environment – Division of Resources and Geoscience |
| DTIRIS | Department of Trade and Investment, Regional Infrastructure and Services (now DISRD) |
| EA | Environmental Assessment |
| EC | Electrical Conductivity |
| EIS | Environmental Impact Statement |
| EPA | NSW Environmental Protection Agency |
| ESCP | Erosion and Sediment Control Plan |
| EMP | Environmental Management Plan |
| EMS | Environmental Management System |
| EPL | Environmental Protection Licence |

| | |
|---|---|
| Glencore | HV Coking Coal Pty Limited (ACN 605 492 804) |
| GIS | Geographical Information System |
| ha | Hectare |
| LMP | Landscape Management Plan |
| LRMS | Land Rehabilitation Management System |
| mL | Mega Litre |
| ML | Mining Lease |
| MOP | Mining Operations Plan |
| Mtpa | Million tonnes per annum |
| RCM | Rix's Creek Mine |
| RCN | Rix's Creek North |
| RCS | Rix's Creek South |
| NMP | Noise Management Plan |
| NOW | New South Wales Office of Water |
| N/A | Not Applicable |
| OEH | Office of Environment and Heritage |
| RMP | Rehabilitation Management Plan |
| RMS | NSW Road and Maritime Services |
| ROM | Run Of Mine |
| DP&E- RR | Department of Planning and Environment- Resources Regulator |
| SC | Singleton Council |
| t | Tonne |
| tph | Tonnes per hour |
| TARP | Trigger Action Response Plan |
| TSC Act | *Threatened Species Conservation Act 1995* |
| WMP | Water Management Plan |

# 1.0 Introduction

## 1.1 Owner / Operator

Bloomfield Collieries Pty Limited own and operate the Rix's Creek North Mine (RCN), formerly part of the Integra Coal Operations Complex.

The open cut operations, delivery of Run of Mine (ROM) coal from the Integra underground mine, coal preparation and train loading operations at RCN are covered by this Mining Operations Plan (MOP).

Bloomfield Collieries Pty Limited (BCL) is an Australian owned, family company, under The Bloomfield Group Mining Operations Management System.

BCL also operate the Rix's Creek South (RCS) open cut coal mine which adjoins RCN.

## 1.2 Purpose of this Document

Under the *Mining Act 1992*, environmental protection and rehabilitation are regulated by conditions in all mining leases, including requirements for the submission of a MOP.

This MOP document details the coal mining operations at RCN and has been prepared for the specific purpose of satisfying the requirements of CL357, ML1630, ML1648, ML1649, ML1650, ML1651 and ML1725.

It has been prepared in accordance with requirements of the NSW Department of Industry, Skills and Regional Development– Division of Resources and Energy (DRE) ESG3:*Mining Operations Plan (MOP) Guidelines* (September 2013) (NSW Trade and Investment, Division of Resources and Energy., Sept 2013) for Level 1 mines.

## 1.3 Context

The mine is located in the Upper Hunter Valley, within the Singleton Council (SC) local government area, approximately 10km northwest of Singleton in the Hunter Coalfields of the Sydney Basin.

The site is surrounded by a number of existing mines including Mount Owen Mine and Ravensworth East Mine to the north-west, Glendell Mine and Ashton Mines to the west and Rix's Creek South Mine to the south.

The mine is located between the New England Highway to the south west, Bridgman Road to the east and Middle Falbrook locality to the north, while the Main Northern Railway line traverses the site.

This MOP outlines the proposed operational and environmental management activities planned for RCN for approximately a three year period from its commencement date.

### 1.3.1 Integration of Rix's Creek Mine and Rixs Creek North Mine

It is recognised that the RCS and RCN mine sites are operated as a partially integrated operation as Rix's Creek Mine (RCM).

In December 2017 a number of Management Plans were approved by the Department of Planning and Environment to allow the Environmental Management System, Blasting, Noise and Air Quality and Greenhouse Gas Management Plans to be integrated across both the RCN and RCS mine sites. Currently RCM is awaiting approval of the integrated Water Management Plan which was submitted in April 2018.

Due to specific conditions within each Project Approval some Management Plans are not integrated specifically and where such issues occur will be managed under existing site based management plans. The majority of the Management Plans have been integrated to optimise operations across both sites.

In this context, this MOP will replace the current Rehabilitation Management Plan (RMP) for the RCN site which currently addresses Condition 52, Schedule 3 of Project Approval 08_0102 relating to the requirement for a RMP. (As shown in Appendix A).

To mitigate the need to rewrite this MOP every time one of these management plans is updated, the management plans have been referenced based on topic (e.g. Water Management Plan) rather than referenced to specific plans.

## 1.4 History of Operations

Camberwell Coal Joint Venture was granted Development Consent (DA 86/2889) for mining operation on the 21 March 1990.

Development commenced with the construction of the CHPP and rail loop facilities and the first coal was mined in the area known as the North Pit on 1 March 1991.

Camberwell Coal Joint Venture and Glennies Creek Joint Venture were integrated in 2006 to form Integra Coal Joint Venture.

AMCI Holdings Australia, part owner of Integra Coal Joint Venture, was bought by Brazil's Companhia Vale do Rio Doce in 2007 which subsequently changed its name to Vale in 2008.

The complex operated as an unincorporated joint venture, with Integra Coal Operations Pty Limited being the management company responsible for all operations at both the Camberwell Coal and Glennies Creek sites on behalf of the joint venture owners.

The project approval for the Integra Open Cut Project was granted on 26 November 2010 under Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) and was valid for the open cut through until 31 December 2022.

This approval was subsequently modified under Section 75W of the EP&A Act for the site to operate under a single project approval instrument which combined the project approval for Integra Underground and Open Cut (PA 08_0101 and PA 08_0102, respectively).

In December 2015 Glencore completed the purchase of 100% of the Integra Mining Operations.

The Bloomfield Group subsequently purchased from Glencore the previous Integra Open Cut Operations, Coal Handling Preparation Plant, Train Loading Infrastructure and the Rail Loop.

Application was made in February 2016 to separate the underground and open cut approvals as well as extend the open cut approval to December 2035 with the approval being formally granted in August 2016.

Bloomfield operate the open cut operations as "Rix's Creek North" with control of the open cut mining, delivery of ROM coal from the Glennies Creek Underground Mine (Project 08_0101), coal preparation and train loading operations.

Along with renaming the mine the operational areas have been renamed as well with the Western Mining Area now being known as the Camberwell Pit and the North Pit being called the Falbrook Pit.

The current Rix's Creek EPL 3391 has had the premises boundary varied to combine the RCS operations and RCN operations in to the one EPL.

## 1.5 Current Consents, Authorisations and Licences

RCN operates under a number of different approvals including:

- Development Consents and Approvals issued by the NSW Department of Planning and Environment (DP&E), (formerly NSW Department of Planning and Infrastructure (DP&I) and Singleton Council (SC);
- Road Closure Approvals issued by the NSW Roads and Maritime Services (RMS) and SC;
- Mining tenements issued by NSW Department of Planning, Division of Resources and Geoscience and precursor agencies;
- Mining Operations Plan accepted by the NSW Department of Planning, Division of Resources and Geoscience;
- Environment Protection Licence (EPL) issued by the NSW Environmental Protection Authority (EPA);
- Dangerous Goods Licences issued by WorkCover NSW (now known as SafeWork NSW); and
- Water Licences issued by NSW Department of Industry- Crown Lands and Water Division (CLWD).

The consent permits the RCN Complex to:

- Produce up to 1.5 Mtpa ROM coal from the Falbrook Pit
- Produce up to 4.5 Mtpa ROM coal from the Camberwell Pit
- Transport up to 7.3 Mtpa of coal from the site via rail

- Operate the Falbrook Pit (also known as the Northern Mining Area) between 7am and 10pm up to seven days a week, with vegetation and topsoil stripping limited on site between 7am and 6pm.
- Operate the Camberwell Pit 24 hours a day up to seven days a week.
- Conduct blasting operations between 9am and 5pm, Monday through Saturday inclusive.

The open cut consent has been modified seven times to date via sections 75J and 75W of the EP&A Act. The modifications are explained in detail in the following section. A copy of the Project Approval is provided in Appendix B.

### 1.5.1 Consent Modifications

Approval for Modification 1 to the Integra Mine Complex Project Approval was formally granted on 18 March, 2012 by the DP&I (now DP&E). Modification 1 was submitted to the Minister of Planning and Infrastructure on the 2 December, 2011 and proposed the following modifications:

- Entitlement of an additional privately owned property to “Acquisition Upon Request”;
- Entitlement of four additional privately owned properties to additional noise mitigation measures;
- Increasing the maximum height of the Falbrook Pit emplacement area from 135m AHD to 141m AHD;
- Relocation of the existing Falbrook Pit crib hut site;
- Extension of the timeframe stipulated in Project Approval Schedule 3, Condition 48, which requires the installation and operation of an overland conveyor from the underground surface facilities to the Camberwell CHPP; and
- Extension of the timeframes stipulated in Project Approval Schedule 3, Conditions 42 and 43, which relate to the revision of Integra Coal’s biodiversity offset strategy and to the provision of long term security for the biodiversity offset areas identified in the strategy.

On the 2 October, 2012 Integra submitted an application (referred to as Modification 3 as it was approved after the lodgement of a third modification request proposal) to the DP&I (now DP&E), seeking to modify the Minister’s approval for Integra underground coal mine (MP 08_0101) and open cut Coal Project (MP 08_0102) under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Integra proposed the following modifications:

- Extend the timeframe for installation of the overland conveyor by a further six months (to the end of March 2013);
- Extend the timeframe for provision of long term security of the offset strategy by a further six months (to the end of March 2013).

Approval of Modification 3 was formally granted on 5th October, 2012 by the DP&I (now DP&E).

On the 21 September, 2012 an application requesting modifications (referred to as “Modification 2”) to the Integra Mine Complex Project Approvals (PA 08_0101 and PA 08_0102) under Section 75W of EP&A Act with an accompanying Environmental Assessment in support of the proposed modifications was lodged by Integra Coal Operations Pty Limited. The modification proposed:

- Removal of Schedule 3 Condition 48, which requires the installation and operation of an overland conveyor from the underground surface facilities to the Coal Handling and Preparation Plan (CHPP);
- Amendment to the definitions of “Day” and “Night” in Schedule 1 to enable the operations within the Falbrook Pit to be carried out for the period from 7 am to 10 pm Monday to Sunday, and public holidays in place of the currently approved 7 am to 10 pm Monday to Saturday, and 8 am to 10 pm Sunday and public holidays under Schedule 2 Condition 11(a);
- Amendment to Table 6 in Schedule 3 Condition 6 “Land where additional noise mitigation measures are available on request” to include “363 – D & L Bynon”;
- Amendment to the night time rating background level (RBL) for receptor ID 112; and
- Amendment of Schedule 3 Condition 43, to extend the timeframe for the long term security of all areas in the revised offset strategy from September 2012 to September 2014.

Approval of Modification 2 was formally granted on 1 February, 2013 by DP&E.

On 19 May, 2014 an application requesting modifications (referred to as “Modification 4” to the Integra Mine Complex Project Approvals (PA 08_0101 and PA 08_0102) under Section 75W of EP&A Act with an accompanying Environmental Assessment in support of the proposed modifications was lodged by Integra Coal Operations Pty Limited. The modification proposed changing the composition of the approved Biodiversity Offset Strategy for the Complex to:

- Excise the Western and Supplementary Biodiversity Offset Areas;
- Reduce the size of the Northern and Southern Biodiversity Offset Areas and modify the boundaries of the Martins Creek Biodiversity Offset Areas; and
- Include two new biodiversity offset areas (collectively referred to as the Appletree Flat Biodiversity Offset Area), located approximately 30 km to the west of the Complex. Both areas are currently private inholdings within the boundary of the Wollemi National Park.

Approval of Modification 4 was formally granted on 24 February, 2016 by DP&E

On 02 February 2016 an application requesting modification (referred to as “Modification 5” to the Integra Open Cut Project Approvals PA 08_0102) under Section 75W of EP&A Act with an accompanying Environmental Assessment in support of the proposed modifications was lodged by Bloomfield Collieries Pty Limited. The modification proposed allowance of Run of Mine Coal to be transported and processed from either open cut mining at the Integra Coal Handling and Preparation Plant.

Approval of Modification 5 was formally granted on 26 February 2016 by DP&E.

On 16 February, 2016 an application requesting modifications (referred to as “Integra Underground Project (MP 08_0101 MOD 5) Integra Open Cut Project (MP 08_0102 MOD 6) Separation of Consolidated Project Approval” to the Integra Mine Complex Project Approvals (PA 08_0101 and PA 08_0102) under Section 75W of EP&A Act with an accompanying Environmental Assessment in support of the proposed modifications was lodged by Integra Coal Operations Pty Limited to separate the open cut and underground approvals into two separate approvals. The modification proposed in order to independently manage operations at Integra Underground and Integra Open Cut, Glencore and Bloomfield have sought approval to:

- Separate the Complex’s consolidated project approval instrument into two separate approvals for the underground and open cut operations;
- Modify the boundaries of the underground and open cut project areas; and
- Allow for previously approved open but mining activates to continue at Integra Open Cut for an extended period of time – a further 13 years (from 31 December 2022 to 31 December 2035).

Approval of Modification 6 was formally granted on the 23 August 2016 by DP&E.

On 22 June 2017 an application requesting modification (referred to as “Modification 7” to the Rix’s Creek North Open Cut Project Approval PA 08_0102) under Section 75W of EP&A Act with an accompanying Environmental Assessment in support of the proposed modifications was lodged by Bloomfield Collieries Pty Limited. The modification sought approval of the following;

- Rix’s Creek South CHPP dried tailings refuse to be emplaced in Rix’s Creek North overburden dumps.

- Rix’s Creek South overburden to be emplaced in Rix’s Creek North overburden dumps.

- Exploration drilling to be conducted in the area between Rix’s Creek North mine area and the northern limit of Rix’s Creek South boundary.

Approval of Modification 7 was formally granted on the 1 September 2017 by DP&E.

Current approvals, tenements and MOP for RCN are summarised in Table 1, while current licences are listed in Table 2.

**Table 1 RCN approvals, tenements and MOP**

| Approval Number | Description | Issue Date | Expiry Date |
|---|---|---|---|
| **Approvals** | | | |
| NSW Department of Planning and Environment | | | |
| PA No. 08_0102 | Development Consent for the construction and operation of surface coal mine extensions. | 26 November 2010 | 31 December 2022 (now superseded to 31 December 2035 – Mod 5). |
| Modification 1 | Modification to acquisition and mitigation properties, increase Falbrook Pit dump height, North crib huts, Implementation date for OLC extension, BOA extension | 18 March 2012 | - |
| Modification 3 | Eliminate OLC, modify Falbrook Pit Operating hours (7a-10p x 7d), additional mitigation property, amend noise criteria at property 112, Further extension to BOA (2 years) | 5 October 2012 | - |
| Modification 2 | OLC extension (6months), BOA extension (6 months) | 1 February 2013 | - |
| Modification 4 | Application submitted April 2014 to revise BOA strategy | 24 February 2016. | - |
| Modification 5 | Transport and Processing of ROM coal from either Open Cut at either CHPP. | 26 February 2016 | |
| Modification 6 | Application submitted Feb 2016 to separate consolidated approval into individual Underground and Open Cut approvals | 23 August 2016. | 31 December 2035 |
| Modification 7 | The exploration drilling activities as described in EA (Mod 7) | 1 September 2017 | |
| PA 06_0073 | Project approval to operate the Falbrook Pit | 2 December 2008 | 1 December 2018. (now superseded to 31 December 2035 – PA 08_0102). |
| Singleton Shire Council | | | |
| DC | Hydrocarbon Storage Shed | 7 December 2005 | - |
| DC | Control Room | 12 September 2005 | - |
| Approval to Demolish Existing Dwelling and Shed | Dwelling and shed located at Lot 93 DP 752442 Middle Falbrook Road | 13 April 2005 | - |
| DC 719/2003 | For Glennies Creek to Ashton Water Pipeline | 13 February 2004 | - |
| DC 90/2001 (Mod) | Alteration / additions to transportable office building | 13 June 2001 | - |
| DC 90/2001 | For new offices and bathhouse | 5 April 2001 | - |

| Approval Number | Description | Issue Date | Expiry Date |
|---|---|---|---|
| BA 1/99 | Construction of awning within Integra underground muster area | 26 March 1999 | - |
| BA 2/99 | Bathroom / office complex | 26 March 1999 | - |
| **Tenements** | | | |
| CL357 | Coal Lease | 27 March 1990 | 27 March 2032 |
| ML1630 | Mining Lease | 16 March 2009 | 16 March 2030 |
| ML1648 | Mining Lease | 4 January 2011 | 4 January 2032 |
| ML 1649 | Mining Lease | 4 January 2011 | 4 January 2032 |
| ML1650 | Mining Lease | 4 January 2011 | 4 January 2032 |
| ML1651 | Mining Lease | 4 January 2011 | 4 January 2032 |
| ML 1725 | Mining Lease | 6 March 2018 | 11 November 2033 |
| **Mining Operations Plan** | | | |
| RCN MOP | | 1 December 2018 | 31 December 2020 |

**Table 2 Key licences and permits**

| Issued By | Number | Grant date | Expiry, renewal or anniversary date | Comment |
|---|---|---|---|---|
| **Environment Protection Licence** | | | | |
| Office of Environment and Heritage | EPL 3391 | 21 August 2000 | 03 April (Annually) | For coal mining and processing at the Rixs Creek North (Integra open cut) and Rix's Creek, South on a scale of >5 million tonnes coal handled and >5 million tonnes of coal products loaded. |
| **Dangerous Goods Licences** | | | | |
| Work Cover 07- | 100230-001 | - | | Licence to store Dangerous Goods on premises |
| Work Cover | NDG 028098 | 29/10/2013 | | Notification of Dangerous Goods on Premises (ammonium nitrate, oxidising liquid and diesel). |
| **Water Access Licences** | | | | |
| Department of Industry- Crown Lands and Water Division | | | | |
| | WAL874 (240 GS) | 31 March 2005 | - | Extraction licences |
| | WAL672 (102 GS) | 23 March 2005 | - | |
| | WAL833 (54 GS) | 31 March 2005 | - | |
| | WAL797 (12 GS) | 1 November 2006 | - | |
| | WAL1273 (1.2 SS) | 1 November 2006 | - | |

| Issued By | Number | Grant date | Expiry, renewal or anniversary date | | Comment |
|---|---|---|---|---|---|
| | WAL 10095 (230HS) | 11 September 2006 | - | | |
| **Bore Licences** | | | | | |
| | Number | Grant date | Security | Volume | Purpose |
| NSW Office of Water | Water Access Licence 672 | 23 March 2005 23/3/2005 | General | 102 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 797 | 1 November 2006 1/11/2006 | General | 14 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 833 | 23 March 2005 23/3/2005 | General | 54 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 874 | 23 March 2005 23/3/2005 | General | 240 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 785 | 18 August 2010 18/8/2010 | High | 23 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 1273 | 1 November 2006 1/11/2006 | Supplementary Water | 1.2 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 10095 | 11 September 2006 11/9/2006 | High | 230 | Hunter Regulated River – Zone 3A Glennies Ck |
| | Water Access Licence 18002 | 1 August 2009 1/8/2009 | Unregulated river | 6 | Hunter Unregulated and Alluvial Water Sources |
| | Water Access Licence 18004 | 1/8/2009 | Aquifer | 5 | Hunter Unregulated and Alluvial Water Sources |
| | Work Approval 20CA200493 | | | | |

| Issued By | Number | Grant Date | Expiry, Renewal or Anniversary Date | Comment |
|---|---|---|---|---|
| NSW Environment Protection Authority. Radiation Management Licence No: **5079169** | Radiation Regulated Material ID 8661 | - | 14 April 2019 | Old No: RR10119 |
| | Radiation Regulated Material ID 8663 | - | 14 April 2019 | Old No: RR10120 |
| | Radiation Regulated Material ID 8664 | - | 14 April 2019 | Old No: RR10121 |
| | Radiation Regulated Material ID 9121 | - | 14 April 2019 | Old No: RR7561 |

### 1.5.2 Tailings Emplacement Approvals

Approval to operate a tailings emplacement is provided under Section 100 of the *Coal Mine Health and Safety Act 2002* Section 100 and High Risk Activity notification under the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014. Table 3 shows the current emplacement approvals at RCN.

**Table 3 Tailings Emplacement Approvals**

| Facility | Approval date | Approving Authority |
|---|---|---|
| TD1 and TD2 | HRA lodged 07/12/2016 | DRE |
| TD3 | 20-10-2008 | DRE |

### 1.5.3 Land Ownership and Land Use

The holding area covers approximately 2504 hectares (ha) (refer to Plan 1A and Table 4). The only land in the MOP area deemed as residential is the "Dulwich" property. Prior to mining operations the area has had a long history of clearing and agricultural or pastoral land use which has resulted in considerable modification to native vegetation and faunal habitat. The majority of the area was cleared for pasture with irrigation on the Glennies Creek floodplain. Clearing resulted in both grasslands being devoid of trees and artificially induced open woodland with scattered mature trees dominating the current landscape.

**Table 4 Land Ownership**

| Lot | DP | Owner | Comment |
|---|---|---|---|
| 2 | 1244769 | Bloomfield Collieries Pty Ltd | |
| 123 | 1067863 | Rix's Creek Pty Ltd | |
| 17 | 752450 | Rix's Creek Pty Ltd | |
| 2 | 603548 | Rix's Creek Pty Ltd | |
| 120 | 752450 | Rix's Creek Pty Ltd | |
| 10 | 752450 | Rix's Creek Pty Ltd | |
| 2 | 752450 | Rix's Creek Pty Ltd | |
| 4 | 606344 | Rix's Creek Pty Ltd | |
| 93 | 752442 | Rix's Creek Pty Ltd | |
| 1 | 783398 | Rix's Creek Pty Ltd | |
| 3 | 600327 | Rix's Creek Pty Ltd | |
| 4 | 600327 | Rix's Creek Pty Ltd | |
| 1 | 606344 | Rix's Creek Pty Ltd | |
| 2 | 606344 | Rix's Creek Pty Ltd | |
| 91 | 752442 | Rix's Creek Pty Ltd | |
| 2 | 1083482 | Rix's Creek Pty Ltd | |
| 1 | 1111102 | Rix's Creek Pty Ltd | |
| 6 | 752450 | Rix's Creek Pty Ltd | |
| 7 | 1075078 | Rix's Creek Pty Ltd | |
| 1 | 725247 | Rix's Creek Pty Ltd | |
| 2 | 1111102 | Rix's Creek Pty Ltd | |
| 78 | 752455 | Rix's Creek Pty Ltd | |
| 43 | 752455 | Rix's Creek Pty Ltd | |
| 44 | 752455 | Rix's Creek Pty Ltd | |
| 77 | 752455 | Rix's Creek Pty Ltd | |
| 119 | 752450 | Rix's Creek Pty Ltd | |
| 31 | 752455 | Rix's Creek Pty Ltd | |
| 3 | 113540 | Rix's Creek Pty Ltd | |

| Lot | DP | Owner | Comment |
|---|---|---|---|
| 6 | 113538 | Rix's Creek Pty Ltd | |
| 75 | 752455 | Rix's Creek Pty Ltd | |
| 98 | 752455 | Rix's Creek Pty Ltd | |
| 240 | 829334 | Rix's Creek Pty Ltd | |
| 3 | 1111102 | Rix's Creek Pty Ltd | |
| 221 | 1171746 | Rix's Creek Pty Ltd | |
| 92 | 752442 | Rix's Creek Pty Ltd | |
| 6 | 1111104 | Rix's Creek Pty Ltd | |
| 1 | 810309 | Rix's Creek Pty Ltd | |
| 1 | 246434 | Rix's Creek Pty Ltd | |
| 2 | 246434 | Rix's Creek Pty Ltd | |
| 2 | 628652 | Rix's Creek Pty Ltd | |
| 4 | 246434 | Rix's Creek Pty Ltd | |
| 1 | 597205 | Rix's Creek Pty Ltd | |
| 8 | 251618 | Rix's Creek Pty Ltd | |
| 2 | 873260 | Rix's Creek Pty Ltd | |
| 233 | 829334 | Rix's Creek Pty Ltd | |
| 231 | 829334 | Rix's Creek Pty Ltd | |
| 5 | 264089 | Rix's Creek Pty Ltd | |
| 12 | 855251 | Rix's Creek Pty Ltd | |
| 4 | 1111102 | Rix's Creek Pty Ltd | |
| 792 | 586255 | Rix's Creek Pty Ltd | |
| G | 37613 | Rix's Creek Pty Ltd | |
| 2 | 802596 | Rix's Creek Pty Ltd | |
| 2 | 597205 | Rix's Creek Pty Ltd | |
| 1 | 802596 | Rix's Creek Pty Ltd | |
| 71 | 777661 | Rix's Creek Pty Ltd | |
| 70 | 777661 | Rix's Creek Pty Ltd | |
| 2 | 810309 | Rix's Creek Pty Ltd | |
| 100 | 633743 | Rix's Creek Pty Ltd | |
| 5 | 246434 | Rix's Creek Pty Ltd | |
| 6 | 246434 | Rix's Creek Pty Ltd | |
| 2351 | 1171747 | Rix's Creek Pty Ltd | |
| 1 | 113540 | Rix's Creek Pty Ltd | |
| 1 | 628652 | Rix's Creek Pty Ltd | |
| 1 | 704496 | Rix's Creek Pty Ltd | |
| 174 | 729917 | Rix's Creek Pty Ltd | |
| 51 | 551899 | Rix's Creek Pty Ltd | |
| 7 | 113538 | Rix's Creek Pty Ltd | |

| Lot | DP | Owner | Comment |
|---|---|---|---|
| 2 | 1183034 | Rix's Creek Pty Ltd | |
| 1 | 745211 | Richards, B & R | Not in Mining Area |
| 1 | 780607 | Glencore | |
| 1 | 608457 | Glencore | |
| 2 | 622070 | Glencore | |
| 2 | 195598 | Glencore | |
| 8 | 246434 | Hall, R & D | Not in Mining Area |
| 79 | 1161577 | Gardiner, W & A | Not in Mining Area |
| 1 | 600327 | Moore, J & M | Not in Mining Area |
| 11 | 1100029 | Moore, J & M | Not in Mining Area |
| 2 | 600327 | Cherry | Not in Mining Area |
| 173 | 727751 | Cherry | Not in Mining Area |
| 20 | 602263 | Gardner, R & W | Not in Mining Area |
| 3 | 1065800 | Carrall & Castledine | Not in Mining Area |
| 4 | 1065800 | Long & Crawford | Not in Mining Area |
| 52 | 587711 | Castledine | Not in Mining Area |
| 51 | 587711 | Nowlan, D | Not in Mining Area |
| 1 | 609259 | Breen, T & G | Not in Mining Area |

## 1.6 Stakeholder Consultation

### 1.6.1 Statutory Authorities

BCL have developed a Stakeholder Engagement Plan (Bloomfield Collieries Pty Limited, 2015) which forms the framework for the stakeholder consultation. This document provides details on:

- Identified stakeholders;
- The contact person;
- Their contact details;
- Allocation of resources in terms of contact methodology; and
- The person in BCL who will be making contact.

As a function of the proximity of the Glencore owned Glennies Creek underground operation the BCL team are in regular liaison with Hunter based staff from Glencore. The Operating, Infrastructure Access and Services Agreement entered into by Glencore and BCL forms legally binding arrangements to allocate the appropriate Integra Complex consent conditions to BCL for the open cut operations and Glencore for the underground operations. It also allocates responsibilities to ensure the surface water management plan operates within consent conditions.

BCL, as the lease holder of RCN, has also consulted with RR in relation to the preparation of this MOP.

### 1.6.2 Community Consultation

RCN is required under Schedule 5 Condition 7 of the Project Approval to participate and co-operate with a Community Consultative Committee (CCC), and BCL recognise that community engagement and community participation are one of the keys to maintaining a licence to operate and to promote industry and community growth. These objectives are achieved through the operation of a 24 hour hotline, the details for which are provided on a link via the BCL site webpage (http://www.bloomcoll.com.au/).

The existing CCC is a combined RCN and RCS operations committee. The committee consists of community representatives, a Singleton Council representative who, at this stage, also Chairs the meetings. DRG and DPE officers have an open invitation to all meetings and provide a direct forum for the community to address environmental and operational concerns with site management and regulatory authorities.

The other methods employed for community consultation are detailed in Table 5 below.

**Table 5 Methods of Communication**

| Stakeholder | Method of Communication |
|---|---|
| Adjacent Residents | - Personal visits and phone conversations<br>- Newsletters (by mail)<br>- Website<br>- Community Consultative Committee |
| Singleton | - Newsletters (accessible by Bloomfield Collieries website)<br>- Community Consultative Committee<br>- Website |
| Singleton Shire Council | - Presentations<br>- Newsletters (accessible by Bloomfield Collieries website)<br>- Website<br>- Phone conversations<br>- Community Consultative Committee |
| Government Departments | - Scheduled external reporting of monitoring results and performance<br>- Newsletters (accessible by Bloomfield Collieries website)<br>- Personal visits and phone conversations<br>- Website |
| Aboriginal Groups | - Newsletters (accessible by Bloomfield Collieries website)<br>- Meetings and site inspections (as required)<br>- Website |
| Employees and their Families | - Monthly Communications Meetings<br>- Tool Box Talks<br>- Notice Boards<br>- Job Safety Observations (JSO)<br>- Newsletters (handed out on site)<br>- Website |
| Educational Providers | - Site tours and presentations |
| Neighbouring Industry | - Site tours and presentations<br>- Website |

# 2.0 Proposed Mining Activities

## 2.1 Project Description

The RCN mine returned to production in 2016 from a care and maintenance phase and has progressively ramped up in production to generally around 2.5 Mtpa of ROM coal from the Camberwell Pit, this will continue for the duration of the MOP where possible.

Planned MOP maximum annual coal production is around 2.5 Mtpa of ROM coal from the movement of approximately eleven million bank cubic meters of overburden.

The Falbrook Pit, formerly known as the North Open Cut will continue to be utilised as a water management area for the duration of this MOP

### 2.1.1 Mine Geology

The open cut project overlies part of the north plunging Rix's Creek Syncline, which is flanked in the west by the eroded Camberwell Anticline, within the Vane Subgroup, Foybrook Formation, and Wittingham Coal Measures. Coal seams are numerous, thin and interbedded with sandstone, mudstone and a lesser amount of conglomerate. The open cut seams dip west or northwest at between 2 and 10 degrees. Seams occasionally show roll structures and paleo-river channels. The steepest dips are located on the western side of the Camberwell Pit but will not be mined during this MOP period.

Geological sections together with the locational diagram are provided in Appendix D. The locations of the cross sections are also shown on all of the other plans.

### 2.1.2 Expected Mine Life

The operational mine life is dependent on current development consents and land access agreements. The current development consent is valid until 31 December 2035. It is the intent of Rix's Creek to continue to extract the remainder of the coal resource within the mining lease area. This will involve gaining further Project Approval to continue the mining operation past the expiry of the current development approval.

This MOP covers the period of mining operations from 01/12/2018 to 31/12/2020.

## 2.2 Asset Register

### 2.2.1 CHPP

The ROM coal from Glencore's Glennies Creek underground mine is washed and processed at the RCN CHPP in accordance with the current consent.

If required, ROM coal from RCN and Rix's Creek South (RCS) may also be managed at the RCN CHPP; currently this ROM coal is being processed at the RCS CHPP.

The RCN CHPP has approval to process coal until 31 December 2035 and has consent to operate 24 hours a day, seven days a week.

The plant is a two module three stage dense-medium separation facility that is rated to 1,200 feed tonnes per hour. The plant has a single input stream of ROM coal and produces a single product stream with two reject streams; fines sized below 1mm and a coarse reject stream. The fines reject, or tailings, is passed through an underflow thickener and then pumped to a tailings storage, while the coarse reject is trucked back to the Open Cut and buried within the spoil at the direction of the mining supervisors.

Associated with the CHPP are three stockpile areas. The Raw Coal stockpile is adjacent to the ROM Hopper and the CHPP. The RL 100 coal stockpile is situated at the head roller of the Glennies Creek Underground Raw Coal conveyor. Product coal is stored on the Product Coal Stockpile, which has a capacity of 500,000 tonnes, prior to reclamation via an underground tunnel reclaim system to the Train Load Out (TLO) facility situated on the Rail Loop.

### 2.2.2 Train Load Out

The TLO has a rated capacity of 5,000 tonnes per hour. This facility is located on the northern section of the Rix's Creek train loop with the Rix's Creek TLO located on the south section of the loop. Operation of this facility is covered by both the RCN Consent and the RCS Consent.

### 2.2.3 Equipment Fleet

Advances in mining equipment and operating systems will continue to be evaluated throughout the term of this MOP, as will any possible improvements to the existing mining fleet to maintain economic viability. Table 6 lists the mining equipment fleet that are utilised at the beginning of this MOP term..

**Table 6 Mining Equipment Fleet- (Includes entire Rix's Creek Mining Fleet – North and South).**

| Equipment | Quantity |
|---|---|
| Caterpillar 789 Truck | 22 |
| Caterpillar 793 Truck | 11 |
| Caterpillar 994 Front-End Loader | 4 |
| Caterpillar 992 Front-End Loader | 3 |
| Caterpillar 988 Front-End Loader | 1 |
| Caterpillar 950 Front-End Loader | 1 |
| Liebherr R9800 Excavator | 1 |
| Hitachi EX5500 Excavator | 1 |
| Caterpillar 6060 Excavator | 1 |
| Hitachi EX3600 Excavator | 3 |
| Caterpillar D 11 Bulldozer | 8 |
| Caterpillar D 10 Bulldozer | 6 |
| Caterpillar Tiger R690B Bulldozer | 1 |
| Caterpillar 16G Grader | 1 |
| Caterpillar 16H Grader | 1 |
| Caterpillar 24H Grader | 2 |
| Redrill SK75 | 1 |
| Redrill SK50 | 1 |
| Sandvik Drill D75K | 1 |
| Sandvik Drill D50-i | 1 |
| Volvo Stemming Truck | 1 |
| Volvo Lube Truck | 2 |
| Caterpillar 773 Lube truck | 1 |
| ACCO Water Cart (10,000 l) | 1 |
| Caterpillar 785 Water Cart (114,000 L) | 3 |
| Caterpillar 777 Water Cart (80,000 L) | 4 |

## 2.3 Activities over the MOP Term

### 2.3.1 Proposed Exploration

Exploration activities will be undertaken during this MOP term. The activities will mainly comprise exploration drilling and associated works that will improve the geological model and the understanding of the coal resource.

The proposed exploration will take place within the Open Cut Project Area and the mining leases ML1648, ML1650, ML1649, ML1651, ML1630, CL357 and ML1725. The exploration activities will also be within the current EPL area.

The proposed drilling will comprise both open holes and cored holes. Some of the holes will be relatively shallow boreholes to help delineate the seam subcrops, while the remaining boreholes will be deeper through more of the

coal measures. Above ground sumps will be used where required and the boreholes will be positioned to minimise any disturbance to gain access to the proposed borehole location.

On completion, the exploration activity at each borehole location will be rehabilitated. The aim of the rehabilitation is to return the area disturbed by exploration activities to a condition that is safe and stable and that allows the current land use. The rehabilitation of each borehole location will include backfilling any sumps and sealing the borehole.

### 2.3.2 Construction Activities

There is no major additional infrastructure construction currently approved.

There will be some minor alterations and construction around the RCN main office and bath house area following from some storm damage in December 2017.

### 2.3.3 Mining Operations

#### 2.3.3.1 Material Production Schedule

The proposed provisional material production schedule for the period covered by this MOP together with anticipated starts and completion dates are summarised in Table 7 dependent on relevant mining constraints and status of subordinate approvals and agreements.

In addition to the volumes depicted in Table 7 RCN has consent to receive up to 500,000m³ of dried tailings refuse and 5,000,000m³ of overburden annually if needed from the RCS mining operations.

**Table 7 Proposed Mining Schedule**

| | Unit | Period 1 | Period 2 | Period 3 |
|---|---|---|---|---|
| Start | Date | 1/01/2018 | 1/1/2019 | 1/1/2020 |
| End | Date | 31/12/2018 | 31/12/2019 | 31/12/2020 |
| Waste | $m^3$ | 10,940,925 | 7,301,051 | 7,364,234 |
| *ROM* Coal | tonnes | 2,430,865 | 2,126,226 | 2,263,196 |
| Saleable Coal | tonnes | 1,163,520 | 1,077,795 | 1,171,136 |
| Saleable Ratio | N/A | 9.4 | 6.8 | 6.3 |

All mining activity will be in the Camberwell Pit.

#### 2.3.3.2 Operating Hours

Mining operations at RCN will be generally undertaken five days per week with weekend production as required.

#### 2.3.3.3 Mining Method

The mining technique is a multi-seam bench system which mines up to six seams and numerous splits.

The mine plan is designed to maximise resource recovery of the whole suite of seams within the lease.

The purpose of MOP Amendment A is cover an area in the Camberwell Pit where it is proposed to remove weathered free dig material prior to drilling and blasting a pre-split for the upper stage of the high-wall in the area.

The result of the change will be a slight increase to the disturbance area while the mining operation will be less intrusive to a neighbouring residence.

#### 2.3.3.4 Blasting

Blasting will be carried out in accordance with the Bloomfield Explosive Management Plan which has been modified to ensure inclusion of all relevant blasting consent conditions. These Plans include the use of a meteorological model to evaluate weather conditions prior to blasting. The model considers wind speed and direction, as well as sigma theta as an indicator of the presence of an atmospheric inversion, to assist in predicting unsuitable blasting conditions. If unsuitable conditions are detected, blasting can be postponed until the conditions become suitable.

RCN operates an automatically triggered blast monitoring system to record and return ground vibration and air blast overpressure results to the mine office directly following each blast.

Blasting hours are controlled by the current EPL.

#### 2.3.3.5 Mineral Processing

Raw coal from Integra Underground, owned by HV Coking Coal Pty Ltd, a 100% owned subsidiary of Glencore, is processed at the RCN CHPP.

As mentioned in Section 2.2.1 raw coal from RCN mine may be received, washed and processed at either the RCS CHPP or at the RCN CHPP.

In accordance with the Integra Open Cut Project Environmental Assessment (URS, 2009) section 3.7.5 Coal Stockpiling, attached to PA08_0102, some coal may require stockpiling in-pit. When this is required, coal would be transported to, and temporarily stockpiled in-pit stockpiles up to 10,000t in size. The locations for temporary stockpiles will vary as the mining faces and associated dumping areas and access ramps advance.

Details on the processing of the material at each site follows.

#### 2.3.3.6 RCS CHPP

ROM coal is dumped by truck or loader into the feed hopper. From the hopper the coal is conveyed to a raw coal sizing screen. The raw coal screen is fitted with a double deck wet screen. The top deck allows wet +50 mm raw coal to enter the rotary breaker. The lower deck conveys wet -50 mm to +10 mm raw coal to be directed via a chute to the plant feed conveyor. The -10 mm slurry is directed into a conical sump and pumped to the plant.

The -50 mm from the sizing screen and the rotary breaker combine and are conveyed to the CHPP. Material not broken in the rotary breaker is conveyed separately to the breaker reject pile which is later removed by truck. In the CHPP the -50 mm to 0 mm raw coal from the primary raw coal sizing and breaker system is further sized on deslime screens with each size fraction being cleaned in separate circuits. Heavy media cyclones treat -50 mm to +1.5 mm fraction with Spirals cleaning -1.5 mm to 0.350 mm. The -0.350 mm is cleaned with froth floatation. The washed product is dewatered in centrifuges and vacuum drum filter then conveyed to a 1,000 t bin.

#### 2.3.3.7 RCN CHPP

ROM coal is dumped by truck or loader into the feed hopper. A sizing station at the feed hopper reduces the material to - 90mm top size in a two stage crushing process. Sized coal is then transported by conveyor to the plant feed surge bin. The material is fed into the plant and crushed a third and final time to - 50mm. Through the use of screens and classifying cyclones, the raw coal is separated into three size fractions. The coarse coal (>2.5mm) is processed in one of two dense medium cyclones, where the coal is separated from reject material. Coarse coal and reject are separately dewatered.

The middle size fraction of the raw coal (-2.5mm to +0.25mm) is processed using spirals. Spirals product is dewatered using a fine coal centrifuge which is recombined with coarse product (-50mm +2.5mm). Spirals reject is dewatered and is combined with the dense medium cyclone reject which leaves the plant as a single stream on the reject conveyor. Coarse reject (all reject +0.25mm) is transported from the CHPP to the reject bin, and is removed by rear dump truck to be co-disposed with overburden within the pit.

The fine coal fraction (-0.25mm) is processed in the flotation circuit using Jameson Cells which beneficiate coal by froth flotation. The coal froth product is dewatered by filtration and combined with the coarser size fraction products (+0.25mm). Reject material from the flotation process is thickened at the CHPP to recover water for reuse and reduce the volume of material reporting to the tailings dam.

### 2.3.4 Rejects and Tailings Management

#### 2.3.4.1 Coarse Rejects

Coarse reject from the CHPP reports to the reject bin. From this bin it is trucked to the open cut area to be co-disposed with the spoil material. Coarse reject disposal within the spoil material is controlled by the production supervisor, with tip areas being located on the basis of environmental constraints and the stability of tip faces within the spoil area. All carbonaceous and reject material is covered by a minimum of 2 m of inert overburden material before the spoil area is shaped and rehabilitated.

#### 2.3.4.2 Fine Rejects

The fine reject consists of a slurry of clay, silt and composite mineral and coal particles less than 0.25 mm in size with water to a pulp density of generally around 28%. This slurry is pumped from the underflow of the tailings thickener through a pipeline to the tailings emplacement dam.

Tailings from the RCN CHPP are pumped approximately 2.5km to Tailings Dam No. 1 and Tailings Dam 2 (TD1, TD2) located in the north east section of the mining lease. A system for water return from the tailing dam complex

to mine water dam D1 (via a decant system) is used. Returned water is then available for reuse through the site water management system.

The tailings are transported by pipeline and safeguarded by:

- use of welded PVC pipe;
- containment dams located along the length of the pipeline; and
- regular pipeline inspections.

Dried fine reject may also be received from the RCS CHPP to the limit of 500,000m³ annually which will be placed in the RCN spoil areas.

### 2.3.5 Monitoring and Maintenance of Containment Facilities

Seepage through the southern and south western embankments of TD2 is minimised by having the tailings selectively beached against the dam wall. Any seepage that does occur is collected in drains constructed at the toe of the downstream batter and directs the water back to dam D1. Seepage to the north from TD2 is collected in containment facility dams W20 and W21 and can be pumped to dam D1. TD3 is no longer in use for tailings emplacement.

In addition to routine inspections, TD2 has six piezometers installed to monitor groundwater in the region of the dam wall; three are installed on the dam wall crest and three at the toe of the dam wall. The piezometers are currently monitored for ground water level, Electrical Conductivity (EC) and pH.

Two v-notch weirs for water flow measurement are installed on both the north and southern sides of the tailings facilities. These weirs measure water flows which indicate the amount of seepage coming from the tailings facilities.

### 2.3.6 Synopsis of Forecast Rehabilitation Activities

Rehabilitation will be undertaken progressively across the site in accordance with the requirements of Project Approval 08_0102 and this Mining Operations Plan.

Condition 52 of Project Approval 08_0102 requires the following

*The Proponent must prepare a Rehabilitation Management Plan for the project to the satisfaction of DRG. This plan must:*

*(a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC;*

*(b) be submitted to the DRG for approval;*

*(c) be prepared in accordance with any relevant DRG guideline, and be consistent with the rehabilitation objectives in Table 15 and in the documents referred to in conditions 2 and 3 of Schedule 2;*

*(d) build to the maximum extent practicable, on the other management plans required under this approval; and*

*(e) address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.*

This Mining Operations Plan, once approved, facilitates the requirement of the Rehabilitation Management Plan as required under PA 08_0102.

A number of domains have been identified to classify land use activities and management requirements of the site (refer Section 5.1). Specific performance indicators have been established for each domain to allow the progress of rehabilitation to be measured. Performance indicators will be monitored over the life of the MOP and the results reported in the Annual Review.

The Bloomfield Group has extensive and proven experience in achieving successful mine rehabilitation. Rehabilitated areas at RCN will be established and managed in accordance with methods currently in place under the Bloomfield Collieries Pty Limited (BCL) Environmental Management System (EMS) which includes commitments to progressive rehabilitation and monitoring.

In accordance with Project Approval 08_0102 which defines the rehabilitation objectives (as shown in Table ), the aims of rehabilitation at the Mine are:

- To reinstate the pre-mining land capability suited to grazing land, with stable landforms, compatible with the surrounding landscape;
- To allow for a range of possible post-mining land-uses;
- to interconnect areas of woodland to form wildlife refuges and linkages across the site and with surrounding and regional biodiversity areas;
- To manage areas of water storage in accordance with the surrounding landscape; and
- To ensure site is stable and safe for domesticated and native fauna and persons accessing the area.

**Table 8 Rehabilitation Objectives**

| Area/Domain | Rehabilitation Objectives |
|---|---|
| Site (as a whole) | • Safe, stable & non-polluting<br>• Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms<br>• Constructed landforms maximise surface water drainage to the natural environment (excluding final void catchments)<br>• Minimise long term groundwater seepage zones<br>• Minimise visual impact of final landforms as far as is reasonable and feasible |
| Final voids | • Safe, stable & non-polluting<br>• Minimise the size and depth of the final void as far as is reasonable and feasible<br>• Minimise the drainage catchment of the final void as far as is reasonable and feasible<br>• Minimise the risk of flood interaction for all flood events up to and including the Probable Maximum Flood<br>• Negligible high wall instability risk |
| Surface infrastructure | To be decommissioned and removed, unless the DRG agrees otherwise |
| Historic underground workings | Safe, stable & non-polluting |
| Other land affected by the projects | Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:<br>- local native plant species (unless DRG agrees otherwise); and<br>- a landform consistent with the surrounding environment |
| Community | • Ensure public safety<br>• Minimise the adverse socio-economic effects associated with mine closure |

General rehabilitation activities forecast for the period of the MOP include:

- Land will be rehabilitated in accordance with relevant DRE standards applicable at the time of rehabilitation;
- Rehabilitated land will represent a minimal source of offsite environmental impacts, such as dust, water pollution, visual amenity and weeds;
- Rehabilitated land will require ongoing management inputs no greater than similar adjacent land;
- Rehabilitation will be compatible with the proposed post-mining land-use; and
- To reinstate a viable drainage network on the site which is hydrologically stable and incorporated erosion controls and sediment collection dams which isolate effectively the rehabilitated area from adjoining areas.

Re-contouring, topsoil handling and revegetation techniques are generally well established on site and future works will be undertaken in accordance with the *Rixs Creek Rehabilitation Strategy* (AECOM on behalf of Rix's Creek Mine, 2015).

The key elements of the Strategy include:

- Setting overall rehabilitation aim and objectives;
- Developing appropriate rehabilitation indicators and completion criteria;
- Undertaking land rehabilitation;
- Developing and implementing a rehabilitation assessment program;
- Continuing rehabilitation management and maintenance; and
- Presenting a request for rehabilitation sign-off to regulators, supported by results from the assessment program.

In short, the final landscape of the site will result in a void being formed in the South pit at the completion of operations with shaped walls and emplacement areas surrounding the void. The old North Pit void contains the access and pit top facilities of the Integra Underground mine, owned by HV Coking Coal Pty Ltd, a 100% owned subsidiary of Glencore, and is subject to a separate underground MOP. During the period of this open cut MOP the Falbrook pit shell will be utilised for mine water storage and an exploration program will assess the remaining open cut resource within the open cut project area. A separate MOP will then be able to be developed, that allows for transfer of stored mine water into the Camberwell Pit void and an open cut mine plan to maximise resource recovery from the Falbrook Pit open cut project area.

Specific rehabilitation objectives and proposed rehabilitation methodology are discussed further in Sections 5.2 and 7.0.

# 3.0 Environmental Issues Management

## 3.1 Environmental Risk Assessment

An integral component of resource management is the management of environmental risks. The components of an activity are assessed relative to the risk they pose. The most critical component of this section is the implementation of mitigation measures to reduce risks to acceptable levels. The methodology used for the risk assessment was generally in accordance with Rix's Creek Mine Risk Management Standard, which follows the general principles outlined in *ISO 31000:2009 Risk Management – Principles and Guidelines* (Standards Australia). The method used for the risk assessment encompassed the following key steps:

1) Establish the context for the risk assessment process;

2) Identify risks and potential impact;

3) Analyse risks;

4) Evaluate risks to determine the necessary controls for mitigation; and

5) Re-assess the risk post identification of additional controls.

6) Ongoing monitoring, review and adjustment

The key risks associated with operations, with particular consideration of risks associated with the transition from care and maintenance to the recommencement of the operation, have been assessed using the Risk Rating Matrix provided in Table 6. The key identified risks and associated risk ratings for mining and rehabilitation activities are provided in Appendix D.

**Table 6 Risk Rating Matrix**

| Consequence *(most likely outcome of the event)* | | Likelihood *(of the event occurring)* | | | | |
|---|---|---|---|---|---|---|
| | | A Certain | B Probable | C Possible | D Remote | E Improbable |
| Rating | Incident outcome / Potential outcome | Will occur | Likely to occur | Could occur | Unlikely to occur | Practically impossible |
| 1. Catastrophic | Multiple fatalities, toxic release with ongoing detrimental effects, huge financial loss | 1 (H) | 3 (H) | 5 (H) | 7 (H) | 11 (M) |
| 2. Major | Fatality/extensive injury, off-site release with no ongoing detrimental effects, major financial loss | 2 (H) | 4 (H) | 8 (H) | 12 (M) | 16 (M) |
| 3. Moderate | Medical treatment injury, on-site release contained with outside assistance, high financial loss | 6 (H) | 9 (M) | 13 (M) | 17 (M) | 20 (L) |
| 4. Minor | First aid injury, on-site release contained with on-site resources, medium financial loss | 10 (M) | 14 (M) | 18 (L) | 21 (L) | 23 (L) |
| 5. Insignificant | No injury treatment, insignificant environmental impact, low financial loss | 15 (M) | 19 (L) | 22 (L) | 24 (L) | 25 (L) |

### 3.1.1 Environmental Management System

Rix's Creek has in place an Environmental Management System (EMS) which is incorporated into the activities at RCN and establishes environmental standards and procedures that are followed during construction, operation and decommissioning of its mining operations.

### 3.1.2 Environmental Management Plans

RCN will manage its day to day activities through a series of Environmental Management Plans (EMP) required under Schedule 5 of Project Approval 08_0102 and reviewed in context of Rix's Creek Mine EMS and internal procedures. All EMS documents are readily available across the organisation.

Management strategies, plans and monitoring programmes are prepared as required by development approval conditions, conditions to the relevant mining lease and legislative and operational requirements. Environmental procedures have been established, documented and maintained for all mining related activities that have a

potentially significant impact on the environment. Procedures provide details of operation and maintenance of facilities, equipment and machinery where required. Where possible, one management plan or program has been developed for all operations.

### 3.1.3 RCN Environmental Services

Rix's Creek Mine has established a team of environmental specialists to implement and audit the requirements of the EMS and EMPs. This experienced team will oversee and where necessary implement the requirements of the EMS and EMPs across RCN.

### 3.1.4 Auditing and Inspections

Rix's Creek Mine Environmental personnel conduct a number of audits and inspections throughout the year, including regular internal EMS and compliance audits and other less routine audits. Site based environmental personnel also conduct regular inspections of all work areas. This experienced team in liaison with specialist consultants will oversee and where necessary implement the auditing requirements across RCN.

### 3.1.5 Environmental Reporting

Rix's Creek Mine prepares an Annual Environmental Management Report (AEMR), now termed "Annual Review" in accordance with the NSW Government Integrated Mining Policy and to fulfill the requirements of held mining leases.

This Annual Review Report is produced for the overall Rix's Creek Mine to fulfil the reporting requirements of DRG, SC, EPA, OEH and DP&E. This annual report compiles monitoring results and discusses trends, system changes and responses to any potential issues identified during monitoring. Targets and future initiatives are also identified. Other environmental related reports include regular reporting to OEH, CCC, EPA and DP&E.

## 3.2 Environmental Risk Management

### 3.2.1 Air Quality

Air quality management at the RCN incorporates best practice dust management practices and an extensive dust monitoring network which operate in accordance with the current *Air Quality and Greenhouse Gas Management Plan* (AQGGMP). The AQGGMP addresses air quality and greenhouse gas management across both RCN and RCS Open Cut sites and also considers potential cumulative issues caused by dust emissions from nearby mining operations.

Controls have been put in place in accordance with the AQGGMP to control potential sources of air pollution. The controls can be split into planning and engineering controls which are outlined below.

*Planning Controls:*

The monitoring network seeks to:

- Facilitate compliance with existing Licence and Project Approval conditions;
- Support proactive dust management;
- Develop an integrated and coordinated approach to air quality management; and
- Consolidate existing monitoring, where possible.

The air quality network for RCN comprises:

- One (1) depositional dust gauge (DDG);
- Three (3) Tapered Element Oscillating Microbalances (TEOM), for measurement of PM10.
- Radio telemetry to all TEOMS to enable data viewing in real-time; and
- One (1) real time Meteorological Station for weather monitoring.

Further monitoring equipment is located specifically for Rix's Creek South Operations.

Rix's Creek Mine is a member of an Upper Hunter Joint Venture Group which provides access to an atmospheric prediction model providing more accurate weather parameter predictions for the Rix's Creek North operation. The information from the Rix's Creek North site is used by management to access environmental conditions for blast scheduling, and determines when adverse conditions exist to cease dumping to exposed locations. This model also forecasts meteorological data for the following day so operational activities can be scheduled for the predicted conditions.

*Engineering Controls:*

- Dust from the ROM and product coal stockpile areas is managed by the use of water sprays.
- Water carts utilised around the site to keep trafficked areas in a damp condition;
- All stockpiles are kept damp by the use of mobile water sprays under dry and windy conditions;
- Tailings dam management including inspections and assessment;
- Roads are regularly graded to ensure that loose dust-generating surface material is kept to the lowest level practicable;
- Speed limits on mine roads are restricted to 60 km/hr. Speed limits will be reduced if required to maintain dust emission at minimum levels;
- Roads are clearly delineated to minimise trafficked areas and to ensure that traffic is kept to watered areas;
- Earthmoving equipment with upwardly directed exhausts are used on site to minimise the generation of dust by exhaust emissions;
- All diesel equipment used on site is maintained properly and fitted with appropriate pollution control devices;
- Rehabilitation of exposed areas;
- Workforce education;
- Cancellation / postponement of blasting and machinery shutdown / relocation during adverse weather conditions;
- Dust extraction systems or water injection capability is installed on drilling rigs. Blasting is not undertaken in adverse weather conditions; and
- Conveyors are partially enclosed where possible.

### 3.2.2 Topsoil Management

The activities of stripping and stockpiling of soil resources prior to any mine-related disturbance will be undertaken in accordance with the soil resource management activities described in Table 7 and the *Rehabilitation Strategy* (AECOM on behalf of Rix's Creek Mine, 2015). These activities aim to:

- Optimise the recovery of topsoil and subsoil available for rehabilitation;
- Manage topsoil and subsoil reserves so as not to degrade the resource;
- Determine the suitability and stripping depth of soil material to be removed;
- Document the management of stockpiles; and
- Ensure that the reuse of suitable soils is maximised.

**Table 7 Soil Resource Management Activities**

| Prior to Commencement of Stripping Activities | During Stripping and Stockpiling Activities | Prior to and During Rehabilitation Activities |
|---|---|---|
| - Quantify the soil resource.<br>- Characterise the suitability of material for rehabilitation purposes.<br>- Formulate stripping and stockpiling guidelines specific to each activity.<br>- Guidelines are to include:<br>• Nomination of appropriate depths.<br>• Scheduling to minimise the total area disturbed or stockpiled at any one time.<br>• Location of areas to be stripped and stockpile locations. | - Minimise over-clearing.<br>- Keep vehicular traffic to a minimum on the soils to be stripped. Exclude all traffic from soils that are sensitive to structural degradation.<br>- Use of loaders and trucks rather than scrapers to minimise structural degradation.<br>- Selective stockpiling of soil according to type (i.e. topsoil, subsoil).<br>- Storage of soil in a manner that does not compromise the long term viability of the resource.<br>- Weed management to prevent germination/succession of exotic species. | - Implement amelioration measures to ensure the long term viability of the soil resource and manage salinity.<br>- Progressive rehabilitation of final landforms as soon as practicable after completion of mine-related disturbance activities. |

#### 3.2.2.1 Soil Stockpile Management

The following soil stockpile management practices will be used to increase the long term viability of the soil resources in stockpiles:

- Topsoil stockpiles are to be located outside of proposed mining areas and away from slopes and drainage lines where possible;
- Stockpiles will be constructed with a “rough” surface condition to reduce the risk of erosion, improve drainage and promote revegetation;
- Stockpiles will be no deeper than three metres in order to minimise problems with anaerobic conditions;
- Fertilise and seed stockpiles to maintain soil structure, organic matter and microbial activity, whilst areas which are to be inactive for extended periods may be seeded with the final species mix;
- Stockpiles will be located to prevent runoff leaving the site;
- The appropriate soil ameliorant to be applied at an appropriate rate to dispersive soil stockpiles where necessary; and
- Implement appropriate weed control strategies particularly for any noxious weeds. Immediate revegetation will provide vegetative competition to assist with control of undesirable plant species.

#### 3.2.2.2 Soil Ameliorants

Soils throughout the project area are generally low in organic matter and nutrients suitable for the establishment of pastures and overstorey species. These factors reduce the availability of nutrients and may create an unfavourable microclimate for germination of plant seeds. The key management practices to rectify these issues are:

- Application of the appropriate amount of soil ameliorant and fertiliser;
- The establishment of a cover crop for soil protection purposes and improvement in organic matter levels; and
- Use of imported organic materials such as bio-solids, compost (Source Separated Green Waste Compost ) and municipal waste compost.

Appropriate application rates for soil ameliorants will be established through ongoing trial work of revegetation techniques and varying application rates.

### 3.2.3 Erosion and Sedimentation

Erosion and sedimentation at RCN is controlled under the *Water Management Plan* (WMP), which includes an *Erosion and Sediment Control Plan* (ESCP).

Prior to the disturbance of land associated with any construction activities at the site, appropriate erosion and sediment controls are established and approved by the Environmental Officer. All erosion and sediment management and related control structures are consistent with the specifications contained in *Managing urban stormwater – soils and construction, Volume 1*, 4th edition (Landcom, 2004), and particularly *Volume 2E Mines and Quarries* (DECC, 2008).

Where practicable, runoff from undisturbed catchments is diverted around the construction activities via diversion drains and banks which direct water into the natural watercourses. Runoff from disturbed areas is retained on site in sediment dams and allowed to settle prior to discharge into the natural system. Drains, diversion banks and channels are compacted and stabilised as they are constructed.

General measures in place at RCN to minimise erosion and sediment mobilisation during operation include:

- Installing erosion and sediment controls prior to the disturbance of any land;
- Minimising the extent of disturbance to the extent that is practical;
- Reducing the rate of water flow across the ground particularly on exposed surfaces and in areas where water concentrates;
- Progressively rehabilitating disturbed land and constructing drainage controls to improve stability of rehabilitated land;
- Ripping of rehabilitation areas to promote infiltration;
- Protecting natural drainage lines and watercourses by constructing erosion control devices which include sediment retention dams and diversion banks and channels. Steep gradients will require the installation of a rock riprap, geotextile fabric sediment filters or other suitable measures; and
- Restricting access to rehabilitated areas.

Erosion control on reshaped and rehabilitated areas is achieved by minimising the time prior to establishing vegetation. Suitable density of drainage channels are established with sediment detention basins being constructed in the flow lines. Sediment detention basins are also used on haul roads and around areas of disturbance; these structures are de-silted as necessary.

### 3.2.4 Surface Water

Surface water is managed in accordance with site Water Management Plan. RCN does not hold a water discharge licence and separates clean, sediment laden and mine water to minimise adverse environmental impacts. Clean water is allowed to run off site and includes captured water from upstream catchment areas that are designated as undisturbed or rehabilitated and are not affected by mining activities. Sediment laden water is water captured on disturbed ground which may or may not be subject to mining activity and includes areas such as roads, hardstand, drill pads and unfinished rehab areas. Mine water generally includes all water coming into contact with overburden, tailings and infrastructure surfaces.

Water management infrastructure includes dams, pipelines and associated drainage structures which allow for catchment of water from undisturbed areas to be diverted, where possible, away from disturbed and sediment laden mine water. Controls are implemented to ensure storm water and groundwater from the mining area is diverted to either mine water dams or the pit void to prevent discharge off site.

The general principles, for surface water management on site include:

- Clean water is kept separate from dirty water flows where practicable;
- Minimising volumes of worked water by diverting clean water from up-slope areas;
- Collecting runoff from disturbed areas using drains and bunds and directing this to onsite storage dams;
- Maximising use of saline groundwater inflows to the mine;
- Storing worked water for dust suppression or for coal processing purposes;
- Locating water management facilities in areas that minimise impacts to natural ecosystems, where practical; and

- Implementing contingency measures to prevent the accidental discharge of worked water.

#### 3.2.4.1 Clean Water Management

In the open cut mining lease area east of the main Northern Railway Line, rainwater runoff from non-mined or rehabilitation areas, as well as from the diversion of the Martins Creek and Blackwattle Creek catchments, is collected in a series of four dams (C1, C2, C3 and C4), a vegetated clean water channel connects these dams. Water from C3 and C4 can be pumped to other water storage dams for on-site use as required. C3 and C4 are maintained with sufficient freeboard to ensure adequate surge capacity during storm events. Three further dams, C5, C6 and C6a are sediment laden water dams in the south of the mining lease and these dams overtop to Dam C3.

The area west of the Main Northern Railway Line had several dams constructed in 2000 due to the increase in South Pit operations and the need to separate clean and dirty water. The water management system comprises clean water dams C7 to C11. The dams and diversion banks divert clean runoff water from entering mine workings. Dams C7, C8 and C11 overtop and flow into C4 via the vegetated channel while dam C9 west of the south pit overtops into Station Creek. Dam C10 was located in the active mining area and was ‘mined-through’ in 2001.

Release of water through C4 has occurred in the past during storm events. Water is decanted after these events in order to keep the dam at 70% of maximum capacity. This maintains enough freeboard to allow sufficient residence time to settle solids in the next first flush event.

The surface water monitoring program is designed to measure potential impacts of the operations of RCN upon surface waters in the vicinity of operations specifically impacts (if any) on the surface water catchments of Glennies Creek, Reedy Creek, Station Creek, Bettys Creek and Main Creek.

The RCN EPL requires the monitoring of surface water for pH, EC, TSS and TDS at the following sites on a monthly basis:

1) Station Creek, where it leaves the mine site (RCN site W1);

2) Martins Creek, where it enters the mine site (RCN site W3);

3) Blackwattle Creek, where it enters the mine site (RCN site W6); and

4) Dam C4, final dam in Open Cut clean water system (RCN site W10).

RCN monitors 29 other sites surrounding the operations. These additional sites are also monitored monthly and samples are analysed for pH, EC, TSS and TDS.

The volumes of water inflow, storage, transfer and use within targeted elements of the water management system are monitored using a series of flow meters and water level gauges at strategic locations across the site. The monitoring program includes telemetered flow meters and water level gauges which were installed in 2013.

#### 3.2.4.2 Mine Water Management

Mine water is a product of water captured within the mine water footprint in areas such as: roads, hardstands, and infrastructure and surface facilities. Typically, due to the local geology, mine water is characterised by elevated salinity levels.

All runoff from open cut surface facilities is intercepted by diversion drains and directed to Dam D1. Mine water and tailings dam return water is pumped or drained to Dam D1.

Groundwater inflows during mining operations are dewatered from the pit to D1 for use in the coal processing system. Development of the North Open Cut included construction of three sediment dams (Sediment Dams 1, 2 and 3) at the eastern end of the pit to collect disturbed area surface runoff. In the Western Mining Area and North Open Cut project areas there have been a number of smaller in-pit dams constructed to aid in the removal of captured mine water from the pit. Water from these dams is pumped back to D1 as required.

Four sediment control dams (B1, B2, B5 and B6) have also been constructed in the Western Mining project area to capture sediment laden runoff. A pump is permanently located at B5 dam and pumps run, as required, at dams B1, B2 and B6 to return water to D1 or South Pit void. The effectiveness of this water management technique will be assessed and modified if required.

The Falbrook pit shall will continue to be utilised as a water storage facility for the duration of this MOP.

Water quality is monitored at both natural watercourses and mine site storage dams locations. The aim of surface water monitoring is to:

- provide pre-mining baseline flow and quality data and provide a comparison with post-mining conditions;
- identify potential physical and/or chemical water quality impacts external to the mining area related to mining;
- identify and confirm trends;
- assess potential long term mining impacts on stream flow and or quality;
- provide a holistic view of overall stream health; and
- ensure that the onsite Water Management System has adequate capacity for the ongoing supply of the operation, storage capacity and to prevent discharges from site.

The response plan for surface water quality impact assessment includes contingency measures which may be enacted in the event that trigger levels are met or exceeded. When trigger levels are exceeded, remedial actions are implemented and may include intercepting and pumping impacted water into the mine water management system, establishing containment or diversion systems, and/or modifying any activity that may be degrading the water quality. Further, where an assessment of the remedial action indicates no improvement to the water quality, further action is taken commensurate to the magnitude of the impact and feasibility of the response. Additional actions may include:

- Construction of dams, drains and permanent pumping systems to permanently contain surface water;
- Modification to Consent and/or Licence conditions; and/or
- Modification or cessation of mining activities deemed to be causing the impact, until a solution can be developed and approved.

### 3.2.5 Ground Water

Groundwater at RCN is managed under the WMP, which contains a groundwater monitoring plan and groundwater response plan. Ground water contamination is also managed through the maintenance of licensed Hazardous Goods storage areas.

The groundwater monitoring plan identifies locations and schedule for monitoring. The objectives of ongoing groundwater monitoring are to identify potential physical and/or chemical water quality impacts, identify and confirm trends and identify any exceedance in impact assessment criteria.

Low pit inflows observed to date, combined with the lower hydraulic conductivities of the mined coal seams expected at depth, suggest that groundwater drawdown from mining will not emanate outside the basin structure (which falls within the Mine Lease).

In the event of any unexpected adverse impacts or water quality degradation, RCN will commission an assessment of the causes, will develop a staged response program to mitigate the adverse impacts, and will attempt to establish and implement measures to limit further adverse impact.

The identification process and response protocols to potential adverse outcomes are provided in the Groundwater Response Plan included in the Water Management Plan for RCN. The responses proposed incorporate a staged assessment and development of management measures deemed appropriate for each individual event should it occur.

### 3.2.6 Noise

Noise control measures in place at RCN are controlled under the approved *Noise Management Plan* (NMP). These include:

- Exposed dumping locations are avoided at night to minimise operational noise.
- Heavy vehicle movements at night in exposed locations are avoided.
- The Environment Officer has access to real-time meteorological data which is used to make decisions on how mining activities will be modified or suspended based on the criteria outlined in the NMP.
- Management measures to be undertaken during adverse weather conditions are also documented in the NMP.

- Individual items of plant are measured during annual sound power testing to check that noise attenuating equipment e.g. baffles, mufflers or silencers, are operating effectively and if any deterioration in efficiency is detected then the items are replaced or repaired.
- A real time directional Noise Monitor located in the Camberwell Village with real time directional noise alarms are sent via email to operations and environmental personnel. This unit, Sentinex 13, is owned by Glencore with access provided to RCN by agreement.
- Complaint management protocol that facilitates investigation and actioning of noise related complaints;

RCN have a predictive noise model for the site to allow better scheduling of site operational activities to minimise the noise impact on offsite receivers. This predictive noise model is used in conjunction with attended monitoring to assure compliance to consent noise levels.

### 3.2.7 Heritage (Aboriginal and European)

#### 3.2.7.1 Aboriginal Heritage

Aboriginal and cultural heritage at the site is managed under the *Heritage Management Plan, Rix's Creek North*, *Aboriginal Heritage Management Plan dated 6 January 2016.* This document sets out the procedures for the protection of Aboriginal sites as well as the salvage and care of Aboriginal objects found within the operational activities. Additional objectives of the Plan are:

- To establish an ongoing Aboriginal stakeholder consultation process;
- To describe the manner in which certain Aboriginal sites will be salvaged;
- To provide a targeted work plan for the sub surface excavation of select sites and areas;
- To highlight the importance of ongoing consultation with Aboriginal stakeholders during mining; and
- To describe a program for Aboriginal site survey and assessment in areas not addressed by the original EA.

There are Aboriginal heritage sites within the lease. Consents to destroy have been obtained in the past and will be gained prior to any work commencing in these areas.

#### 3.2.7.2 European Heritage

A *Non-Aboriginal Heritage Management Plan – Rix's Creek North dated 12 February 2016* addresses management of non-Aboriginal heritage at the RCN.

### 3.2.8 Visual Amenity and Lighting

Management of visual amenity at RCN is addressed through a series of key actions which include:

- The construction of environmental bunds to screen emplacement areas.
- Planting on the bunds with a mixture of appropriate native species.
- Progressive rehabilitation of emplacement areas.
- Moulding of bunds to existing topography so that there are no 'hard' edges.
- Using non-reflective building materials for the construction of surface facilities.
- Appropriate site layout to minimise light impacts offsite.
- Placement of lighting only where it is required (e.g. for operations or security). All lighting will be focused on the subject area and directed downwards as much as possible.
- Flood lighting is to be faced inward to the pit area to avoid light spilling on to public roads. (It is a responsibility of all supervisors is to ensure all lights are set up so as not to direct light that may affect traffic on nearby residences)
- All External lighting will comply with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.*
- Positioning mine entrance and exit roads to prevent headlights shining towards adjacent residences;
- .

### 3.2.9 Biodiversity

The objectives of the *Biodiversity Management Plan (Rixs Creek North Mine, 19 Aug 2016)* are to rehabilitate, revegetate and manage land for biodiversity within the biodiversity offset areas and within the mine site during and post mining. The biodiversity offset strategy will be integrated into the overall rehabilitation at RCN through the development of linkages between the offset areas, revegetated habitats in the rehabilitated mine site, and riparian habitat within Glennies Creek. This is shown on Plans 1B, 3A-3C and Plan 4.

Threatened species potentially impacted are listed in Table 8. No threatened flora species were impacted by the approved project.

**Table 8 Threatened fauna species potentially impacted**

| Threatened Fauna | TSC Act | EPBC Act |
|---|---|---|
| Squirrel Glider - (*Petaurus norfolcensis*) | x | |
| Grey-crowned Babbler - (*Pomatostomus temporalis temporalis*) | x | |
| Eastern Bentwing Bat - (*Miniopterus schreibersii oceanensis*) | x | |
| Eastern Freetail-bat - (*Mormopterus norfolkensis*) | x | |
| Yellow-bellied Sheathtail-Bat - (*Saccolaimus flaviventris*) | x | |
| Grey-headed Flying Fox - (*Pteropus poliocephalus)* | x | x |
| Speckled Warbler - (*Chthonicola sagittata*) | x | |
| Brown Treecreeper - (*Climacteris picumnus victoriae*) | x | |
| Brush-tail Phascogale - (*Phascogale tapoatafa*) | x | |

#### 3.2.9.1 Weeds and Pest Animals

The *Rehabilitation Strategy* (AECOM Australia Pty Limited, July 2015) provides guidance in the management of noxious weeds and pest (feral and native animals) on the lands associated with the RCN. The objectives being:

- To comply with legislative requirements for declared noxious weeds;
- Management of weeds other than declared noxious weeds; and
- Manage the impact of feral (and native) animals upon biodiversity.

The following obligations relate to weed control:

- Systematic surveillance and treatment for noxious weeds;
- Staff training in the identification of noxious weeds;
- Treatment following a reported weed sighting;
- Prevention of the establishment of additional noxious weed species; and
- Maintain up to date knowledge of the latest weed control techniques and products.

All noxious weeds are managed and controlled as per the requirements of the *Noxious Weeds Act 1993*. Control of weeds will be undertaken in direct consultation with the Local Land Service and Upper Hunter Weeds Authority staff utilising a combination of mechanical, biological and chemical controls.

RCN has designed an annual feral animal management and control program that will be undertaken for the mine area with work undertaken on a campaign basis. Management timing, chosen target species and mode of management are functions of the nature and scale of the pest problem as evidenced either by Environmental staff or via reports to the Environmental staff. All work will be implemented in close liaison with the staff of the Local Land Services and in close communication with adjoining land users to ensure a coordinated approach to pest management. All baiting, trapping and culling operations will be undertaken in accordance with the relevant legislative requirements and within necessary licences such as those issued by the National Parks and Wildlife Service for kangaroo population control.

### 3.2.10 Bushfire

Bushfire risk is managed through preventive actions as well as management safeguards.

*Preventive actions:*

- Ensuring mining activities that have the potential to cause ignition such as sparks from vehicles, metal grinding, welding etc. are managed.
- Ensuring vegetation does not interfere with power lines.
- Creating firebreaks to ensure that bushfire does not spread from surrounding lands.

*Management safeguards:*

- The provision of firefighting equipment.
- Fire training for staff and on site fire-fighting team.
- Suppression of any bushfire outbreaks.
- Set up appropriate communication strategies to ensure all employees, contractors and service providers are aware of fire emergency policies and procedures as well as any NSW Rural Fire Services Fire Bans.
- Maintenance of appropriate fire breaks and perimeter trails.
- The local Darlington and Glennies Creek Bushfire Brigade conduct hazard reduction burns as necessary.

### 3.2.11 Prescribed Dams

RCN open cut has a dam prescribed under the *Dam Safety Act* (NSW 1974) – namely Possum Skin Dam to the north of the Falbrook Pit. The dam forms a storage reservoir for mine water and is used to stage water from the open cut and the Glennies Creek underground operation. As referred to in Section 1.5.2 RCN also operates three Tailing Emplacement Areas approved under *Coal Mines Health and Safety Act* 2002, Section 100 and the Work Health and Safety (Mines and Petroleum) Regulation 2014, Schedule 3 High Risk Activities. These tailing emplacement dams are also approved under the Dam Safety Committee.

A number of controls are already in place regarding inspections of the dams. Under the approved Dam Safety Committee (DSC) management plan, Comprehensive and Intermediate inspections are conducted by approved Geotechnical Engineers with Routine inspections conducted by onsite personnel who maintain their “Dam Safety Management for Ash, Tailings and Mining Dams” competency. Rixs Creek North will engage appropriately qualified geotechnical experts to manage this approved dam management plan.

### 3.2.12 Containment of Hazardous Materials

RCM has a current Dangerous Goods Manifest as required under Schedule 12 of the Work, Health and Safety Regulation (2017) (WHS Regulation) for all products listed in Schedule 11 of the WHS Regulation. This register lists the Dangerous Goods stored and handled at this site under the control of The Bloomfield Group.

Oils, fuels, greases and chemicals are labelled and stored in designated, impermeable bunded areas or approved storage facilities and are only used on as required.

Appropriate barriers are in place to eliminate the potential for soil contamination. At Rix’s Creek North, the bunded fuel and oil storage area is located north of the workshop.

All Hazardous Chemicals are stored and handled on the premises as per legislative requirements. (*Managing Risks of Hazardous Chemicals in the Workplace, Code of Practice. July 2012*).Inventories of hazardous materials and Safety Data Sheets (SDS) are available through an online system which is administered by Rix’s Creek Mine.

#### 3.2.12.1 Hazardous Waste Disposal

Hazardous wastes such as batteries, waste oils, greases, oil filters, oily rags and oily water are managed by a licenced waste contractor and disposed of or recycled by licenced waste operators. Monthly waste tracking reports for all hazardous waste removed from site are provided on a monthly basis.

### 3.2.13 Hydrocarbon Contamination

RCN manages hydrocarbon contaminated material in accordance with the internal *Hydrocarbon Management Procedure- Rix's Creek* dated 11 January 2017. This document details the procedures for spill containment, bioremediation, management and reporting

Management of hydrocarbons geared to contamination prevention. Procedures are in place on site to handle any hydrocarbon spills. Spill kits are located in the store, site workshops as well as the CHPP and fuel storage facilities.

### 3.2.14 Explosives

RCN is not licenced to store explosives. All explosives used at RCN are stored at the Rix's Creek South under Licence XSTR100131 issued under the NSW Explosives Act (2003) and NSW Explosives Regulation (2013).

Open cut explosive materials, such as ammonium nitrate prill and emulsion, which are used to blast overburden, are stored in the explosives compound at Rix's Creek South. Detonators are stored in a separate compound as per the *Explosives Act 2003* and *Explosives Regulation 2013*.

### 3.2.15 Contaminated Land

There is no contaminated polluted land of major significance known at the site.

The Camberwell Pit bioremediation area has historically been used for the treatment of contaminated material at RCN. This area is no longer used for these purposes and appropriate signage has been erected to prevent "fresh" material being placed. The existing material is being tested and either further treated or if decontaminated, removed. The area will be rehabilitated once all decontaminated material has been removed.

### 3.2.16 Spontaneous Combustion

Adiabatic self heating- propensity to spontaneous combustion testing has been carried out on insitu coal at RCN. Results indicate that the coal has low to medium propensity for spontaneous combustion. There have been no identified incidents of spontaneous combustion at RCN since production commenced and the risk of spontaneous combustion is considered to be low.

Recent assessment of the dry tailings (solid bowl centrifuge) material showed a low propensity to spontaneous combustion. The testing included R70 adiabatic self heating test and showed a result of 0.065 Deg.C / Hour (R70). Figure (1a)

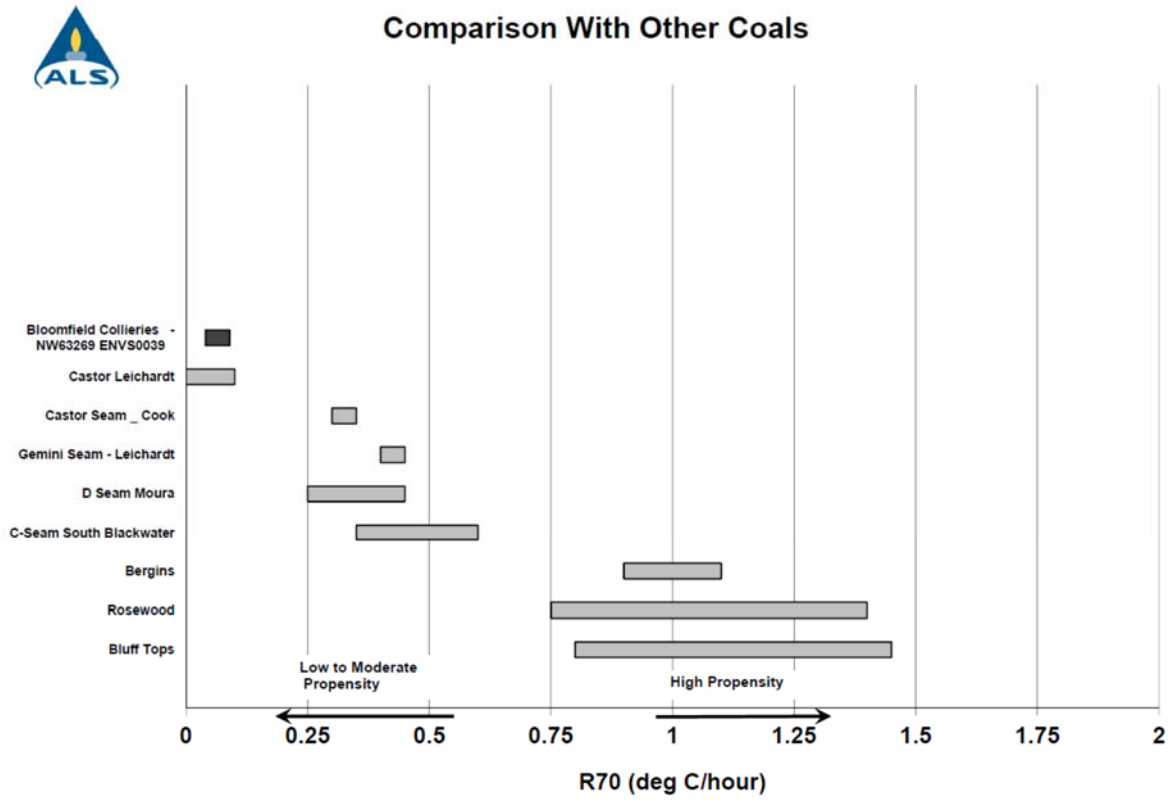


**Figure 1a: Dry Tailings Propensity to Spontaneous Combustion comparison with other coals. (source: ALS- 2018).**

### 3.2.17 Acid Mine Drainage

There has been no evidence of acid mine water on the site in the twenty years of continuous mining operation. This can be partly attributed to the very low sulphur content (ranging between 0.01% and 0.95%). The higher sulphur content materials also contain a relatively high level of soluble salt which typically acts to buffer the leachate acidic tendency. As such, the potential for acid mine drainage problems arising from the waste rock emplacements is considered to be low. Long term analysis of void / surface water at possum skin dam demonstrates that the mine water is slightly alkaline with a long term average pH of 8.4.

### 3.2.18 Mine Subsidence

Mine subsidence can occur because of the amount of ground disturbance that occurs adjacent to a mine – particularly from underground mining operations. This MOP addresses specifically the issues relating to the open cut mine where the prevalence of ground subsidence is typically limited to the settlement of waste emplacement areas.

Areas of the RCN mine site are undermined by historic underground workings. Sink holes associated with shallow workings are infrequent. If identified, the standard management procedure is to flag off and isolate the sink holes from access, back fill the holes and monitor for further subsidence. Once deemed stable, the area will then be rehabilitated and periodic inspections will continue.

During the term of the MOP, RCN staff will monitor the settlement of the waste emplacement areas for signs of uneven or excessive displacement that may alter drainage patterns or present a safety risk.

### 3.2.19 Waste Management

The RCN *Waste Management Plan* guides the treatment and subsequent disposal of several waste streams which include wastes produced by mining and coal processing (overburden, tailings and rejects) and site general waste; sewage, general waste streams (rubbish), recyclables and hazardous wastes. Any general waste removed

from site is carried out by a licenced waste disposal contractor and disposed of at a licensed waste facility. Large vehicle tyres are disposed of in pit and smaller tyres are removed from site by a licenced tyre handling facility.

Quarterly reporting of waste management is undertaken internally and internal waste targets are set to encourage recycling, reuse and operational improvement.

#### 3.2.19.1 Waste Oil and Metals

Oil from scheduled maintenance and breakdown repairs is collected and stored in an above ground tank prior to recycling. Likewise waste oil from mining equipment as a result of scheduled maintenance operations and the oil / water separator at the wash down bay is collected in a storage tank and removed for recycling by a waste oil contractor for processing off site.

Most mining machinery is greased automatically by an automated on board system. The system is refilled from a bulk bin on the mobile service cart.

Scrap metal, hydraulic hose and used oil filters are collected for recycling on a regular basis.

#### 3.2.19.2 Other Wastes

Earthmoving machinery tyres not suitable for reuse are disposed of progressively in the void of the mining process and buried. At present, there is no recycling process available for heavy earthmoving machinery tyres in the Hunter Valley.

General garbage is placed in large bins and taken off site by a licenced waste contractor for disposal in the Council landfill site. Paper and Cardboard is placed in large bins and taken off site by a waste contractor for further recycling.

### 3.2.20 Sewage Treatment/ Disposal

Grey water generated on site consists of domestic waste water from the bathhouse, associated amenity areas, administration areas and CHPP areas. Sewage and sullage waste disposal is in place and consists of a septic disposal system incorporating two septic tanks and evaporation pond system. RCN has on-site sewage treatment systems, which includes a primary aeration tank with a secondary maturation pond and a package sewage treatment plant. The septic tank provides a primary and secondary process with solid waste processed by anaerobic bacteria. Effluent then passes to a maturation pond prior to disposal by land irrigation.

The system was approved on 1/3/2012 approval - OSSM Approval No.: 2820/2002 by Singleton Council.

# 4.0 Post Mining Land Use

## 4.1 Regulatory Requirements

The regulatory requirements specific to post mining land use and rehabilitation outcomes at RCN are summarised in Table 9.

**Table 9 Regulatory requirements – Post mining land use, landscape and rehabilitation outcomes**

| Section / Condition | Area | Requirement |
|---|---|---|
| **Project Approval** | | |
| Schedule 3 Condition 50 | Rehabilitation Areas | The Proponent must rehabilitate the site in a manner that is generally consistent with the rehabilitation strategy described in the documents referred to in conditions 2 and 3 of Schedule 2 – and depicted conceptually in the figure in Appendix 8 – and the objectives in Table 15. |
| Schedule 3 Condition 50 Table 15 | Site (as a whole) | • Safe, stable & non-polluting<br>• Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms<br>• Constructed landforms maximise surface water drainage to the natural environment (excluding final void catchments)<br>• Minimise long term groundwater seepage zones<br>• Minimise visual impact of final landforms as far as is reasonable and feasible |
| | Final Voids | • Safe, stable & non-polluting<br>• Minimise the size and depth of the final void as far as is reasonable and feasible<br>• Minimise the drainage catchment of the final void as far as is reasonable and feasible<br>• Minimise the risk of flood interaction for all flood events up to and including the Probable Maximum Flood<br>• Negligible high wall instability risk |
| | Surface infrastructure | To be decommissioned and removed, unless DRG agrees otherwise |
| | Historic underground workings | Safe, stable & non-polluting |
| | Other land affected by the project | Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:<br>• local native plant species (unless DRG agrees otherwise); and<br>• a landform consistent with the surrounding environment |
| | Community | Ensure public safety • Minimise the adverse socio-economic effects associated with mine closure |
| Schedule 3 Condition 51 | Progressive Rehabilitation | The Proponent must carry out rehabilitation of the site progressively, that is, as soon as reasonably practicable following the disturbance. |
| Schedule 3 Condition 52 | Rehabilitation Management Plan | The Proponent must prepare a Rehabilitation Management Plan for the project to the satisfaction of DRG.<br>This plan must:<br>(a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC;<br>(b) be submitted to the DRG for approval;<br>(c) be prepared in accordance with any relevant DRG guideline, and be consistent with the rehabilitation objectives in Table 15 and in the documents referred to in conditions 2 and 3 of Schedule 2;<br>(d) build, to the maximum extent practicable, on the other management plans required under this approval; and |

| Section / Condition | Area | Requirement | | |
|---|---|---|---|---|
| | | (e) address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.<br>The Proponent must implement the approved management plan as approved from time to time by the Secretary. | | |
| Schedule 3 Condition 53 | | Within 12 months of the completion of the exploration drilling program, the Proponent shall plant 2 trees for every established tree removed during the exploration drilling program. The replacement trees must be of like-for-like species, planted in the same area from which they were removed, and be maintained until established.<br>Note: An established tree is considered to be two metres or greater in height | | |
| Schedule 3 Condition 54 | | Rehabilitation of all areas disturbed by the exploration drilling program is to be undertaken in accordance with an approved Mining Operations Plan / Rehabilitation Management Plan, to the satisfaction of DRG. | | |
| PA 08_0102 Statement of Commitments | Soils and Land Capability Rehabilitation | B1 | Strip material to the depths stated in Table 6.3. | Continuous during operations |
| | | B2 | Material will not be stripped in either extremely wet or dry conditions. | Continuous during operations |
| | | B3 | Stripped material will be used immediately (where practicable) to avoid the requirement for stockpiling. | Continuous during operations |
| | | B4 | Tracking over previously laid soil will be avoided to minimise compression effects. | Continuous during operations |
| | | B5 | The surface of soil stockpiles will be left in as a coarsely textured a condition as possible to promote rainfall infiltration and minimise erosion. | Continuous during operations |
| | | B6 | A maximum stockpile height of 3m will be maintained where practicable. | Continuous during operations |
| | | B7 | Stockpiles will be positioned away from drainage lines and/or upslope water diversion banks or similar controls will be installed | Continuous during operations |
| | | B8 | Downslope sedimentation controls will be installed until the soil stockpiles are appropriately stabilised | Continuous during operations |
| | | B9 | If long-term stockpiling is planned (i.e. greater than 3 months), stockpiles will be seeded and fertilised as soon as possible | Continuous during operations |
| | | B10 | Prior to re-spreading stockpiled topsoil onto reshaped overburden, it will be decided if individual stockpiles require herbicide application and / or 'scalping' of weed species prior to topsoil spreading. | As required |
| | | B11 | An inventory of available soil will be maintained to ensure adequate | Continuous during operations |

| Section / Condition | Area | Requirement | | |
|---|---|---|---|---|
| | | | topsoil materials are available for planned rehabilitation activities. | |
| | | B12 | Topsoil will be spread to a nominal depth of 0.10m. | Continuous during operations |
| | Rehabilitation | L2 | Suitable species of vegetation will be planted and established to achieve the nominated post mine land uses. The rehabilitation plan will clarify the projects rehabilitation goals and outcomes and will confirm the monitoring and management program | Continuous through operations |
| | | L3 | The majority of the post-mine landform will be revegetated with a combination of native and improved pasture species with scattered tree lots and tree corridors linking the surrounding rehabilitated areas, proposed tree planting corridors and surrounding existing native vegetation | Progressively during operations |
| | | L4 | The final landform will be stable and not subject to slumping or excessive erosion which would result in the agreed post mining landform not being achieved | Prior to completion of Project activities and lease relinquishment |
| | | L4 | The outside facing slopes of the post-mine landform will generally be a maximum 10$^{o}$ where they are above the natural land surface. The internal facing slopes and those below natural surface reporting to the final void ( including the low wall areas) will generally be a maximum of 18$^{o}$ | Progressively during operations |
| **Mining Tenements** | | | | |
| Coal Lease 357 | | | | Mining Operation |
| Condition 3 | Rehabilitation | Any disturbance as a result of activities under this lease must be rehabilitated to the satisfaction of the Director General | | |
| Condition 7 | Rehabilitation | Any disturbance as a result of activities under this lease must be rehabilitated to the satisfaction of the Director General | | |
| Mining Lease 1725 | | | | Rehabilitation |
| Condition 2 | Rehabilitation | Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister. | | |
| Condition 3 | Mining Operations Plan and Annual Rehabilitation Report | Refer document | | |
| Mining Lease 1630 | | | | Mining Operation |
| Condition 3 | Environment Management Reporting | Refer document | | |

| Section / Condition | Area | Requirement |
|---|---|---|
| Condition 4 and 5 | Rehabilitation | Disturbed land must be rehabilitated to a sustainable /agreed land use to the satisfaction of the Director -General |
| Condition 7 | Rehabilitation | Disturbed land must be rehabilitated to a sustainable /agreed land use to the satisfaction of the Director -General |
| Mining Leases 1648, 1649,1650,1651 | | Mining Operation |
| Condition 3 | Environment Management Reporting | Refer document |
| Condition 4 | Rehabilitation | Any disturbance as a result of activities under this lease must be rehabilitated to the satisfaction of the Director General |
| Condition 7 | Roads and tracks | Temporary access tracks must be rehabilitated and revegetated to the satisfaction of the Director General as soon as reasonably practical after they are no longer required under this lease |
| Condition 14 (d) | | |

## 4.2 Post-mining Land use and Landscape Goals

The aim of rehabilitation program is to provide grazing land of Land and Soil Capability Class IV (NSW Office of Environment & Heritage, Oct 2012) with the 10 – 18 degree rehabilitated batter slopes becoming lower productivity Class V land. Areas of woodland are to be interconnected to form wildlife refuges and linkages across the site and with surrounding and regional biodiversity areas. Areas of water storage will be managed in accordance with the surrounding landscape whilst ensuring that the site is stable and safe for domesticated and native fauna and persons accessing the area.

The following key planning considerations will be incorporated into the design of the Final Void, with details on the design to be reflected in the Final Void Management Plan which is to be developed in the last five years of the operation.

- Design alternatives for the final void will continually be evaluated and will be prepared as part of the closure planning process;
- The void depression will not be easily visible or recognisable as such, by any generally available public access e.g. the New England Highway, whilst also improving the visual amenity of the project area;
- Regardless of the final design alternative selected, the location and use of the final void is outside the 100-year recurrence interval flood prone area of the Hunter River;
- Salinity levels in the final void which result from the intrinsically saline groundwater;
- Ecosystem health in the water body of the void;
- Plant communities that can be developed and sustained on the batters of the void, which as the water levels rise will aid in the development of aquatic ecosystems; and
- Access and safety for site users and animals – both domesticated and native.

The following goals underpin the post mining land use and landscape goal:

- Land will be rehabilitated in accordance with relevant DRE standards applicable at the time of rehabilitation;
- Rehabilitated land will represent a minimal source of offsite environmental impacts, such as dust, water pollution, visual amenity and weeds;
- Rehabilitated land will require ongoing management inputs no greater than similar adjacent land;
- To reinstate a viable drainage network on the site which is hydrologically stable and incorporates erosion controls and sediment collection dams which isolate effectively the rehabilitated area from adjoining area.
- Successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes; and

- Post-mining land use compatible with surrounding land uses, that provides optimal environmental, economic and community benefits.

## 4.3 Rehabilitation Objectives

As defined in the *Rehabilitation Strategy (AECOM on behalf of Rix's Creek Mine, 2015)*, the rehabilitation objectives for final landform and landscape at RCN Mine are consistent with the Statement of Commitments in the Open Cut Environmental Assessment (2009) and are in accordance with the Project Approval Condition 56 (Integra Coal Operations Pty Ltd) which apply to open cut mining (and as shown in Table 10 and shown on Plans 3A-3G and Plan 4). Further discussion on the rehabilitation objectives is provided in Section 5.2.

**Table 10 Rehabilitation Objectives – Project Approval (Integra Coal Operations Pty Ltd)**

| Area/Domain | Rehabilitation Objectives |
|---|---|
| Site (as a whole) | Safe, stable & non-polluting |
| Surface infrastructure | To be decommissioned and removed, unless the Director-General agrees otherwise |
| Other land affected by the projects | Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:<br>- local native plant species (unless the Director-General agrees otherwise); and<br>- a landform consistent with the surrounding environment |
| Community | Minimise the adverse socio-economic effects associated with mine closure |

# 5.0 Rehabilitation Planning and Management

## 5.1 Domain Selection

In accordance with the DRE MOP Guidelines (NSW Trade and Investment, Division of Resources and Energy., Sept 2013), the primary domains have been defined on the premise of land management units within the mine site, usually with unique operational and functional purpose and therefore similar geophysical characteristics. Secondary Domains are defined as land management units characterised by a similar post mining land use objective.

The primary and secondary domains are to the defined together with the codes which have been allocated for each domain as shown in Table 11.

The purpose of this MOP is to focus on all mine disturbed land and the associated rehabilitation, accordingly unmined lands which form part of the Mining Lease and are not directly impacted have not been included as a domain. The unmined or buffer lands are a valuable resource, providing:

- Analogue sites for establishing baseline criteria by which the rehabilitation objectives and success can be compared;
- Areas that can be incorporated with the rehabilitated lands to enable beef cattle production; and
- A potential for future development of non-agricultural based activities aligned to optimal post mining land use.

These lands are to be managed to enhance land use values during and after the life of the Project. The management of these lands will require:

- Corridor management in the context of grazing and biodiversity;
- Fencing and access control;
- Weed and vertebrate pest species management and control;
- Track construction and maintenance;
- Strategic grazing and stock control; and
- Bushfire management.

**Table 11 Primary and Secondary Domains**

| Primary Domains | Secondary Domains |
|---|---|
| Active Mining Area | Water Management Area - Clean |
| Overburden Emplacement Area | Rehabilitated Lands – Trees over Pasture |
| Infrastructure Area | Rehabilitated Lands – Pasture |
| Tailings Emplacement Area | Final Void |
| Water Management Area - Clean | |
| Water Management Area - Mine | |

Further information on these domains and the key issues that pertain to their management is provided in the following Sections.

### 5.1.1 Active Mining Area

Active Mining Areas comprise areas where active mining activities will occur during the period covered by the MOP or are in a disturbed state from active mining, i.e. in Falbrook Pit and in Camberwell Pit. These include highwalls, lowwalls, active voids, spoils and ramps. This domain generally cannot be progressively rehabilitated as they are required up to the end of production for accessing coal and related infrastructure services.

### 5.1.2 Infrastructure Area

The Infrastructure Area includes all the buildings, structures and service lines present on the site. The existing major infrastructure on site comprises the following:

- Administration buildings, car parks, office, store, bathhouse;
- Workshops;
- Hard stands;
- Fuel farm and explosive storage shed;
- Electrical services and sewerage system;
- Clean coal stockpile;
- Haul roads;
- Coal handling and preparation plant;
- Clean coal reclaim tunnel/stacker and train loader facility.

### 5.1.3 Water Management Area

A Water Management Area includes components of the network of dams, clean water and mine water that compose the RCN water management system that is in place to control the movement of water around the site. These include sedimentation, diversion, mine water and water supply dams but exclude the tailings emplacement areas.

The current surface water dams present around the mine site and processing areas and details of their capacity are provided in Table 12 as per the data provided in the Water Management Plan (Integra Coal Operations Pty Ltd, 22 October 2014).

**Table 12 Water Storages**

| Storage | Type of Water Stored | Capacity at Spill Level (ML) |
|---|---|---|
| C1 | Clean | 243 |
| C2 | Clean | 173 |
| C3 | Clean | 97 |
| C3A | Clean | 25# |
| C4 | Clean | 90 |
| C5 | Clean | 16 |
| C6 | Clean | 4 |
| C6A | Clean | 4 |
| C7 | Clean | 2 |
| C8 | Clean | 18 |
| C9 | Clean | 2 |
| C11 | Clean | 0.8 |

| Storage | Type of Water Stored | Capacity at Spill Level (ML) |
|---|---|---|
| TD1 | Mine | 205 |
| TD2 | Mine | 1000 |
| D1 | Mine | 440 |
| D2/TD3 | Mine | 600# |
| D3 | Mine | 39 |
| D4 | Mine | 2.5 |
| Possum Skin Dam | Mine | 1560 |
| Sediment Dam 1 | Sediment Laden | 15.6 |
| Sediment Dam 2 | Sediment Laden | 26.8 |
| Sediment Dam 3 | Sediment Laden | 9.7 |
| Sediment Dam B1 | Sediment Laden | >10.5 |
| Sediment Dam B2 | Sediment Laden | >1.2 |
| Sediment Dam B5 | Sediment Laden | >6.1 |
| Sediment Dam B6 | Sediment Laden | >7.0 |

# - Estimate only

### 5.1.4 Tailings Emplacement Area

Tailings dam 3 (TD3) stopped receiving tailings prior to the term of this MOP and is currently being used as an emergency overflow structure for TD1 and TD2. TD1 and TD2 will remain active during the life of this MOP, with the tailings material which is produced at the RCN CHPP being managed using these storage facilities.

### 5.1.5 Overburden Emplacement Area

Overburden is produced and disposed of within mined out sections of the open cut to create a final landform. Spoil dumping locations will be managed to maintain flexibility and productivity of the overburden haulage fleet while giving consideration to environmental conditions. In general the dumps will be constructed in reasonably flat layers incorporating rehabilitated edges where possible.

It is noted that during the term of this MOP some overburden will be placed above the Final Landform batter presented in the consent without increasing the overall elevation of the spoil dump to provide material for reshaping. This material is will be dozed in to the mine void burying internal access ramps and the mine low wall batter to create the final landform presented in the consent.

### 5.1.6 Rehabilitated Lands

Rehabilitated Lands are those areas of the mine where coal extraction and active mining are complete and that are being progressively rehabilitated in accordance with the final landscape and land use objectives for the site. The rehabilitated lands are divided in areas to be returned to either domains Rehabilitated Lands – Pasture, and areas to be returned to Rehabilitated Lands - Trees over Pasture. Slopes up to 10º are permissible on both domains.

Post-mining land and soil capability (NSW Office of Environment & Heritage, Oct 2012) is anticipated to be predominantly Class 5 with area of Class 4 on lands with slope less than or equal to 10º. This land will be suitable for a mix of non-intensive cattle grazing and woodland habitat.

For area subject to grazing, land management activities will focus on achieving stocking rates of between 1.5 and 4.0 dry sheep equivalents (DSE) per hectare (average 2.8 DSE) in accordance with Beef Stocking Rates and

Farm Size – Hunter Region (NSW Dept. of Primary Industries, 2006) , as is commensurate with the surrounding lands and this will be evidenced by monitoring of grazing.

### 5.1.7 Final Void

A Final Void is the remnant open pit left at mine closure. Under the current consent there will be a final void in the Camberwell Pit, which will not be finalised during the life of the MOP. The Final Void has been defined as a separate domain to the Water Management Areas recognising that the management of Final Void will require added consideration in terms of the steeper slopes of the void, depth of water, water quality, public safety and impact on ground water.

The location of the final void as at end of mine is shown on Plan 4.

## 5.2 Rehabilitation Objectives

As defined in the *Rehabilitation Strategy* (AECOM on behalf of Rix's Creek Mine, 2015), the rehabilitation objectives for final landform and landscape for the site are:

*General*

- Land will be rehabilitated in accordance with relevant DRG standards applicable at the time of rehabilitation.
- Rehabilitated land will represent a minimal source of offsite environmental impacts, such as dust, water pollution, visual amenity, weeds and odour.
- Rehabilitated land will require ongoing management inputs no greater than similar adjacent land.
- Rehabilitation will be compatible with the proposed post-mining land-use.

*Landform*

- Rehabilitated land will be safe and stable.
- Land and soil capability comparable to that pre-mining.
- Mined land will be re-contoured to a landform compatible with the surrounding natural landscape.
- Reinstatement of a stable drainage network.

*Growing media*

- A sustainable vegetation cover will be established on rehabilitated land (soils).

*Vegetation*

- Rehabilitated land will be topsoiled, fertilised and sown with grass and/or native vegetation species.
- A sustainable vegetation cover will be established on rehabilitated land.
- Grazing areas will be established with a range of species suitable for pasture production in the area.
- Tree area will be established with native species by either direct seeding or tubestock planting techniques.

*Infrastructure* which has no use post mining;

- All infrastructure, including roads, will be removed and rehabilitated.
- Footings are only required to be removed to the existing ground level only, covered with a minimum of 0.5 metres of fill and rehabilitated.
- Electricity supply infrastructure (overhead lines, poles, substations, etc.) will be removed.

## 5.3 Rehabilitation Phases

The ultimate rehabilitation objective for the RCN Mine is the development of sustainable ecosystems across the site which is representative of the surrounding landscape. This will be achieved through a series of conceptual

phases which are shown diagrammatically in Figure 1, described in further detail in the Rehabilitation Strategy (AECOM on behalf of Rix's Creek Mine, 2015) and described as:

- **Phase 1**: Decommissioning – removal of hard stand areas, buildings, contaminated materials, hazardous materials.
- **Phase 2**: Landform Establishment – incorporates gradient, slope, aspect, drainage, substrate material characterisation and morphology.
- **Phase 3**: Growing Media Development – incorporates physical, chemical and biological components of the growing media and ameliorants that are used to optimise the potential of the media in terms of the preferred vegetative cover.
- **Phase 4**: Ecosystem and Land use Establishment – incorporates revegetated lands and habitat augmentation; species selection, species presence and growth together with weed and pest animal control / management and establishment of flora.
- **Phase 5**: Ecosystem and Land use Sustainability – incorporates components of floristic structure, nutrient cycling recruitment and recovery, community structure and function which are the key elements of a sustainable landscape.
- **Phase 6**: Rehabilitation Complete – Land use and landscape is deemed as suitable to be relinquished from the Mining Lease.

Table 13 shows the relevant rehabilitation phases for each domain by the end of the MOP, based on the post mining land use and landscape, and the rehabilitation objectives to be achieved.

**Table 13 Relevant rehabilitation phases for each domain by the end of the MOP**

| Primary Domain / Rehabilitation Phase | Infrastructure Area | Water Management Area | Tailings Storage Facility | Overburden Emplacement | Rehabilitated lands – Pasture | Rehabilitated Lands – Tree over Pasture | Final Void | Active Mining |
|---|---|---|---|---|---|---|---|---|
| Stage 1 – Decommissioning | | | | | | | | |
| Stage 2 – Landform Establishment | | | | ✓ | ✓ | ✓ | | |
| Stage 3 – Growing Media Development | | | | ✓ | ✓ | ✓ | | |
| Stage 4 – Ecosystem and Land use Establishment | | | | ✓ | ✓ | ✓ | | |
| Stage 5 – Ecosystem and Land use Sustainability | | | | ✓ | ✓ | ✓ | | |
| Stage 6 – Rehabilitation Complete | | | | | | | | |

### 5.3.1 Phase 1 – Decommissioning

Phase 1 provides for the removal of hard stand areas, buildings, contaminated materials and hazardous materials. During the life of this MOP there is no planned decommissioning to take place.

The objectives, criteria and performance indicators for RCN rehabilitation domains for the Decommissioning phase are provided in

### 5.3.2 Phase 2 – Landform Establishment

In the context of this MOP, Landform Establishment corresponds to the processes involved to achieve stable landforms including slopes, erosion controls, and drainage lines with integrated landscape features, which are compatible with surrounding landforms, whilst ensuring also that the rehabilitated areas of native vegetation link with undisturbed native vegetation.

*Final Landform*

The proposed final landform at RCN will be consistent with the surrounding natural landscape.

The final landform and rehabilitation domain types for RCN during the life of the MOP are shown on Maps 3A – 3C inclusive and Map 4. The objectives, criteria and performance indicators for RCN rehabilitation domains for the Landscape Establishment phase are provided in

### 5.3.3 Phase 3 – Growing Media Development

In the context of this MOP, Growing Media Development incorporates the processes involved to achieve a soil which is capable of supporting a sustainable plant community. It includes consideration of the chemical, physical and biological properties of the media and takes into account issues such as the specialist requirements (e.g. soil ameliorants) aligned to the revegetation of the disturbed areas, whilst also incorporating consideration of land use both for grazing and biodiversity that may deviate from the traditional post mining land use.

*Overburden Characterisation*

Overburden material varies in physical and geochemical properties, in accordance with the geology of the area and the extent of exposure to weathering. Chemical analyses of the spoil materials indicate that, in general, the overburden is slightly sodic and alkaline, but within acceptable ranges for use as a plant growth medium.

*Soil Types and Suitability*

Data derived from previous environmental assessments demonstrates the suitability of these soils for use as top dressing and the stripping depth. Whilst it is recognised that the growing media will in part comprise shallow soils and the presence of sodic subsoils, the Mine land management program will ensure that there are no rocky outcrops and growing media is available to an indicative depth of at least 100mm. Proactive management of erosion (wind and water) will be carried out and cropping will not be included in the program. These measures together with the use of soil ameliorants including though not limited to biosolids, will enable the land to return to post mining Land and Soil Capability Classes aligned to the surrounding landscape.

The objectives, criteria and performance indicators for RCN rehabilitation domains for the Growing Media Development phase are provided in Table 14.

### 5.3.4 Phase 5 – Ecosystem and Land use Sustainability

In the context of this MOP, Ecosystem and Land use Sustainability incorporates the:

- Development of land use and land capability which is consistent with the surrounding areas;
- Nutrient Cycling;
- Development of land use options that provide optimal and sustainable social and economic benefit to the local community;
- Species diversity and abundance for both flora and fauna;
- Development of profiles in the growing media; and
- Vegetation communities capable of withstanding catastrophic events e.g. bushfire and extensive drought.

The objectives, criteria and performance indicators for Rix's Creek rehabilitation domains for the Ecosystem and Land use Sustainability phase are provided in Table 14.

### 5.3.5 Phase 6 – Rehabilitation Complete

No areas of the Mining Lease are planned to be relinquished during the life of this MOP.

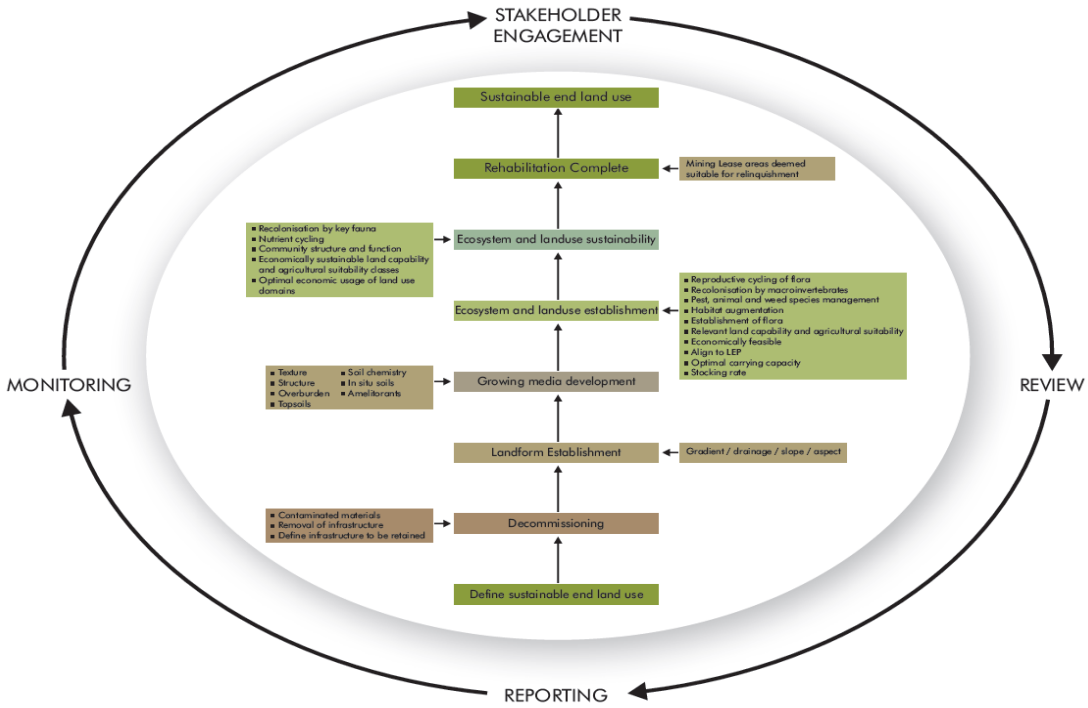


**Figure 1b Conceptual Phases of Sustainable Ecosystem Development**

# 6.0 Performance Criteria, Measures and Indicators

In accordance with the DRE MOP Guidelines (NSW Trade and Investment, Division of Resources and Energy., Sept 2013) the performance criteria, measure and indicators have been defined for each domain in context of the phase of the rehabilitation program. This includes the following:

- Nomination and justification of **performance measures**. Performance measures are used to quantify the rehabilitation and land management programme in terms of efficiency or effectiveness and establish the indicative timeframes for completion, and the standards of completion;
- Identification of **performance indicators** of the biophysical environment or where applicable; the built environment that can be measured reliably over time using accepted scientific techniques and standards i.e. Australian Standards; and
- Establishment of the **performance/completion criteria** for each indicator which quantitatively demonstrates rehabilitation.

The criteria, measures and indicators which provide the framework for this MOP are underpinned by a range of documents which relate to land management and site rehabilitation. These include industry standards, Rix's Creek Mine Standards and Procedures as apply to RCN. The ongoing development of these documents will provide the basis for the review of this MOP with resultant amendments being recorded in the AEMR.

The objectives, performance indicators, measures and criteria in the MOP are designed to form the basis of the performance measure and provide the ability to track the development of sustainable ecosystems through a series of conceptual stages. This information is provided for all defined rehabilitation domains in Table 14 and aligned to the Rehabilitation Plans 3A-3C.

Where required, these elements are completed with input and agreement from relevant external parties, such as landowners and regulators. A flowchart of the rehabilitation process at RCN is presented in Figure 2.

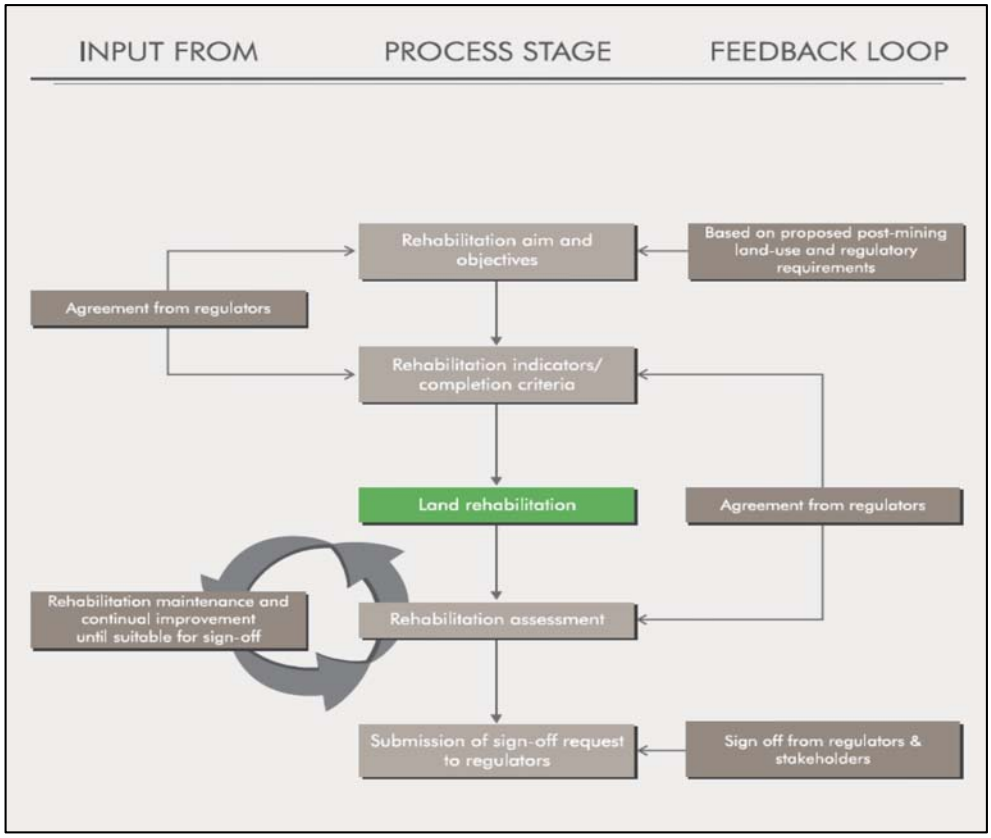


**Figure 2 RCN Rehabilitation Management Process**

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Table 14 Rehabilitation Tables – Objectives, Performance Indicators, Measures and Criteria

## *Table 14A Decommissioning Phase*

| Domain Objective | Performance Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at start of MOP |
|---|---|---|---|---|---|---|
| Domain 1 – Active Mining | | | | | | |
| No decommissioning activities in Domain 1 | | | | | | |
| Domain 2 – Water Management | | | | | | |
| Mine water dams and sediment dams are decontaminated prior to conversion to clean water dams in the final landform. | Dam Sediments | Sediments accumulated in mine water and sediment dams are removed and disposed of in accordance with legislation. | Water Management Plan 2009 EA Appendix J | No | na | Not commenced |
| All infrastructure removed, unless otherwise agreed with relevant stakeholders | Pumping Infrastructure | Pumps and associated infrastructure is decommissioned and removed from site. | This MOP | No | na | Not commenced |
| Domain 3 – Infrastructure | | | | | | |
| All built infrastructure will be decommissioned and removed from site (unless otherwise agreed with regulators and stakeholders) | Site services | All site electricity and telecommunication services that are not required for the post-mining land use has been disconnected and removed (supported by records). | This MOP 2009 EA- Appendix J | No | na | Not commenced |
| | Demolition of infrastructure | All surface infrastructure that is not required for the post-mining land use has been demolished (or dismantled) and removed from the site, supported by demolition certificates. | This MOP 2009 EA- Appendix J | No | na | Not commenced |
| | | Records verify that all demolition work has been carried out in accordance with *AS2601-2001: The Demolition of Structures* or its latest version. | This MOP | No | na | Not commenced |
| | Foundations and pavements | Records verify that all concrete footings, foundation pads and pavements have been removed. | This MOP 2009 EA (App J) | No | na | Not commenced |
| All hazardous materials and contaminated materials will be identified and removed from site or bioremediated as appropriate. | Carbonaceous Material | Carbonaceous material has been removed from the footprint of haul roads, conveyors and the ROM pad and disposed of in the void, supported by visual monitoring. | This MOP | No | na | Not commenced |
| | Hydrocarbons | Records verify that hydrocarbons have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form, or bioremediated onsite with evidence that the material meets NEPM standards for onsite use and disposal. | This MOP 2009 EA (App J) | No | na | Not commenced |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Chemicals and explosives | Records verify that chemicals and explosives have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form. | This MOP | No | na | Not commenced |

| Domain Objective | Performance Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at start of MOP |
|---|---|---|---|---|---|---|
| | Contaminated soils | Records verify that contaminated soils have been identified and remediated or removed in accordance with legislation; as per EPA waste tracking record form or bioremediated onsite with evidence that the material meets NEPM standards for onsite use and disposal. | This MOP<br>2009 EA (App J) | No | na | Not commenced |
| All open bore holes (including underground dewatering bores and monitoring wells) and mine entries will be sealed and rehabilitated in accordance with regulatory guidelines. | Open bores | All open bore holes (including exploration boreholes, underground dewatering bores and monitoring wells), have been backfilled and sealed in accordance with EDG01 – Borehole Sealing Requirements on Land (supported by records). | *EDG01 – Borehole Sealing Requirements on Land* | No | na | Not commenced |
| | Underground entries. | All underground entries have been sealed as per DRG standards (*Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams*) (supported by records). | CL357, ML1630, ML1648, ML1649, ML1650 ML1651, ML1725 | No | na | Not commenced |
| Domain 4 – Overburden Emplacement | | | | | | |
| No proposed decommissioning activities in the Overburden Emplacement area | | | | | | |
| Domain 5 – Tailings Storage Area | | | | | | |
| All tailings pumping infrastructure will be decommissioned and removed prior to closure | Pumping Infrastructure | All tailings pumping infrastructure is decommissioned and demolished or dismantled and removed from site | EA Section 7.16.7 | No | na | Not commenced |
| Tailings emplacement areas will be capped and rehabilitated in accordance with the capping design presented in the High Risk Activity Application; | Capping Design | A detailed tailings capping designs are developed for TD1, TD2 and TD3 tailings emplacements prior to decommissioning. | Work Health and Safety (Mines and Petroleum Sites) Regulation 2014.<br>2009 EA (App J) | No | na | Not commenced |

## *Table 14B Landform Establishment Phase*

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at start of MOP |
|---|---|---|---|---|---|---|
| All Domains | | | | | | |
| Post mining landforms will be safe, stable and non-polluting | Slopes | Survey confirms rehabilitated slopes are generally 10 degrees and less than 18 degrees (unless otherwise approved). | This MOP<br>Statement of Commitments (SOC) SOC L4<br>2009 EA (App J) | No | 1, 2 | Not complete |
| | Surface rock density | Visual inspections confirm surface spoils are (generally) rock free and provide a friable substrate. Large rocks are removed and placed into habitat piles on rehabilitated areas. | This MOP | No | n/a | Not complete |
| | Free draining landforms | Landforms are graded to be generally free draining in accordance with design. Micro relief will be provided in accordance with project approval to assist in free drainage of the areas. | This MOP.<br>DA 08_0102- Cond 50.<br>2009 EA (App J) | No | 4 | Not complete |
| | Stability | Visual inspections confirm rehabilitated landforms exhibit an absence of slumping. | This MOP<br>SOC L3 | No | 1 | Not complete |
| | Spontaneous Combustion | Visual monitoring indicates no evidence of spontaneous combustion. Adiabatic self- heating testing of coal reject material shows very low propensity to spontaneous combustion. | This MOP<br>2009 EA (App J) | No | 6 | Not complete |
| | Dispersive Spoils | Testing confirm dispersive spoils are not present in the surface layer or are appropriately ameliorated with Biosolids or other ameliorants if required. | This MOP<br>SOC L3 | No | 7 | Not complete |
| | ESC | Suitable erosion control measures (e.g. silt fences, mulches etc.) are installed in rehabilitation areas in accordance the Blue Book to minimise soil loss from areas undergoing rehabilitation. | DECC 2008<br>SOC L3 | No | na | Not complete |

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at start of MOP |
|---|---|---|---|---|---|---|
| | Gullying | Monitoring demonstrates there are no areas of active gully erosion. | This MOP | No | 3 | Not complete |
| | Rilling | Visual inspections confirm rill erosion is limited to isolated areas of minor rilling up to 200mm deep. | This MOP<br>SOC L3 | No | 3 | Not complete |
| Domain 2 – Water Management Area | | | | | | |
| Surface water management structures will be designed and constructed in accordance with the Blue Book to minimise erosion and enhance stability | Final landform drainage | Final landform drainage structures including drains, banks, drop structures and dams have been constructed in accordance with Blue Book requirements. Micro relief will be provided in accordance with project approval to assist in free drainage of the areas. | DECC 2008<br>SOC L3<br>2009 EA (App J) | No | 4 | Not commenced |
| | Geomorphic stability | Drainage structures are assessed to be stable with no evidence of overtopping or significant scouring, loss of freeboard or channel capacity. | DECC 2008<br>SOC L3 | No | 4 | Not commenced |
| Surface water runoff from the final landform will be non-polluting | Runoff water quality | Runoff water quality from rehabilitation areas is within the range of water quality data recorded from analogue sites and does not pose a threat to downstream water quality. Environmental Monitoring Program. Analytes measured include pH, TSS, TDS and Conductivity. | EPL 3391<br>DA 08_0102- Cond 50.<br>2009 EA (App J) | No | 5 | Not complete |
| Domain 4 – Overburden Emplacement | | | | | | |
| Overburden emplacements will be shaped with generally informal profiles and maximum heights that complement the local topography | Landform compatibility | Landforms are assessed to be generally compatible with the surrounding landscape, as shown on MOP Plan 4. | This MOP<br>DA 08_0102- Cond 50. | No | na | Not complete |
| | Height | Surveyed and in accordance with final design. | This MOP<br>DA 08_0102 - Appendix 8 | No | na | Not complete |

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at start of MOP |
|---|---|---|---|---|---|---|
| | Informal undulations | Elements such as drainage paths, contour drains, ridgelines, and emplacements are shaped into undulating informal profiles. Micro relief will be provided in accordance with project approval. | This MOP<br>DA 08_0102- Cond 50. | No | na | Not complete |
| Domain 5 – Tailings Storage Area | | | | | | |
| Rehabilitated tailings emplacements will be capped and shaped to produce free draining landforms. | Capping | Tailings will be capped with at least 2 m of inert material including select inert overburden, subsoils and topsoils. | High Risk Activity Capping & Dumping Manuals<br>2009 EA (App J) | No | 16 | Not complete |
| | Ponding | Tailings emplacement areas will be shaped to be free draining and exhibit an absence of ponding. | High Risk Activity Capping & Dumping Manuals<br>2009 EA (App J) | No | 4 | Not complete |
| Domain A – Final Void | | | | | | |
| Final voids will be made safe by:<br>• Constructing highwalls and battering back lowwalls to be geotechnically stable; and<br>• Constructing perimeter fencing and safety bunds to restrict public access | Carbonaceous materials | All coal and carbonaceous material is capped with a minimum of 1.5 metres of inert overburden. | This MOP<br>2009 EA (App J) | No | na | Operations ongoing |
| | Stability | Highwalls and lowwalls have been assessed by a qualified geotechnical engineer to validate long term stability. | This MOP<br>DA 08_0102- Cond 50.<br>2009 EA (App J) | No | 2 | Operations ongoing |
| | Size and Depth | Minimise size and depth of Final Void. | DA 08_0102- Cond 50. And Appendix 8<br>2009 EA (App J) | No | na | Operations ongoing |
| | Safety | Safety features (e.g. safety berm and fence) are installed at the crest of highwalls to restrict public access. | This MOP<br>DA 08_0102- Cond 50.<br>2009 EA (App J) | No | na | Operations ongoing |

## *Table 14C Growth Medium Development Phase*

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | TARP Key Element | Progress at end of MOP |
|---|---|---|---|---|---|---|
| All Domains | | | | | | |
| Soils (or soil substitutes) will be reinstated on rehabilitation areas with characteristics that are appropriate for the final landuse. | Soil Depth | Topsoil and/or subsoils are spread uniformly at the depth of 100mm. | This MOP<br>2009 EA (App J) | No | 8 | Not complete |
| | Compaction | Soils are ripped to produce a friable surface prior topsoil spreading; | This MOP | No | na | Not complete |
| | Ameliorants | Ameliorants (such as Biosolids, gypsum, Green waste source separated compost and fertilisers) are spread at the recommended rate per hectare; as supported by soil testing and application in accordance with *"Environmental Guidelines: Use and Disposal of Biosolids Products" NSW EPA 2000.* | This MOP | No | 7 | Not complete |
| | Temporary ESC | Temporary ESCs are installed prior to topsoil re-spreading. Temporary ESCs will be installed in accordance with the Bluebook such as silt fences, catch drains and sediment basins down slope of rehabilitation areas. | DECC 2008<br>SOC L3 | No | 3 | Not complete |
| | | Topsoiled rehabilitation areas are sown with a non-persistent cover crop at the recommended sowing rate per hectare. | DECC 2008 | No | na | Not complete |
| Domain D – Rehabilitation Area – Trees over pasture | | | | | | |
| Trees over pasture rehabilitation areas will provide habitat augmentation features (such as rock piles and felled logs and woody debris) for native species. | Habitat features | Rehabilitation monitoring confirms habitat features are incorporated into trees over pasture rehabilitation areas (including rock piles, felled hollow bearing logs and coarse woody debris). | This MOP<br>2009 EA (App J) | No | 14 | Not complete |
| | | Habitat features include structure suitable for native species. | This MOP<br>2009 EA (App J) | No | 14 | Not complete |

### *Table 14D Ecosystem Establishment Phase*

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | Link to TARP | Progress at end of MOP |
|---|---|---|---|---|---|---|
| **All Domains** | | | | | | |
| Enhance the productivity and ecological function of rehabilitation areas by effectively managing risks from bushfire, weeds and feral animals. | Weed presence | The density of weeds in rehabilitated areas is no worse than analogue sites. All measurements will be undertaken in accordance with the Department of Agriculture, Fisheries and Forestry (2008) *Field Manual for surveying and Mapping Nationally Significant Weeds.* | This MOP | No | 11 | Not complete |
| | Feral animal density | Feral animal pests are controlled in accordance with legislation and the MOP. | This MOP | No | No | Not complete |
| | Fuel loads | Fuel loads are assessed and managed as required including, maintaining fire-breaks. | This MOP | No | 15 | Ongoing |
| | Access | Firefighting access across rehabilitation areas and water sources (dams) is maintained in accordance with the Bushfire Hazard Reduction Plan. | This MOP | No | 15 | Ongoing |
| **Domain B – Water Management** | | | | | | |
| Surface water runoff from the final landform will be non-polluting. | Runoff water quality | Water quality testing confirms runoff water quality meets EPL requirements. Analytes measured in accordance with EPL 3391 include; conductivity, pH and TSS. | EPL 3391<br>SOC L3<br>2009 EA (App J) | No | Yes | Not complete |
| **Domain C – Rehabilitation Area – Grassland** | | | | | | |
| Grassland will be established that can be demonstrated to be capable of supporting sustainable grazing. | Soil Quality | Soil testing indicates that soil pH, ESP and EC are trending toward the range of analogue sites after 5 years. | This MOP | No | 7 | Not complete |

| Domain Objective | Indicator | Completion Criteria | Justification/ Source | Complete (Yes/No) | Link to TARP | Progress at end of MOP |
|---|---|---|---|---|---|---|
| Grassland will be established that can be demonstrated to be capable of supporting sustainable grazing. | Species composition | Pasture species to consist of native and improved pasture grasses and legumes appropriate to the district and recognised as suitable for beef cattle grazing. | This MOP SOC L2 | No | 12, 13 | Not complete |
| | Ground cover | Rehabilitation survey confirms at least 80% vegetative cover over a minimum of 95% of areas treated after one year. | This MOP | No | na | Not complete |
| **Domain D – Rehabilitation Area – Tress over Pasture** | | | | | | |
| Trees over Pasture rehabilitation areas will be self-sustaining and require ongoing management inputs that are appropriate for the final land use | Surface cover | Rehabilitation survey confirms ground cover (vegetation, leaf litter, mulch) greater than 70% by Year 10. | This MOP | No | 9 | Not complete |
| | Soil Quality | Soil testing indicates soil characteristics (pH, EC, ESP) vary by no more than 20% from relevant analogue site after 10 years. | This MOP | No | 7 | Not complete |
| Vegetation compositions in trees over pasture areas will be comparable with analogue vegetation communities | Vegetation health | More than 75 per cent of trees are healthy and growing as indicated by long term rehabilitation monitoring. | This MOP | No | na | Not complete |
| | | Rehabilitation monitoring confirms stem density is within 90% of the analogue trees over pasture site. | This MOP | No | na | Not complete |

## *Table 14E Ecosystem Sustainability Phase*

| Domain Objective | Indicator | Completion Criteria | Justification/Source | Complete (Yes/No) | Link to TARP | Progress at end of MOP |
|---|---|---|---|---|---|---|
| **All Secondary Domains** | | | | | | |
| Enhance the productivity and ecological value of rehabilitation areas by effectively managing risks from bushfire, weeds and feral animals | Firefighting resources | Adequate access and water resources for firefighting are retained in the final landform for relinquishment. | This MOP | No | 15 | Ongoing |
| | Weed presence | There are no significant weed infestations that are identified as a risk to rehabilitation. | This MOP | No | 11 | Ongoing |
| | Feral animal density | Feral animal pests are controlled in accordance with legislation and do not present a risk to biodiversity. | This MOP<br>2009 EA (App J) | No | N/A | Ongoing |
| Soils (or soil substitutes) will be reinstated on rehabilitation areas with characteristics that are appropriate for the final landuse | Soil chemistry | Soil testing indicates soil N, P, K and S levels are within 20% of levels of analogue site after 10 years. | This MOP | No | 7 | Not complete |
| | Organic carbon | Soil testing indicates soil total organic carbon is no less than 20% of levels in adjacent analogue site after 10 years. | This MOP | No | 7 | Not complete |
| | Soil profile development | Soil cores demonstrate a developing A and B horizon. | This MOP | No | N/A | Not complete |
| **Domain A – Water Management Area** | | | | | | |
| Surface water runoff from the final landform will be non-polluting | EPL Extinguishment | Water quality monitoring for rehabilitated catchments support EPL extinguishment. Analytes measured include; conductivity, pH and TSS. | EPL 3391<br>DA 08_0102- Cond 50. | No | 5 | Not complete |
| **Domain B – Rehabilitation Area – Grassland** | | | | | | |
| | Species composition | At least 75% of species surveyed consist of native and improved pasture grasses and legumes appropriate to the district and recognised as species suitable for grazing. | This MOP<br>SOC L2 | No | 10 | Not complete |

| Domain Objective | Indicator | Completion Criteria | Justification/Source | Complete (Yes/No) | Link to TARP | Progress at end of MOP |
|---|---|---|---|---|---|---|
| Grassland will be established that can be demonstrated to be capable of supporting sustainable grazing by:<br>• Having a pasture species mix representative of the district<br>• Providing a mix of land capability suitable for agriculture (Rural Land Capability Class IV, V and VI);<br>• having a carrying capacity comparable to suitable analogue sites; and<br>Requiring management inputs comparable to suitable analogue sites | Natural regeneration | Evidence of second generation pasture plants present during rehabilitation monitoring. | This MOP | No | na | Not complete |
| | Fertiliser and ameliorants | Fertiliser and amelioration are no longer required. | This MOP | No | na | Not complete |
| | Weed and pest management | Weed and pest management inputs are no more than those of analogue sites. | This MOP | No | na | Not complete |
| | Yields | Pasture production is comparable to similarly managed analogue site yields within 10 years.<br>. | This MOP | No | na | Not complete |
| | Stock water availability | Water storage and access to water are suitable to support low intensity grazing activities. | This MOP | No | na | Not complete |
| | Carrying capacity | Demonstrated carrying capacity for a specified head of stock per hectare is within 20% of analogue sites. | This MOP | No | na | Not complete |
| **Domain C – Rehabilitation Area – Trees over Pasture** | | | | | | |
| Trees over pasture rehabilitation areas will be self-sustaining and require ongoing management inputs that are appropriate for the final land use | Nutrient recycling | Inspections confirm evidence of nutrient recycling (e.g. presence of fungi). | This MOP | No | na | Not complete |
| | Surface cover | Rehabilitation monitoring confirms ground cover (vegetation, leaf litter, mulch) is in the range of analogue sites at Year 10. | This MOP | No | 9 | Not complete |
| | Vegetation health | More than 75 per cent of trees are healthy and growing as indicated by long term rehabilitation monitoring. | This MOP | No | na | Not complete |
| | Species composition | Revegetation areas contain flora species assemblages characteristic of the desired native vegetation communities. | This MOP | No | 12 | Not complete |

| Domain Objective | Indicator | Completion Criteria | Justification/Source | Complete (Yes/No) | Link to TARP | Progress at end of MOP |
|---|---|---|---|---|---|---|
| | Reproduction | Rehabilitation monitoring confirms second generation tree seedlings (recruitment) are present or likely to be (e.g. presence of flowering). | This MOP | No | na | Not complete |
| | Structure | Rehabilitation monitoring confirms rehabilitated areas provide a range of vegetation structural habitats (e.g. eucalypts, shrubs, ground cover, developing litter layer, rock and wood piles etc.) to encourage use by native fauna species. | This MOP | No | 14 | Not complete |
| | Native fauna presence | Rehabilitation monitoring confirms target native fauna species are recorded utilising rehabilitation areas. | This MOP<br>SOC L1 | No | na | Not complete |
| Trees over Pasture rehabilitation corridors will connect with remnant vegetation to enhance habitat connectivity | Connectivity | Habitat corridors are shown to be successfully established and consistent with desired vegetation community compositions. | This MOP<br>SOC L2<br>2009 EA (App J) | No | 14 | Not complete |
| | | Woodland corridors are assessed to provide contiguous structural habitat. | This MOP | No | 14 | Not complete |

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# 7.0 Rehabilitation Implementation

## 7.1 Status at MOP Commencement

This Section describes the status of each domain at the start of this MOP period. This information is presented graphically in Plan 2. The rehabilitation status of domains that are active, i.e. subject to ongoing mining operations, is not described.

### 7.1.1 History of Land Management

The rehabilitation program at RCN is supported by over 80 years company experience in mining and over 25 years in land management by the environmental team at Rix's creek mine. This experience will build on the experience of rehabilitation activities that have been occurring on site for the past 28 years.

The key elements of the rehabilitation program have and will continue to include:

- Setting overall rehabilitation aims and objectives;
- Developing appropriate rehabilitation performance indicators and completion criteria;
- Implementing the land rehabilitation program;
- Developing, reviewing and implementing a rehabilitation assessment program;
- Integration of the rehabilitation program into the Mine Environmental Management System (EMS) and Environmental Management Plans (EMP). The EMS and EMP provide a framework for environmental standards and procedures that are followed during construction, operation and decommissioning of its mining operations.
- Conducting a number of audits and inspections throughout the year, including regular internal EMS and compliance audits and other less routine audits. Site based environmental personnel also conduct regular inspections of all work areas. These assessments are reported in the site AEMR which compiles monitoring results and discusses trends, system changes and responses to any potential issues identified during monitoring. Targets and future initiatives are also identified.
- Environmental monitoring results are provided monthly via the Bloomfield Collieries website. An Annual Environmental Report, the AEMR, is completed by the 31st March annually for each previous year and is distributed to the Rix's Creek Coal Mine Community Consultative Committee (CCC), Government Regulators and is also placed on the company website – www.bloomcoll.com.au.
- Long term rehabilitation monitoring and compilation of data to document rehabilitation outcomes which supports a request to Regulators for sign off on rehabilitated areas.

### 7.1.2 Active Mining Area

Domain is active.

### 7.1.3 Infrastructure Area

Domain is active.

### 7.1.4 Water Management Area – Clean and Mined

Domain is active and subject to ongoing operations.

### 7.1.5 Tailings Emplacement Area

Domain is active.

Details on the tailings management activities are provided in Section 5.1.4

### 7.1.6 Overburden Emplacement Area

Domain is active, with progressive rehabilitation undertaken in context of land form design as required.

### 7.1.7 Rehabilitation – Pasture, Rehabilitation – Tree over Pasture

At September 2018 the total area of mined land that has been rehabilitated at RCN was 436 ha

Pasture areas consist of a range of both native and introduced pasture species and are designed to sustain grazing pressures. Areas of trees over grass utilise local native tree and shrub species and are designed to increase biodiversity values.

### 7.1.8 Final Voids

There are currently no final voids on site.

## 7.2 Proposed Rehabilitation Activities in this MOP Term

Rehabilitation techniques are well established at RCN. Rehabilitation activities at during this MOP will continue to be undertaken in accordance with the procedures outlined the *Rehabilitation Strategy* (AECOM Australia Pty Limited, July 2015). RCN rehabilitation methodology includes short, medium and long term measures to achieve the overall rehabilitation objectives for the site; these are outlined Table 15, with site specific works listed in Table 16 and shown pictorially on Plans 3A-3G.

**Table 15 RCN general rehabilitation measures**

| Timeframe | Rehabilitation Measure |
|---|---|
| Short Term Rehabilitation Measures | - Scheduling rehabilitation to minimise the disturbance footprint of the mining operation;<br>- Pre-clearing surveys for topsoil stripping from stockpiles;<br>- Final landform shaping involving the reconstruction of a drainage pattern, construction of erosion and sediment control works;<br>- Topdressing using topsoil and application of soil ameliorants as required, such as biosolids and mulch;<br>- Sowing/fertilising with selected species mix. |
| Medium Term Rehabilitation Measures | - Maintenance programs including: weed control, bushfire management through managing fuel loads by slashing or grazing and re-sowing where vegetation establishment has been poor;<br>- Control access to rehabilitated areas;<br>- Assessment program, annual maintenance inspections, scheduled rehabilitation monitoring and review of inspection/measurement data over time to assess rehabilitation performance. |
| Long term Rehabilitation Measures | - Final maintenance inspection and rehabilitation monitoring;<br>- Review monitoring results to determine progress is on a trajectory to achieving the rehabilitation objectives;<br>- Submission for rehabilitation signoff from Regulators and stakeholders. |

**Table 16 Rehabilitation Activities Proposed during the term of the MOP**

| Year | Activities |
|---|---|
| End of Year 1 - 2018 | - Rehabilitation of North open cut adjacent to Stoney Creek Road and underlying area of the pre-existing North open cut soil stockpile area.<br>- Rehabilitation of West Pit RL 150 dump. |
| End of Year 4 - 2019 | Rehabilitation of West Pit RL 150 dump. |
| End of Year 5 - 2020 | Rehabilitation of West Pit RL 150 dump. |

The proposed rehabilitation activities for each domain are outlined below.

### 7.2.1 Active Mining Area

This domain will remain active during the period of the MOP.

### 7.2.2 Infrastructure Area

No rehabilitation activities are anticipated for this domain during the period covered by this MOP, as the existing major infrastructure will remain in place and none will be decommissioned. Maintenance of structures will be undertaken on an as need basis throughout the period of the MOP.

### 7.2.3 Water Management Area – Clean and Mined

Water Management Areas will continue to be managed as in the current situation with none to be rehabilitated during the period of this MOP.

### 7.2.4 Tailings Emplacement Area

The mine's tailings emplacement area consists of a complex of three approved tailings dams, TD1, TD2 and TD3. TD1 and TD2 had previously approached design consent levels and have been augmented to a Dam Safety Committee (DSC) approved construction plan and monitoring plan. All of these structures are monitored, in conjunction with the DSC approved mine water dam (Possum Skin Dam), by geotechnical experts and competent onsite personnel.

TD1 and TD2 will remain active during the life of this MOP, with the tailings material which is produced at the RCN CHPP being managed using these storage facilities and / or the facilities currently in place on the Rix's Creek Mine.

TD3 will continue to be used as an emergency overflow structure for the TD1 and TD2 areas.

### 7.2.5 Overburden Emplacement Area

Overburden is placed in active overburden emplacement areas adjacent or behind active mining areas. Overburden is then shaped and prepared before rehabilitation activities can take place. Shaped overburden emplacements are generally located behind the unshaped spoil piles for each pit.

*Surface Shaping*

Reshaping principally involves re-contouring overburden dumps into the designed shape for final rehabilitation. The bulk movement of overburden is usually undertaken using bulldozers. Ideally, reshaping will result in a stable landform with slopes and drainage patterns which blend in with the surrounding natural topography.

Slope stability is integral to rehabilitation design and slopes in excess of 10 degrees are not favoured. However, slopes steeper than 10 degrees may be necessary in some locations to ensure rehabilitation merges seamlessly with adjacent undisturbed land.

*Deep Ripping and Rock Raking / Removal*

Once bulk reshaping is completed, the landform is deep-ripped and the final trim/rock raking is undertaken. The ripping loosens up any near surface strata within the landform that have been compacted during placement, aiding root penetration during vegetation establishment. The final trim smooths out any wash-outs and gullies, rough edges, temporary access tracks, local steep slopes and prepares the surface for revegetation.

Rock-raking is the final stage of reshaping and removes or buries exposed surface rock greater than 500 mm in diameter. Rocks are either buried within the spoil structure or may be left in groups on the surface as fauna habitat. This raking is usually done along the contour, leaving a cultivated surface that assists with erosion minimisation until vegetation can be established.

*Drainage Establishment*

Suitable drainage must also be integrated into the rehabilitation design, to ensure the final landform can safely shed surface runoff without erosion damage being caused. Long or steep slopes are divided up by the construction of contour banks to collect and divert water off the slopes. Contour banks should run the surface water at a drop of no greater than 1 in 100 into a drainage line (via a sediment dam) or into some form of protected drop structure that will run the water down the gradient in a controlled or protected manner.

### 7.2.6 Rehabilitation – Pasture, Rehabilitation– Tree over Pasture

Table 16 proposes the timeframes for the completion of the progressive rehabilitation during the term of the MOP. The locality of these areas in context of Domains and Phases are shown in Plans 3A – 3C.

#### 7.2.6.1 Revegetation methods

Revegetation of the reshaped landform will generally be undertaken in accordance with the steps detailed below. Note that these steps are indicative only and the order may vary, with some steps being excluded completely, based on the specific landform requirements and resource availability.

*Soil Amelioration*

Soil/spoil ameliorants may be spread and integrated into the surface layer to address soil acidity and assist with soil structural properties where needed. Ameliorants, if required, may include lime and gypsum at a rate of up to 200kg/ha each ploughed into the top 30 cm of the profile.

*Topdressing*

Topsoil is applied to the reshaped surface in an even layer generally not less than 100mm. Depending on the quality of the topdressing material, ameliorants may be integrated with topsoil at this stage. Topsoil will be used as a first priority but where topsoil has not been available in sufficient volumes, Biosolids, Biosolids /mulch mix or other suitable organic based materials that have been successfully used to improve soil structure and act as a source of nutrients, will be applied to improve establishment of vegetation. Biosolids are generally applied at a rate no greater than 100 t/ha (wet weight), using a tractor towed spreader trailer. A Biosolids /mulch mix (1:1 ratio) has been shown to be very successful topsoil supplement at Rixs Creek Mine and is usually applied at a rate of 200 – 250 t/ha.

*Integration*

Once the material has been top-dressed, the surface is contour disc or chisel ploughed to integrate the topdressing material. This assists in binding the topdressing material with the underlying spoil and is a requirement of the EPA biosolids guidelines. The area is then contour cultivated to create seed entrapments and microclimates prior to sowing.

Revegetation

A typical species list sown, in approximate kilograms per hectare, for the establishment of pastures for a post-mining grazing land use includes:-

- Rhodes grass (1kg/ha), couch grass (5kg/ha), rye grass, two sub. Clover (6kg/ha) varieties, Haifa white clover (2kg/ha), Woolly pod vetch (4kg/ha), green panic (5kg/ha), Sirosa phalaris (4kg/ha), Sephi barrel medic (4kg/ha), Lucerne (4kg/ha) and kikuyu (1kg/ha).

A typical list of native species used in the revegetation program under direct seeding, all of which align to the tree species characteristic of the pre mining and surrounding plant communities, with particular reference to Ironbark Woodland and align to variations in the landscape include:-

- Dry – Top and mid-slopes of Overburden Emplacement areas
  - *Angophora floribunda, Daviesia genistifolia, D. ulicifolia, E.crebra, E.melliodora, E. moluccana, E. sideroxylon, , E. tereticornis, E. albens, Corymbia maculata, Acacia amblygona, A concurrens, A. decora, A. decurrens, A. falcata, A. filicifolia, A. implexa, A. paradoxa, A. salicina, Hardenbergia violacea*
- Wet – Toe of slopes
  - *Angophora floribunda, Casuarina cunninghamiana subsp. Cunninghamiana, C. glauca, E. tereticornis, Acacia concurrens, A. decora, A. decurrens, A. falcata, A. filicifolia, A. implexa, A. paradoxa, A. salicina, Hardenbergia violacea*

A seed collection program aims to provide 75% of the seed as local provenance material, where available.

A typical list of native species, all of which align to the tree species characteristic of the pre mining and surrounding plant communities, used in the revegetation program under tubestock planting for visual screens and on bunds include:-

- *Angophora floribunda, E.crebra, , E. moluccana, E. sideroxylon, E. tereticornis, E. albens, Corymbia maculata, Acacia concurrens, A. decora, A. decurrens, A. falcata, A. filicifolia, A. implexa, A. paradoxa, A. salicina, Allocasuarina luehmannii, Casuarina glauca*

All noxious weeds will be managed and controlled as per the requirements of the *Noxious Weeds Act 1993*. Control of weeds will be undertaken in direct consultation with the Local Land Services, Singleton Council and Upper Hunter Weeds Authority staff using a combination of mechanical, biological and chemical controls.

Particular attention will be paid to the control of African Olive (*Olea europaea* L *subsp cuspidate*) across the site as the invasion of this species is listed as a potential key threatening process to the Central Hunter Grey Box- Ironbark Woodland and the Hunter Lowlands Redgum Forest both of which are listed under the *Threatened Species Conservation Act* 1995.

*Bushfire Management*

A hazard reduction plan has been drawn up in consultation with the Rural Fire Service. The Rural Fire Service conduct hazard reduction activities on Company managed lands surrounding the mining operation. The ongoing maintenance program on rehabilitated areas involves slashing in key areas, for example, along fence lines and access tracks to reduce the bulk of vegetative matter. As well as providing surface mulch, this also reduces the fire hazard of those areas. Grazing on older established rehabilitation area may also be conducted to reduce fuel loads.

#### 7.2.6.2 Disturbance and Revegetation Schedule

Details on the rehabilitation and disturbance rates during the life of the MOP are shown in Table 17 with details on the disturbance and rehabilitation in context of changes in areas of each Domain relative to the Phase of rehabilitation during the term of the MOP and shown in Plans 3A – 3G.

Table 17 Rehabilitated and Disturbance Areas (ha) for each year of the MOP

| Domain / Phase | Year 1 2018 | Year 2 2019 | Year 3 2020 |
|---|---|---|---|
| Infrastructure Area | 109.8 | 107.5 | 107.5 |
| Tailings Emplacement Area | 67.7 | 67.7 | 67.7 |
| Active Mining Area | 84.6 | 91.6 | 84.3 |
| Overburden Emplacement Area | 366.0 | 353.3 | 336.6 |
| Rehabilitated Lands – Pasture;<br>Phase - Ecosystem and Land use Establishment | 19.4 | 14.8 | 24.0 |
| Rehabilitated Lands – Trees over Pasture;<br>Phase - Ecosystem and Land use Establishment | 0 | 0 | 0 |
| Rehabilitated Lands – Pasture;<br>Phase - Ecosystem and Land use Sustainability | 19.4 | 34.2 | 58.2 |
| Rehabilitated Lands – Trees over Pasture; | 81.8 | 81.8 | 81.8 |

| Domain / Phase | Year 1 2018 | Year 2 2019 | Year 3 2020 |
|---|---|---|---|
| Phase - Ecosystem and Land use Sustainability | | | |
| Total Rehabilitation – Ecosystem and Land use Sustainability (incl. pre MOP rehabilitation) | 435.3 | 450.0 | 474.1 |
| Cumulative rehabilitation over the life of the MOP | 19.4 | 34.2 | 58.2 |

**Table 18 Disturbance and Rehabilitation during the term of the MOP**

| Domain | Total Area at MOP start (ha) (Derived from Map 2) | Area Affected / Rehabilitated (ha) Total Area at MOP end |
|---|---|---|
| **Mine Lease Area** | | |
| Mining Lease | 3290.1 | 3290.1 |
| **Infrastructure Area** | | |
| Active | 109.8 | 107.5 |
| **Active Mining Area** | | |
| *Active* | 98.8 | 84.3 |
| **Overburden Emplacement Area** | | |
| *Active* | 369.0 | 336.6 |
| *Shaped* | | |
| **Tailings Emplacement Area** | | |
| *Active* | 67.7 | 67.7 |
| *Decommissioning* | | |
| *Landform Establishment* | | |
| *Growth Medium Development* | | |
| *Ecosystem and Land use Establishment* | | |
| **Water Management Area – Clean and Mined** | | |
| *Active* | 93.8 | 93.8 |
| *Decommissioning* | | |
| *Landform Establishment* | | |
| *Growth Medium Development* | | |
| *Ecosystem and Land use Establishment* | | |
| **Rehabilitation – Pasture** | | |
| Active | 415.9 | |
| *Decommissioning* | | |
| *Landform Establishment* | | |
| *Growth Medium Development* | | |
| *Ecosystem and Land use Establishment* | | 10.4 |
| *Ecosystem and Land use Sustainability* | | 88.2 |
| **Rehabilitation – Trees over Pasture** | | |
| Active | 81.8 | |
| *Decommissioning* | | |

| | | |
|---|---|---|
| *Landform Establishment* | | |
| *Growth Medium Development* | | |
| *Ecosystem and Land use Establishment* | | |
| *Ecosystem and Land use Sustainability* | | |
| **Secondary Domain – Rehabilitated Land - Pasture** | | |
| Active | | |
| *Decommissioning* | | |
| *Landform Establishment* | | |
| *Growth Medium Development* | N/A | |
| *Ecosystem and Land use Establishment* | | |
| *Ecosystem and Land use Sustainability* | | 415.9 |
| *Rehabilitation Complete* | | |
| **Secondary Domain – Rehabilitated Land -Trees over Pasture** | | |
| *Active* | | |
| *Decommissioning* | | |
| *Landform Establishment* | | |
| *Growth Medium Development* | N/A | |
| *Ecosystem and Land use Establishment* | | |
| *Ecosystem and Land use Sustainability* | | 81.8 |
| *Rehabilitation Complete* | | |
| **Final Void** | | |
| *Active* | N/A | N/A |

*# Total disturbance area includes areas of land which are within the following phases: Active and Decommissioning. Temporary rehabilitation is to be considered as active mining area for the purposes of this table.*
*** Total Rehabilitation Area includes areas of land which are within the following phases: Landform Establishment and Growth Medium Development, Ecosystem and Land Use Establishment, and Ecosystem and Land Use Sustainability*

## 7.3 Relinquishment Phase Achieved during MOP Period

"Relinquished Lands", i.e. the following parameters have been met:

- the area is self-sustaining,
- has been signed off by all parties,
- the lease (or a portion of a greater lease) is relinquished;
- the security bond has been returned; and
- the mine would have no further responsibility for these areas.

As shown on the Plans, no areas of the Mining Lease are deemed to be 'relinquished lands" during the life of the MOP.

## 7.4 Rehabilitation Cost Estimate

This MOP forms the basis for the estimation of the security deposit imposed to ensure compliance with conditions of authorisation granted under the Mining Act. In accordance with the DRE MOP Guidelines (NSW Trade and Investment, Division of Resources and Energy., Sept 2013) *an application for approval of, an amendment or new revision to a MOP (i.e. this document), must be accompanied by a Rehabilitation Cost Estimate prepared in accordance with "ESG1: Rehabilitation Cost Estimate Guidelines*" (NSW Trade & Investment - Mineral Resources 2012). The RCN Mine Rehabilitation Cost Estimate is provided as a separate document and contained with the application from RCN Mine for the approval of this MOP.

# 8.0 Rehabilitation Monitoring, Research and Reporting

## 8.1 Rehabilitation Monitoring

### 8.1.1 Post Mined Lands

All rehabilitated areas are also inspected on a regular basis to note any problem areas (such as bare patches, failed vegetation, drainage structure failure, significant erosion or significant weed infestation) requiring maintenance or further treatment. Particular attention is to be paid to areas rehabilitated in the past 12 months.

The assessment program is designed to collect sufficient data to compare the results of rehabilitation against control sites (analogue sites) and against the agreed completion criteria. The assessment program consists of three components:

Remedial works will then be scheduled to address these areas. The assessment program is designed to collect sufficient data to compare the results of rehabilitation against the agreed completion criteria. The assessment program consists of three components:

- The annual maintenance inspections;
- Scheduled rehabilitation and analogue site monitoring; and
- The review of inspection/measurement data over time to assess rehabilitation performance.

Representative rehabilitated monitoring sites will be established in newly rehabilitated areas at an average of one site per 10 ha of newly rehabilitated land. Representative analogue sites will be established at a ratio of 10 rehab sites to 1 analogue site for both trees over pasture rehabilitation and pasture rehabilitation Each site will be monitored within 12 months of establishment and then every two years after. This will provide three sets of monitoring data in the first five years following rehabilitation.

Each rehabilitation and analogue monitoring site will be permanently marked using steel pickets or similar and surveyed via GPS. The annual inspection protocol includes assessment of the following parameters:

- Landform:
  - average slope gradient; and
  - steepest slope gradient.
- Drainage:
  - Contour bank design – number interval and gradient;
  - Contour banks discharge point; and
  - Other drainage structures – dams, drop structures, diversions.
- Surface preparation:
  - Topsoil used – source, depth;
  - Ameliorants or supplements used – rate / ha; and
  - Ripping – depth / type.
- Vegetation establishment;
  - Method – direct seeding or tubestock;
  - Seed mix – species, rate, source;
  - Tubestock – species, density, source; and
  - Fertiliser – type, rate, timing of application.

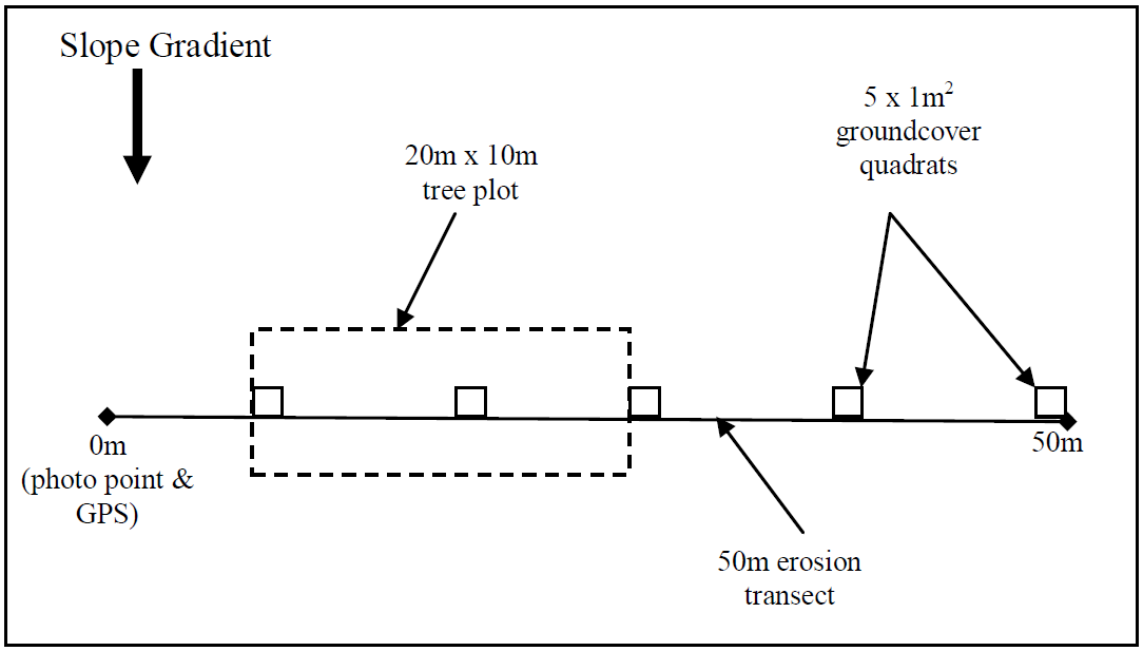
- Carrying capacity and stocking rates –
  - Assessment of herbage mass and herbage composition;
  - Assessment of feed quality and potential carrying capacity;
  - Assessment of soil nutrient; and
  - Assessment of cattle weight.
- Weeds – distribution, density and species;
- Fauna recolonising the area – in terms of species recorded and their indicators e.g. scats, tracks, nests;
- Vegetation – groundcover as percentage, groundcover species; species diversity; evidence of recruitment; plant health;
- Nutrient recycling – depth of litter; presence of cryptograms;
- Soils/surface condition with assessment of parameters relevant to pasture establishment and growth;
- Impact of bushfires – extent of area burnt, impact on vegetation and ground cover;
- Land and soil capability;
- Fences, gates, stock movement corridors;
- Erosion and stability; and

A photo showing the general rehabilitation condition

A standard monitoring plot design as shown in

Figure 3 will be utilised. Further details are provided in the methodology provided in the Rehabilitation Strategy (AECOM on behalf of Rix's Creek Mine, 2015).

**Figure 3 Standard layout of rehabilitation monitoring plot**




In the event that the annual inspection finds there are problems, further investigations should be undertaken to determine the possible causes and identify an appropriate remediation strategy.

Factors to consider include:

- Nutrient levels;
- Soil limitations such as depth, pH, salinity;
- Insect attack, weeds or other pests;
- Drought or storm damage; and
- Excessive grazing.

Where appropriate, the rehabilitation procedures will be amended to improve the standard of rehabilitation.

#### 8.1.1.1 Soil Analysis

Soil analysis will be undertaken to confirm that growth media is not likely to inhibit the sustainable development of a vegetative cover. As well as field observations and tests made during monitoring, soils analysis will consist of:

- Collecting representative root zone soil samples during field monitoring; and
- Testing for pH, EC and Emerson Aggregate Test (indication of erosion potential).
- Nutrients aligned to plant growth for both pasture based and native plant community based plant communities

#### 8.1.1.2 Pasture Productivity Assessment

In areas with a post mining land use aligned to pasture, pasture sampling is undertaken in accordance with the collection technique guidelines – Form Collect1-Version No.2-01/11/07 supplied by the NSW Department of Primary Industries (NSW Department of Primary Industries, 2007). Data is to be collected on percentages of green and dead material, total herbage mass (including weeds), and a visual assessment of species composition, percentage bare ground, pasture height.

Samples are to be sent to an accredited laboratory for analysis to determine the quality of feed available. Forage analysis is to include dry matter percentage, neutral detergent fibre, acid detergent fibre, water soluble carbohydrate, crude protein, inorganic ash, dry matter digestibility (DMD) and metabolisable energy.

Based on the testing results on the feed quality, pasture productivity (pasture quantity, pasture digestibility and species composition) will be calculated aligned to stocking rates and farm size assessment tools relevant for beef cattle in the Hunter Valley, which in turn determine sustainable carrying capacities.

#### 8.1.1.3 Land and Soil Capability Assessment

As for disturbance monitoring, the survey area for this component of the monitoring program will not be limited to the transect/plot area, and will include the broader surrounding area containing the nominated transects/plots. The land and soil capability system is applied to the survey area in accordance with the guideline (NSW Office of Environment & Heritage, Oct 2012).

Data will be collected and a range of factors are assessed to determine the land capability of the land. These will include climate, soils, geology, geomorphology, soil erosion, topography and the effects of past land-uses.

#### 8.1.1.4 Native Flora and Fauna

A monitoring program focusing on habitat for native fauna and impact on flora will be undertaken by independent, suitably skilled and qualified persons to determine persistence and recolonisation of rehabilitated and offset areas in terms of current populations, including threatened species.

This program will include an annual assessment of the following parameters, complemented by periodic field based assessments by competent and qualified environmental site personnel;

- Fauna recolonising the area – in terms of species recorded and their indicators e.g. scats, tracks, nests;
- Opportunistic sightings of fauna;
- Vegetation – groundcover as percentage, groundcover species; species diversity– identifying the main species at each strata in terms of diversity and abundance; evidence of recruitment; plant health;
- Nutrient recycling – depth of litter; groundcover;
- Weeds – distribution, density and species;
- Erosion and stability;
- Habitat features;
- Site disturbance – rubbish, damage to fences gates, unauthorised access; and
- Establishment of photo monitoring sites to show the general condition of the area at a fixed point of time and over time

### 8.1.2 Photographic Monitoring

Photos are to be taken from the permanent star pickets located at the start and end of the monitoring transect/plot, looking in the direction of the transect line. A ground to sky ratio of 5:1 is used where possible. Once the 50 m tape has been laid between the two star pickets, three digital photographs are to be taken:

- A photograph is taken to the left of the tape (with the tape just in the frame in the far right);
- A photograph is taken with the tape (and star picket) in the centre of the frame; and
- A photograph is taken to the right of the tape (with the tape just in the frame in the far left).

Alternatively, and depending on the capability of the digital camera being used, a panoramic shot can be taken centred around the star picket.

A systematic photographic monitoring program will be introduced in accordance with the Statement of Commitment No U48, which requires the maintenance of a photographic record of creeks and dam walls to assist in determining baseline rates of erosion. This work will be undertaken concurrently with the water quality monitoring.

### 8.1.3 Timeframes for Monitoring

Indicative timeframes for the implementation of monitoring of rehabilitated and offset lands is defined in Table 19.

**Table 19 Indicative Timeframes for Monitoring Program**

| Task | Occurrence | Parameters to be recorded |
|---|---|---|
| Regular inspection and reporting | Within 4 weeks of seeding | To assess for germination of cover crop and pasture species and assess for risk of erosion |
| | Monthly minimum of areas < 12 months | Slope stability, localised erosion, maintenance requirements for erosion and sediment control features, changes in surface water movement and noted changes in plant health.<br>Date rehabilitation works were undertaken (e.g. topsoil stripping, placement, seeding, tubestock planting and weed control), |
| Annual inspection | Autumn | As per Section 8.1.1 with report to provided recommendations for remedial works that can be planned for implementation in spring, or as weather conditions dictate |
| Soil analysis | Within 12 months of placement of growing media | As per Section 8.1.1.1<br>Undertaken concurrently with Land and Soil Capability Class assessment |
| | Every three years there after | As per Section 8.1.1.1<br>Undertaken concurrently with Land and Soil Capability Class assessment |
| Pasture Productivity | Within 12 months of placement of growing media | As per Section 8.1.1.2 |
| | Every three years thereafter until cattle are introduced | As per Section 8.1.1.2 |
| | As required and dependent on defined stocking rates post cattle being introduced to rehabilitated lands | As per Section 8.1.1.2 |
| Land and Soil Capability Assessment | Within 12 months of placement of growing media | As per Section 8.1.1.3<br>Undertaken concurrently with soil assessment |
| | Every three years there after | As per Section 8.1.1.3<br>Undertaken concurrently with soil assessment |
| Native Flora and Fauna | Spring | As per Section 8.1.1.4 with report to provided recommendations for remedial works that can be planned for implementation in autumn, or as weather conditions dictate |
| Photographic | Within 12 months of placement of growing media | As per Section 8.1.2<br>Undertaken concurrently with soil assessment |
| | Spring | Undertaken concurrently with native flora and fauna monitoring |

| Task | Occurrence | Parameters to be recorded |
|---|---|---|
| | Autumn | Undertaken concurrently with monitoring of rehabilitated lands |

### 8.1.4 Relinquishment Reporting

Whilst no areas are proposed to be relinquished during the life of this MOP, a description of the process to be followed prior to submission of a sign-off proposal follows.

The land proposed for signoff will be subjected to a final maintenance inspection. This inspection will cover the whole area proposed for sign-off. The outcome of the inspection will be a documented description and photographic record of the general condition of rehabilitation, highlighting any areas of potential concern and will include and build upon data captured during previous monitoring events. This report will be included in the submission to DRG.

Once a rehabilitated area is deemed to be potentially suitable for sign-off, a Sign-off Report will be submitted to the Regulators. This report will include the following information for the proposed sign-off area:

- Survey Plan clearly showing the proposed area;
- Area size, disturbance and rehabilitation history;
- Monitoring data compared against rehabilitation aim, objectives and completion criteria;
- Final maintenance inspection findings;
- Photographs of the proposed area; and
- Analysis of rehabilitation development and sustainability.

## 8.2 Research and Rehabilitation Trials

Rix's Creek Mine environmental staff conducted a trial in 2015 comparing biosolids and organics as a soil ameliorant to establish pastures on rehabilitation. This study determined that the areas that had been treated with biosolids offered the highest potential stocking rates at 7.3DSE/ha at March 2015.

The results of this trial and the successful utilisation of biosolids at Rix's Creek Mine has been introduced at RCN in preference to the previous use of Organic Growth Matter (OGM) as a soil ameliorant. The implementation of this change will be monitored in accordance with the parameters as described in Section 8.1.1.

### 8.2.1 Cattle Grazing Trial

Land disturbed for mining at Rix's Creek Mine has been rehabilitated to grow pasture for livestock production post mining. The aim of the rehabilitation has been to support a productive and sustainable grazing land use. These areas of rehabilitated mined lands have been grazed with beef cattle.

To better understand the capability of the rehabilitated pastures for supporting cattle enterprises, a monitoring and recording program is proposed.

The aim is to demonstrate that livestock enterprises conducted on rehabilitated pastures at Rix's Creek Mine are of comparable productivity to local district pasture land and are capable of grazing over the long term.

Demonstration that this land is capable of sustainable and productive cattle grazing is needed to provide assurance that cattle grazing is a viable future agricultural use for the land. The stability and productivity of the pastures, as well as soil & water conditions will be monitored to determine the performance of pastures on rehabilitated land.

Monitoring and documentation will provide an assessment of progress in achieving closure criteria for rehabilitated grazing land. Evaluation of pasture conditions will provide feedback for management of the land and provide early indicators to initiate changes in management if required.

Two rehabilitated pasture paddocks will be monitored. Identical monitoring of an adjoining natural pasture site which is grazed in a similar fashion will provide an analogue to which the rehabilitation sites will be compared. Monitoring and comparison with both district practice and cattle grazed on undisturbed natural pasture will provide a benchmark for comparison of productive capability.

Pasture and land condition will be compared to 'target criteria' and trigger points can be used to initiate adaptive and anticipated changes to grazing and management to suit seasonal conditions. Documentation and recording is needed to allow long term assessment over a number of seasonal conditions.

Comparison across several seasons will allow the assessment of productivity under variations in seasonal conditions and markets. Co-operation and access to production records from lessees is necessary to compliment the physical paddock monitoring to be conducted.

Long term productivity assessment will also provide guidance into maintenance requirements to meet grazing best practice management.

# 9.0 Intervention and Adaptive Management

## 9.1 Trigger Action Response Plan

The following Trigger Action Response Plan (TARP) identifies the proposed contingencies strategies in the event of unexpected variations or impacts to rehabilitation outcomes with data as obtained from the monitoring programs and performance criteria and indicators as stipulated in Section 8 of this MOP. A risk-based approach has been used to assess the potential consequences and mitigation measures in terms of the Consequence Category – Environment.

The key risks associated with site rehabilitation have been assessed using the maximum reasonable consequence ratings, likelihood ratings, risk matrix and classifications (Environmental Risk Identification Matrix) presented in Section 3.1.

Table 20 outlines the key identified risks, triggers and proposed mitigation measures.

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**Table 20 Trigger Action Response Plan**

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| Landform stability | Slope gradient | 1 | Trigger | Rehabilitated overburden areas have slopes that are generally <10˚. | Rehabilitated overburden areas have slopes >10° but <14˚. | Rehabilitated overburden areas have slopes >15°. |
| | | | Response | No response required. Continue monitoring program. | Undertake regrading and revegetation of the area, if it is not designed to be >10° <14˚. | Undertake a review of the landform design, including survey if required. Undertake regrading and revegetation of the area, if required. |
| | | 2 | Trigger | Rehabilitation areas have no signs of slumping or movement. | Rehabilitation areas exhibit some minor slumping or movement. | Rehabilitation areas exhibit significant slumping or mass movement. |
| | | | Response | No response required. Continue monitoring program. | Monitor and assess stability of area. Undertake regrading and revegetation of the area, if required. | Undertake a review of the landform design, including survey if required. Undertake regrading and revegetation of the area, if required. |
| | Erosion control | 3 | Trigger | No gully or tunnel erosion. No active rilling present >200mm deep | Minor gully or tunnel erosion present and/or active rilling >200 mm deep. | Significant gully or tunnel erosion present and/or rilling >600 mm deep. |
| | | | Response | No response required. Continue monitoring program. | A suitably trained person to inspect the site. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate. | Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable. |
| | Drainage Condition | 4 | Trigger | Drainage condition is in accordance with the design criteria established within this document. | Landforms exhibiting minor drainage issues but does not threaten to cause rehabilitation failure. | Landforms exhibiting significant drainage issues, threatening or causing rehabilitation failure. |
| | | | Response | No response required. Continue monitoring program. | A suitably trained person to inspect the site. Investigate opportunities to address issues. Remediate as appropriate. | Undertake a review of the drainage design and provide recommendations to appropriately remediate the area. Remediate as soon as practicable. |

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| Water Quality | Monitoring parameters | 5 | Trigger | Surface water quality of runoff from rehabilitation areas is within EPL criteria and rehabilitation performance criteria established within this document. | Water quality exceeds EPL or performance criteria but does not indicate a long-term rehabilitation issue. Surface water quality or runoff must comply with section 120 of the Protection of the Environment Operations Act 1997. | Water quality exceeds EPL criteria, indicating a long term rehabilitation liability. Surface water quality or runoff must comply with section 120 of the Protection of the Environment Operations Act 1997. |
| | | | Response | No response required. Continue monitoring program. | Reporting as per PIRMP and all Statutory reporting requirements.<br><br>Review and investigation of water quality monitoring and management where appropriate. Implement relevant remedial measures where required. | Reporting as per PIRMP and all statutory reporting requirements. Implement relevant responses and undertake immediate review to determine source of issues and implement remediation measures identified as soon as practicable. |
| Spontaneous Combustion | Evidence of Spontaneous Combustion | 6 | Trigger | No evidence of spontaneous combustion in rehabilitation areas. | Isolated incidence of heating in rehabilitation areas. | Widespread or repeated incidences of ignition in rehabilitation areas. |
| | | | Response | No response required. Continue monitoring program. | Investigate sources of potential ignition. Excavate material with propensity for spon com in proximity to rehabilitated surface. Review overburden / coarse reject emplacement practices. | Consult with regulators to develop remediation plan to mitigate spon com such as increased capping. Review Spon Com Management Plan and material emplacement practices. |
| Soil/spoil | | | Trigger | Properties of soil/spoil are not limiting the plant establishment. | Rehabilitation vegetation underperforming, i.e. limited establishment/diversity of vegetation present over areas >400m$^2$ | Rehabilitation vegetation underperforming, i.e. bare areas of rehabilitation greater than >400m$^2$ |

| | | | | | | |
|---|---|---|---|---|---|---|
| Quality | Monitoring parameters | 7 | Response | No response required. Continue monitoring program. | Investigate application of additional soil, and/or use of appropriate soil ameliorants or management options to address soil/spoil quality if deemed necessary. Conduct soil sampling and analysis if appropriate | Consultant to be engaged to assist with recommendations to appropriately remediate soil/spoil quality and depth. Conduct soil sampling and analysis. Remediate as soon as practicable. |

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| Topsoil Availability | Topsoil quantity | 8 | Trigger | Sufficient topsoil identified for rehabilitation over the MOP term and for the Life of the Mine. | Topsoil balance indicates a deficiency in topsoil available for rehabilitation over the Life of the Mine. | Deficiency significant enough to delay rehab progression the MOP term |
| | | | Response | No response required. | Investigate options and alternatives (Source Separated Green Waste Compost) to be able to meet future topsoil requirements Continue direct seeding on spoil where possible and approved. | Source and budget for purchasing topsoil for use in rehabilitation. Investigate use of alternatives such as Source Separated Green Waste Compost. |
| | Ground cover | 9 | Trigger | Vegetation is on a trajectory developing groundcover of diversity and density consistent with final landform and completion criteria. | Vegetation is not on a trajectory of developing groundcover of diversity or density consistent with final landform and/or completion criteria. | No target groundcover present. |
| | | | Response | No response required. Continue monitoring program. | Review procedures where required to increase vegetation cover. | A suitably trained person to inspect the site and conduct soil sampling and analysis if appropriate. Investigate use of appropriate management options to remediate. Remediate as appropriate. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Vegetation | Weed presence | 10 | Trigger | Weed presence is within range found at analogue sites and does not present a risk to rehabilitation. | Weeds present a risk to the establishment of rehabilitation areas. | Weeds are limiting the establishment of rehabilitation significantly. |
| | | | Response | No response required. Continue monitoring program. | Engage weed management contractor to remove introduced species from the site. | Engage weed management contractor to remove introduced species from the site as soon as practicable. Conduct soil sampling and analysis if appropriate<br>Investigate management measures to assist native plant establishment including use of ameliorants and implement as appropriate. |

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| | Species composition | 11 | Trigger | Trees over pasture vegetation is on a trajectory developing groundcover of tree and shrub species consistent with final landform and completion criteria. | Trees over pasture vegetation is not on a trajectory of developing tree and shrub species composition consistent with final landform and/or completion criteria. | Trees over pasture vegetation is not developing or has significant maintenance required to achieve composition consistent with final landform and/or completion criteria. |
| | | | Response | No response required. Continue monitoring program. | Review native seed mix and amend accordingly. Consider remedial actions such as tubestock planting, reseeding or other management practices to achieve required species composition. | An inspection of the site will be undertaken by a suitably trained person. Investigate remedial options to achieve required species composition. |
| | | 12 | Trigger | Pasture vegetation is on a trajectory developing grass and legumes species consistent with final landform and completion criteria, appropriate to the district and suitable for cattle grazing. | Pasture vegetation is not a trajectory developing grass and legumes species consistent with final landform and completion criteria, appropriate to the district and suitable for cattle grazing. | Pasture vegetation is not developing or has significant maintenance required to achieve composition consistent with completion criteria, appropriate to the district and suitable for cattle grazing. |
| | | | Response | No response required. Continue monitoring program. | Investigate additional weeding and re-seeding where required and ensure seed mix utilised is consistent with desired species composition. | An inspection of the site will be undertaken by a suitably trained person. Investigate remedial options to achieve required species composition. |
| Biodiversity | Habitat Corridors | 13 | Trigger | Monitoring indicates corridors are successfully established and consistent with the desired vegetation community composition and being utilised for fauna species movement. | Habitat corridors are successfully established and consistent with the desired vegetation community composition however are not being utilised for fauna species movement. | Monitoring indicates that vegetation corridors do not contain the desired vegetation community composition and are not being utilised for the movement of fauna species. |

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| | | | Response | No response required. Continue monitoring program. | Investigate whether sufficient habitat features (rock piles, felled hollow bearing trees, nest boxes etc.) are available and have been incorporated into the corridors. | Engage ecologist to recommend remedial rehabilitation works such as additional planting or seeding, soil amelioration, or weed reduction. Ensure sufficient habitat features are available for fauna. |
| Bushfire | Fuel Load | 14 | Trigger | Fuel loads are assessed and managed as required and the Bushfire Management Plan is being implemented. | Bushfire Management Plan is not being implemented increasing the risk of bushfire impact to rehabilitation. | A fire on site damages rehabilitated areas. |
| | | | Response | No response required. Continue monitoring program. | Reduce fuel loads and ensure access tracks are cleared. Inspect water sources are and ensure sufficient water is available. | Review and update (if required) the Bushfire Management Plan to ensure monitoring and maintenance is completed for fuel loads, access tracks, and water bodies. |
| Tailings | Inadequate capping | 15 | Trigger | The capped tailings landform is constructed in accordance with the approved capping design and is free-draining and no ponding is present. | Inspections indicate some temporary ponding on the tailings landform, however settlement is within the range considered in the detailed capping design. | Landform is exhibiting permanent or significant ponding issues. |
| | | | Response | No response required. Continue monitoring program. | A suitably trained person to inspect the site. Investigate opportunities to improve landform drainage. Remediate as appropriate. | Undertake a review of the capping and drainage design and provide recommendations to appropriately remediate the area. Remediate as soon as practicable. |

| Aspect/ Category | Key Element | Element Number | Trigger Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|---|---|
| Groundwater | Void water balance | 16 | Trigger | Water balance and groundwater monitoring indicate void water balance is correct | Groundwater monitoring indicates that inflows into the void may be higher than the water balance assumptions which in combination with high surface runoff could result in the voids filling higher than predicted. | Groundwater inflows are significantly higher than predicted in the water balance and in combination with high surface runoff could result in overtopping of the voids. |
| | | | Response | No response required. Continue monitoring program. | Undertake additional groundwater monitoring and review water balance | Engage a qualified groundwater specialist and engineer and amend the final void design if beneficial in achieving the outcome. |

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# 10.0 Reporting

### 10.1.1 Operational

Formal records will be maintained in accordance with the RCN and BCL EMS of all discussions / contact with government agencies, surrounding operators and landholders. These records will include details on:

- Purpose of communication;
- Date;
- Time;
- Person(s); and
- Commitments / statements.

### 10.1.2 Incident Reporting

Incident reporting procedures are in place to ensure that relevant agencies are notified in the format required (verbal and or phone) and in accordance with the timeframes of the licence or Approval. Records of these reports will be stored in accordance with the site based EMS.

### 10.1.3 Company Website

The company website will be checked and updated on a regular basis – at least monthly – to ensure that all monitoring data, reports and other documentation as stipulated in the Project Approval 08_0102, Schedule 5, Condition 13.

### 10.1.4 Annual Environment Management Report- Annual Review.

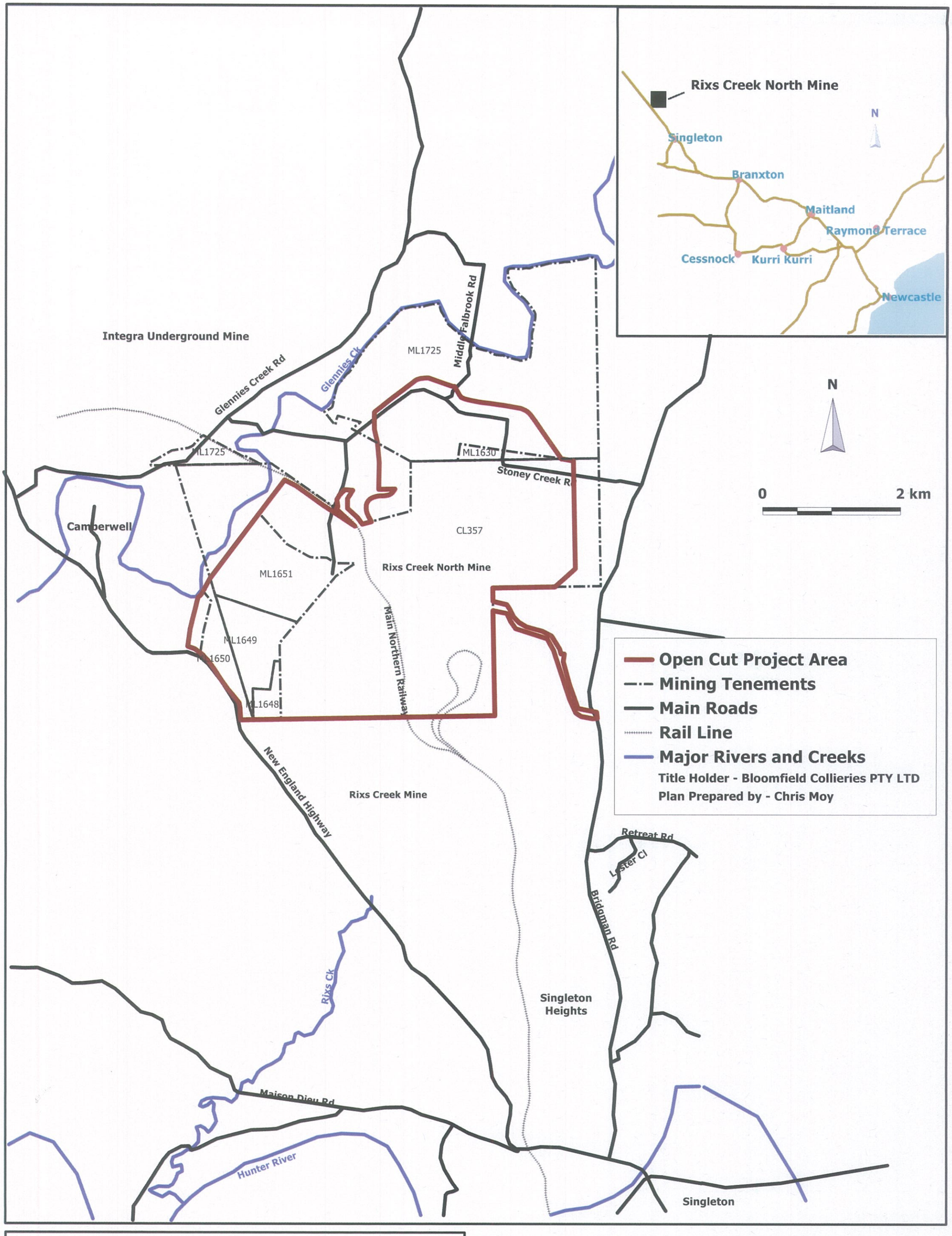
RCN prepares an Annual Review Report as part of the Department of Primary Industries – Mineral Resources' Mining, Rehabilitation and Environmental Management Process (MOP) framework. This report compiles monitoring results and discusses trends, system changes and responses to any potential issues identified during monitoring. Targets and future initiatives are also identified.

Also as required under the Development Consent, RCN will undertake a review of the environmental performance of the project annually, which is reported in the Annual Review Report. This review will include:

- describe the works (including any rehabilitation) that were carried out during the previous calendar year, and the works that are proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the:
    - relevant statutory requirements, limits or performance measures/criteria;
    - monitoring results of previous years; and
    - relevant predictions in the EAs;
- identify any non-compliance over the previous calendar year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the project;
- identify any discrepancies between the predicted and actual impacts of the project, and
- analyse the potential cause of any significant discrepancies.

# 11.0 Plans

- Plan 1A – Pre Mining Environment – Project Locality;
- Plan 1B - Pre mining environment – Natural environment
- Plan 1C - Pre mining environment – Built environment
- Plan 2 - Mine domains at commencement of the MOP;
- Plan 3A – 3C are a series of maps which show the annual sequence of mining and rehabilitation activities over the term of the MOP;
- Plan 4 - Final rehabilitation and post mining land use and landform at the completion of the project – approx. 2036; and
- Plan 5 – rehabilitation and post mining land use cross sections.




I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development.

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, Certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainability Unit- NSW Resources Regulator

C.M 10/9/2018
Registered Mining Surveyor Date

THE Bloomfield GROUP

# Rixs Creek North Mine

## Pre-mining Environment - Project Locality
## Mining Operations Plan - 2018 to 2020

Date 17/09/2018 **Plan 1A**

- Open Cut Project Area
- Open Cut Area
- Contours
- Rivers & Creeks
- Mining Tenements

**Vegetation Communities**
(North Open Cut EA Oct 2007)
(Western Extension EA June 2009)

- Plantation
- Regenerating Natural Woodland
- River Oak Riparian Forest
- Swamp Oak
- Ironbark Woodland
- Blakely's Red Gum Woodland
- Bull Oak

**Existing Rehabilitation**

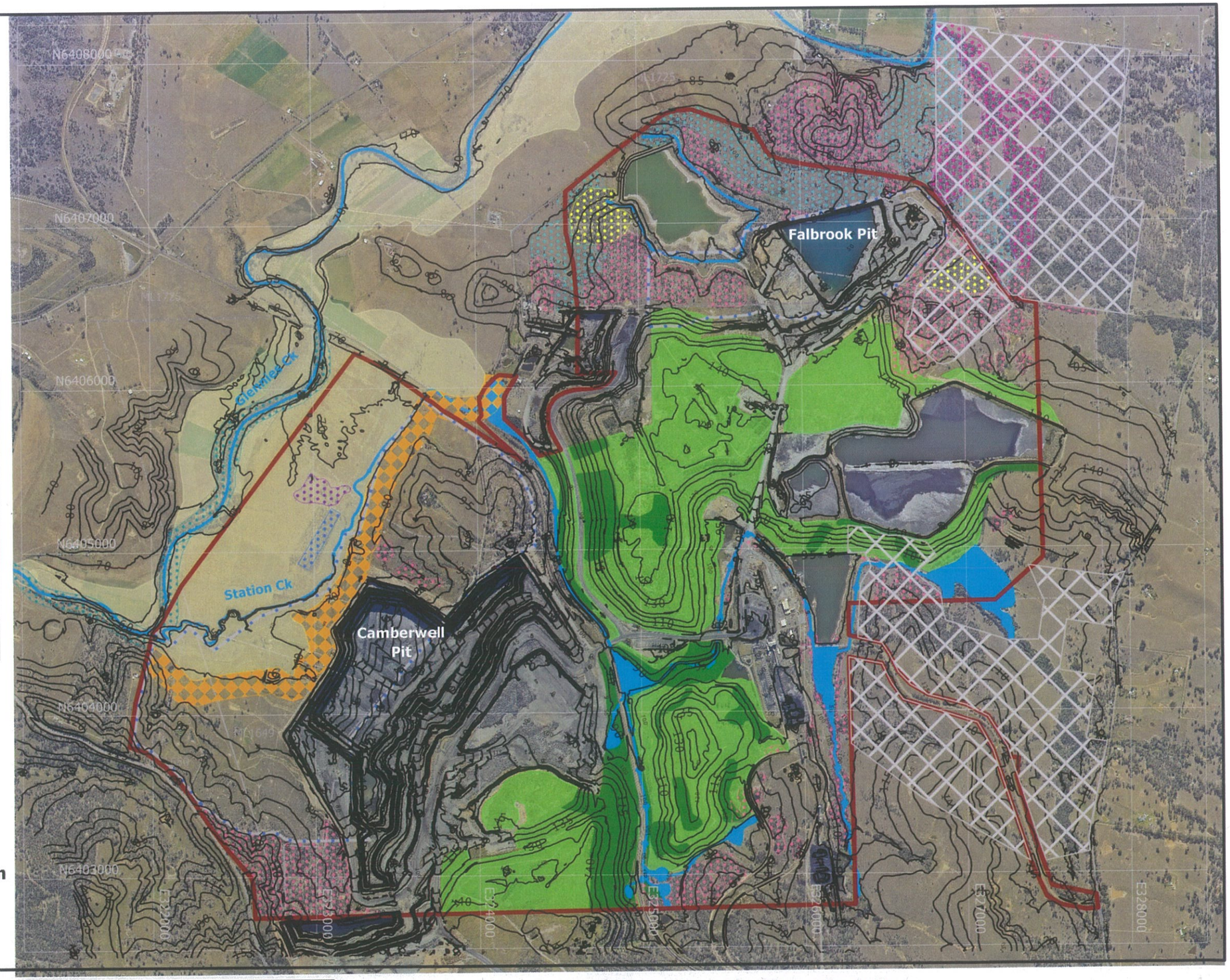
- Pasture
- Trees over pasture

**Environmental Management Area**

- Biodiversity Offset Area
  (as per North Open Cut EA 2017)
- Glennies Creek / Station Creek Alluvials
  (as per Western Extension EA 2009)
- 150m Alluvials Buffer Zone
  (as per Report GC13-R1E 12 June 2009)

Title Holder - Bloomfield Collieries PTY LTD
Plan prepared by Chris Moy

AAM Orthophoto -May 2018




N

0 2 km

Scale(A3) 1:25000
MGA Zone 56

I,Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainabilty Unit- Resources Regulator

10/9/2018
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Pre-mining Environment - Natural Environment
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

THE Bloomfield GROUP

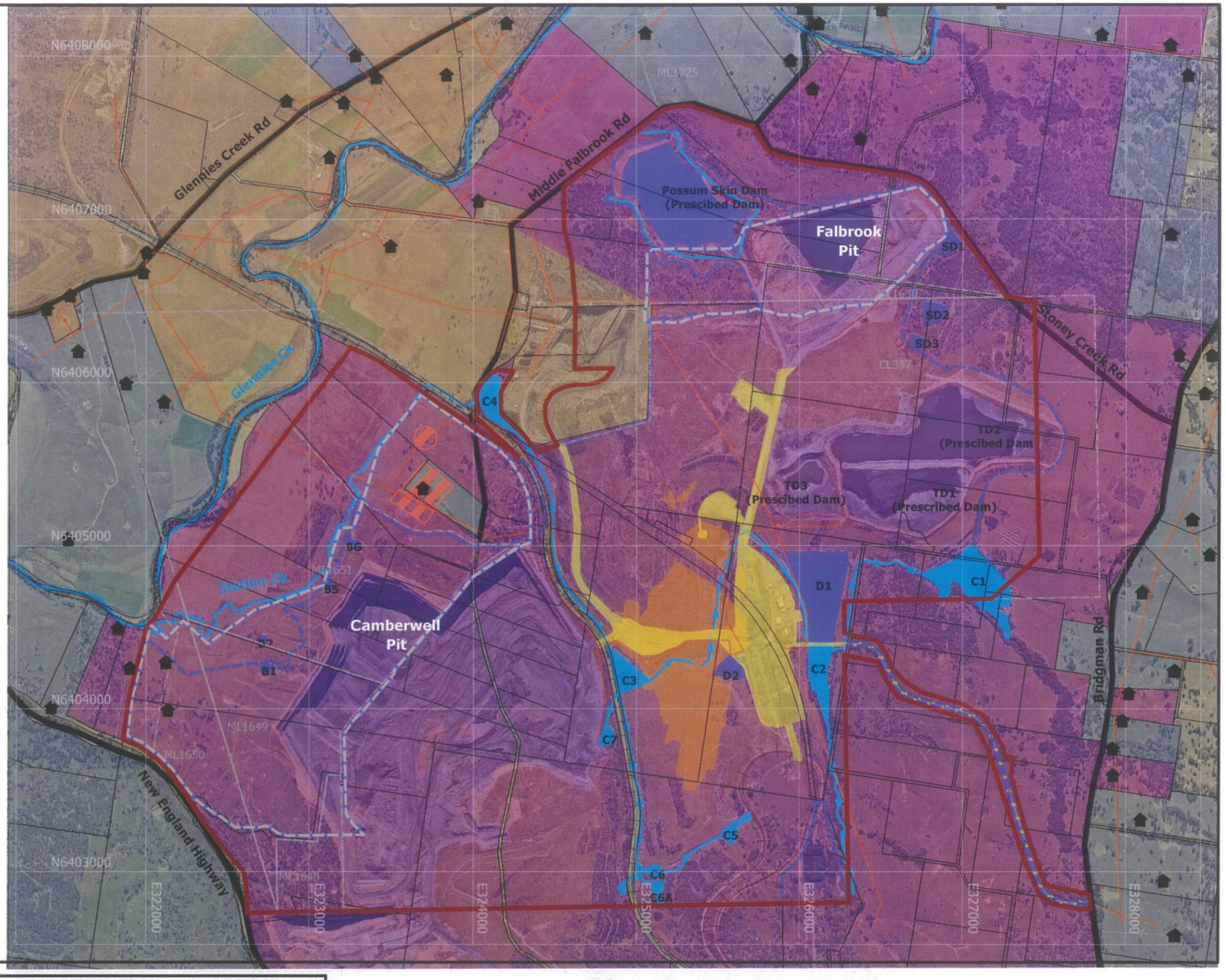
**Plan 1B**

- Open Cut Project Area
- Open Cut Area
- Cadastral Boundary
- Mining Tenements
- Area of Disturbance
- Powerline
- Rail LIne
- Roads
- Infrastructure Area
- Mine Water Dams
- Clean Water Dams
- Rivers & Creeks
- Old Underground Workings
- Residence
- European Heritage

- Land Ownership
- Bloomfield Group
- Private
- Glencore

Title Holder - Bloomfield Collieries PTY LTD
Plan prepared by Chris Moy

AAM Orthophoto - May 2018




N

0 2 km

Scale(A3) 1:25000
MGA Zone 56

I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

12/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainability Unit- Resources Regulator

C.M 10/9/2018
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Pre-mining Environment - Built Environment
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

THE Bloomfield GROUP

**Plan 1C**

- Open Cut Project Area
- Open Cut Area
- Area of Disturbance
- Cadastral Boundary
- Contours
- Rivers & Creeks
- Mining Tenements
- Rail Line
- Road
- Powerline
- Cross-section

**Primary Mine Domains**
- Active Mine Area
- Overburden Emplacement Area
- Infrastructure Area
- Tailings Emplacement Area
- Water Management Area - Clean
- Water Management Area - Mine

**Secondary Mine Domains**
- Rehabilitation - Trees over Pasture
- Rehabilitation - Pasture

- Glencore Underground Area (not in this MOP)

Title Holder - Bloomfield Collieries PTY LTD
Plan prepared by Chris Moy

AAM Orthophoto - May 2018

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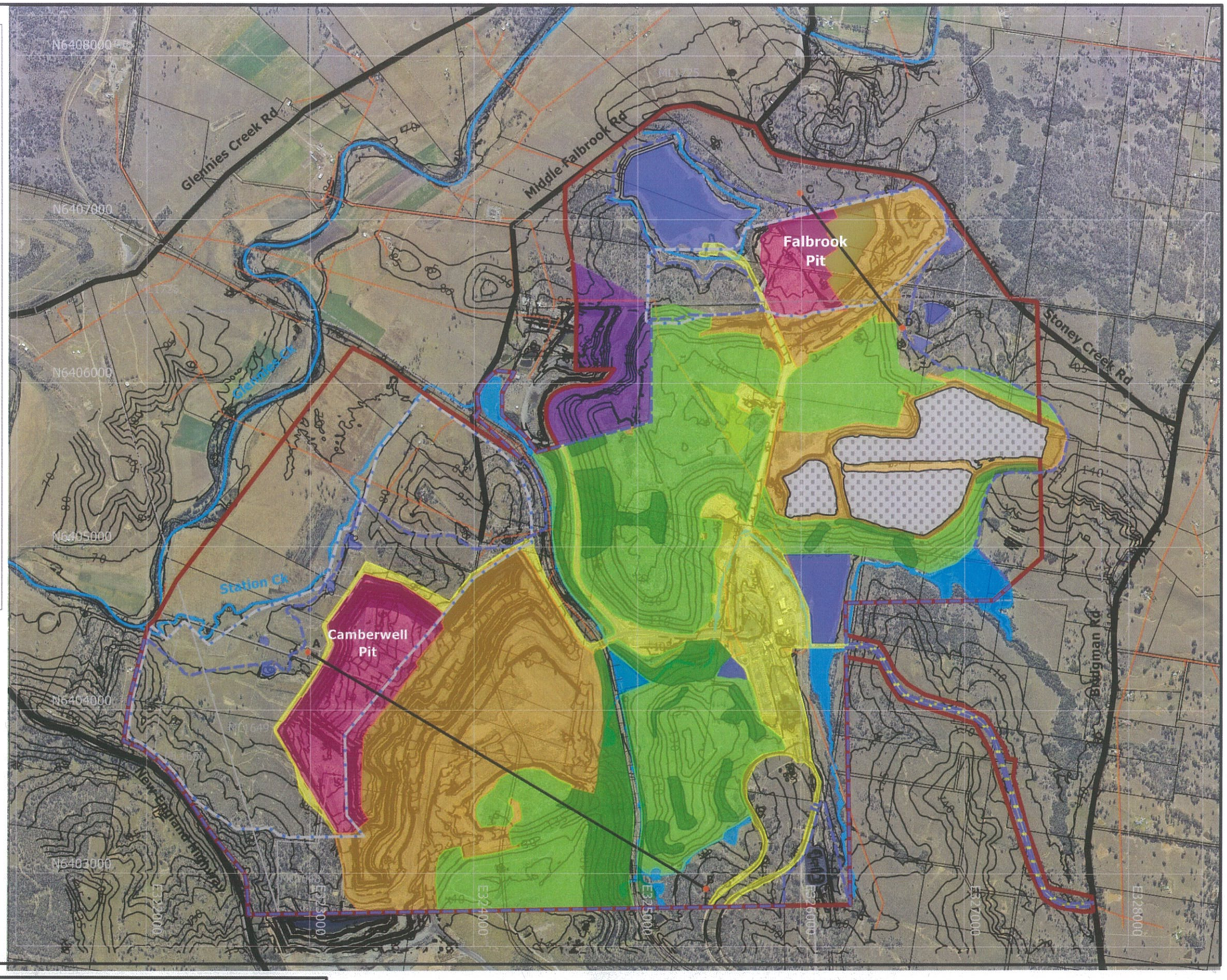
0 2 km

Scale(A3) 1:25000
MGA Zone 56




I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required bythe Environmental Sustainability Unit- Resources Regulator

10/9/2018
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Mine Domains at Commencement of MOP
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

THE Bloomfield GROUP

**Plan 2**

- Open Cut Project Area
- Open Cut Area
- Area of Disturbance
- Cadastral Boundary
- Contours
- Rivers & Creeks
- Mining Tenements
- Rail Line
- Roads
- Powerline
- Cross-section

**Primary Mine Domains**
- Active Mining Area
- Overburden Emplacement Area
- Infrastructure Area
- Tailings Emplacement Area
- Water Management - Clean
- Water Management Area - Mine

**Secondary Mine Domains**
- Rehabilitation - Trees over Pasture
- Rehabilitation - Pasture

**Rehabilitation Phases**
- Ecosystem and Land Use Establishment
- Ecosystem and Land Use Sustainability

- Glencore Underground Area (not in this MOP)

Title Holder - Bloomfield Collieries PTY LTD
Plan Prepared by Chris Moy

AAM Orthophoto - May 2018

N

0 2 km

Scale(A3) 1:25000
MGA Zone 56


I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Envirobmental Sustainability Unit- Resources Regulator

11/9/2018
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Mining and Rehabilitation - 2018
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

THE Bloomfield GROUP

**Plan 3A**

- Open Cut Project Area
- Open Cut Area
- Area of Disturbance
- Cadastral Boundary
- Contours
- Rivers & Creeks
- Mining Tenements
- Rail Line
- Roads
- Powerline
- Cross-section

**Primary Mine Domains**
- Active Mining Area
- Overburden Emplacement Area
- Infrastructure Area
- Tailings Emplacement Area
- Water Management - Clean
- Water Management Area - Mine

**Secondary Mine Domains**
- Rehabilitation - Trees over Pasture
- Rehabilitation - Pasture

**Rehabilitation Phases**
- Ecosystem and Land Use Establishment
- Ecosystem and Land Use Sustainability

- Glencore Underground Area (not in this MOP)

Title Holder - Bloomfield Collieries PTY LTD
Plan Prepared by Chris Moy

AAM Orthophoto - May 2018

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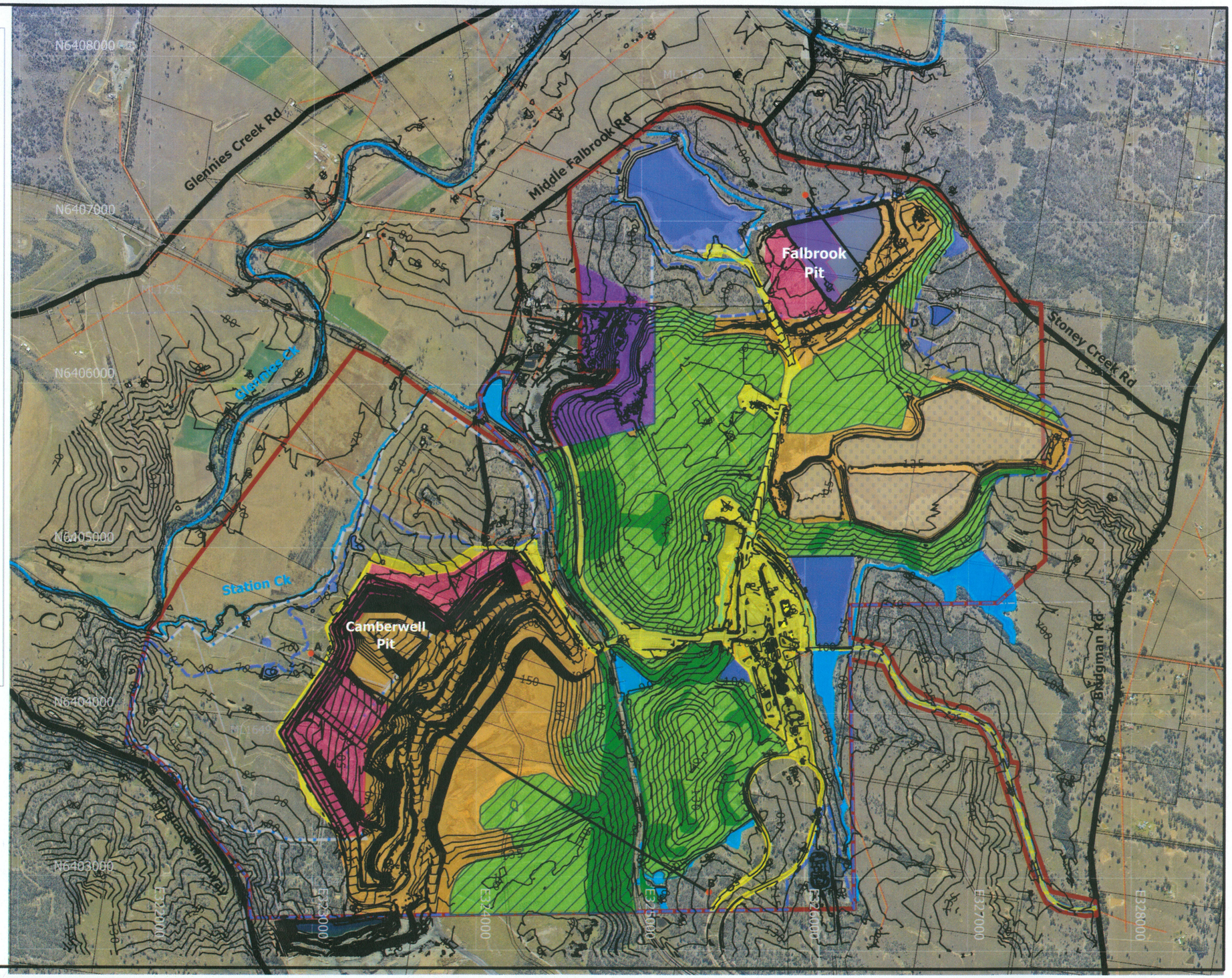
0 2 km

Scale(A3) 1:25000
MGA Zone 56




I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

26-3-2019
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainability Unit- Resources Regulator

26/3/2019
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Mining and Rehabilitation - 2019
## Mining Operations Plan - 2018 to 2020

**Date: 26/03/2019**

THE Bloomfield GROUP

**Plan 3B**

- Open Cut Project Area
- Open Cut Area
- Area of Disturbance
- Cadastral Boundary
- Contours
- Rivers & Creeks
- Mining Tenements
- Rail Line
- Roads
- Powerline
- Cross-section

**Primary Mine Domains**
- Active Mining Area
- Overburden Emplacement Area
- Infrastructure Area
- Tailings Emplacement Area
- Water Management - Clean
- Water Management Area - Mine

**Secondary Mine Domains**
- Rehabilitation - Trees over Pasture
- Rehabilitation - Pasture

**Rehabilitation Phases**
- Ecosystem and Land Use Establishment
- Ecosystem and Land Use Sustainability

- Glencore Underground Area (not in this MOP)

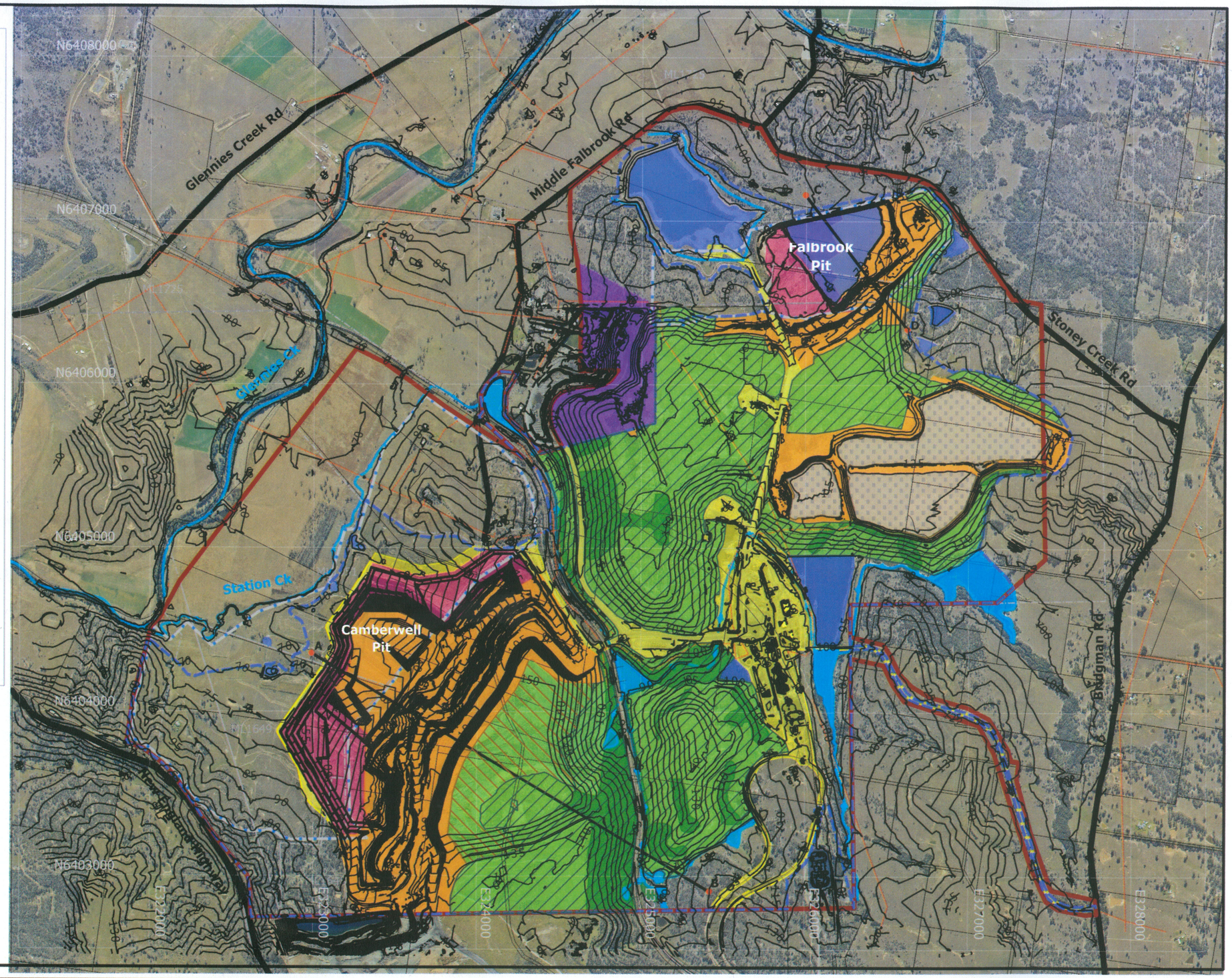
Title Holder - Bloomfield Collieries PTY LTD
Plan Prepared by Chris Moy

AAM Orthophoto - May 2018

N

0 2 km

Scale(A3) 1:25000
MGA Zone 56




I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

26-3-2019
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required bythe Environmental Sustainability Unit- Resources Regulator

C.M 26/3/2019
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Mining and Rehabilitation - 2020
## Mining Operations Plan - 2018 to 2020

**Date: 26/03/2019**

THE Bloomfield GROUP

**Plan 3C**

- Open Cut Project Area
- Area of Disturbance
- Cadastral Boundary
- Contours
- Rivers & Creeks
- Direction of Water Flow
- Wildlife Corridors
- Rail Line
- Powerline
- Roads
- Cross-section
- Biodiversity Offset Area
- European Heritage

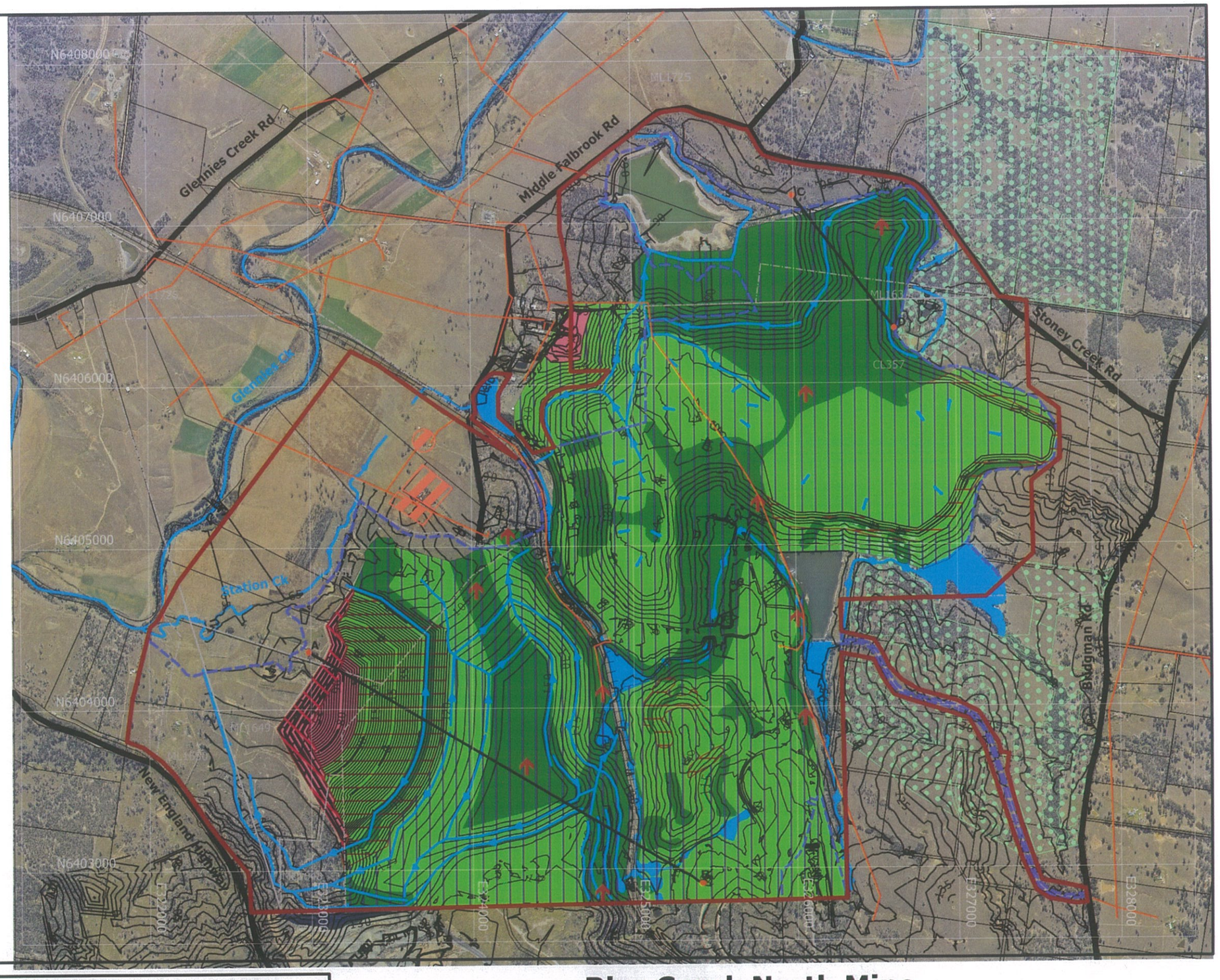
**Secondary Domains**
- Rehabilitation - Trees over Pasture
- Rehabilitation - Pasture
- Water Management - Clean
- Final Void

**Land and Soil Capability Class**
- L&SC Class 4
- L&SC Class 5
- L&SC Class 8

**Title Holder - Bloomfield Collieries PTY LTD**

**Plan Prepared by Chris Moy**

**AAM Orthophoto - May 2018**




N

0 1 km

Scale(A3) 1:25000
MGA Zone 56

I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainability Unit- Resources Regulator

C.Moy 15/9/18
Registered Mining Surveyor Date

# Rixs Creek North Mine

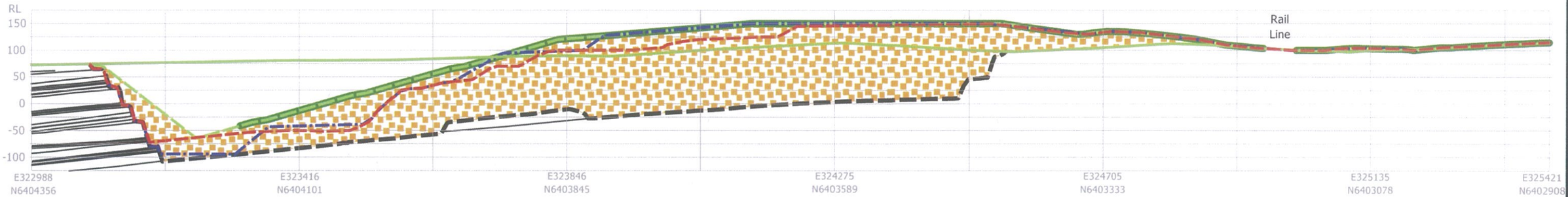
## Final Rehabilitation and Post Mining Land Use - 2036
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

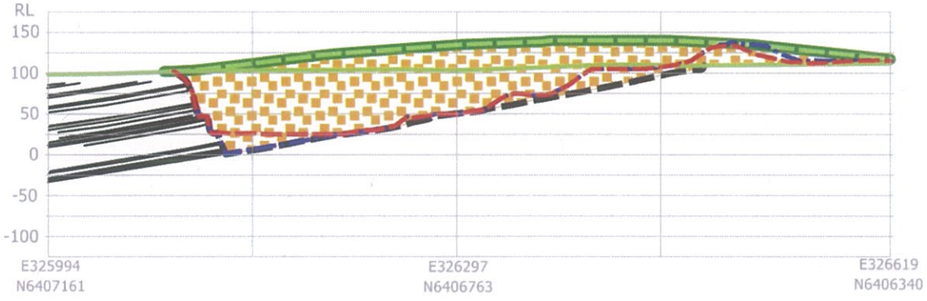
THE Bloomfield GROUP

**Plan 4**

## Section A-B




## Section C-D




0 500 m

Horizontal Scale (A3) 1:7500
Vertical Scale (A3) 1:7500
MGA Zone 56

- Natural Surface
- Current Surface
- 2020 Surface
- Final Landform
- Rehabilitated Areas
- Floor of Open Cut
- Overburden Emplacement
- Coal Seams

Title Holder - Bloomfield Collieries PTY LTD
Plan Prepared by Chris Moy

I, Brendon Clements, Holder of Mine Managers Certificate of Competency, certify that the information on this plan is a true indication of the proposed development

17/9/2018
Mine Manager Date

I, Chris Moy, Registered Mine Surveyor, certify that to the best of my knowledge and belief this plan conforms to the accuracy & standards required by the Environmental Sustainability Unit- Resources Regulator

C.M 15/9/18
Registered Mining Surveyor Date

# Rixs Creek North Mine

## Rehabilitation and Post Mining Land use Sections
## Mining Operations Plan - 2018 to 2020

**Date: 17/09/2018**

THE Bloomfield GROUP

**Plan 5**

# 12.0 Review and Implementation of the MOP

The ongoing effectiveness and efficiency of the site Management System is monitored as part of the operation's day-to-day management. Feedback from this and other more formal reviews and/ or following special occurrences, form the basis for System improvement and re-design.

In general, Management Systems are reviewed and up-dated as follows:

- Every three years; or
- Whenever there is a significant change to relevant legislation; or
- If required to do so by the Regulations; or
- Whenever there is a significant change to the operations; or
- If required (in writing) to do so by the Chief Inspector; or
- Whenever control measures are found to be ineffective either through:
    - changes to the working environment; or
    - changes to operating systems; or
    - subsequent risk assessments; or
    - the findings of an audit; or
    - following a fatality or dangerous incident that could reasonably have been expected to result in a fatality; or
    - following an assessment of a related safety alert.

### 12.1.1 Continual Improvement

Operational activities will be subject to regular review to ensure conformance with commitment made in the EMS and subordinate plans and strategies.

### 12.1.2 Document Management

Copies of this document are managed under the Group Document Management System. This document and other relevant documents are kept on site and are available to all employees.

## 12.2 Implementation

The company directors are responsible for the overall rehabilitation and environmental performance of RCN Mine. The Mine manager has direct responsibility for the rehabilitation process. The Senior Environmental Officer provides direction and advice to ensure site environmental compliance is maintained. The Senior Environmental Officer and Environmental Officer are responsible for the implementation of the works as descried in this MOP and RMP for the Rix's Creek mine site. This involves ensuring all aspects of the rehabilitation processes, as outlined in this document, are followed and carried out.

# 13.0 Bibliography

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Vale - Integra Coal Operaitons pty Ltd. (21 Sept 2012). *Environmental Management System.*

Appendix A

# Project Approval Conditions pertaining to Rehabilitation Management Plan

# Appendix A Project Approval Conditions pertaining to Rehabilitation Management Plan

| | |
|---|---|
| Project Approval 08_0102<br>Schedule 3 Condition 52 | The Proponent must prepare a Rehabilitation Management Plan for the project to the satisfaction of DRG.<br>This plan must:<br>(a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC;<br>(b) be submitted to the DRG for approval;<br>(c) be prepared in accordance with any relevant DRG guideline, and be consistent with the rehabilitation objectives in Table 15 and in the documents referred to in conditions 2 and 3 of Schedule 2;<br>(d) build, to the maximum extent practicable, on the other management plans required under this approval; and<br>(e) address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.<br>The Proponent must implement the approved management plan as approved from time to time by the Secretary. |

Appendix B

# Project Approval

# Appendix B Project Approval

*Insert in PDF version*

# Project Approval

## Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project applications referred to in Schedule 1, subject to the preamble in Schedule 1 and the conditions in Schedules 2 to 5.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the projects.

The Hon Tony Kelly MLC
**Minister for Planning MP**

Sydney 2010

**SCHEDULE 1**

| | |
|---|---|
| **Application Numbers:** | 08_0102 |
| **Proponent:** | Bloomfield Collieries Pty Limited |
| **Approval Authority:** | Minister for Planning |
| **Land:** | See Appendix 1 |
| **Project 08_0102:** | Rix's Creek North Open Cut Project |

(Schedules 1 – 5 updated in entirety during Modification 6, dated 23 August 2016)
Red type represents Modification 7, dated 1 September 2017

## TABLE OF CONTENTS

## DEFINITIONS

| | |
|---|---|
| Annual review | The review required by condition 10 of Schedule 5 |
| Approved mine plans | The plan for open cut mining depicted in the figure in Appendix 3 |
| Adaptive management | Adaptive management includes monitoring subsidence effects and impacts and, based on the results, modifying the mine plan as mining proceeds to ensure that the effects, impacts and/or associated environmental consequences remain within predicted and/or designated ranges |
| ARTC | Australian Rail Track Corporation |
| Ashton | Ashton coal mine |
| BCA | Building Code of Australia |
| Biodiversity offset strategy | The biodiversity enhancement program described in the EA Mod 4 and shown conceptually in the figures in Appendix 8 |
| Blast | A single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the project |
| Blast misfire | The failure of one or more holes in a blast pattern to initiate |
| Built features | Includes any building or work erected or constructed on land, and includes dwellings and infrastructure such as any formed road, street, path, walk or driveway, any pipeline, water, sewer, telephone, gas or other service main |
| CCC | Community Consultative Committee required by condition 7 of Schedule 5 |
| CHPP | Coal Handling and Preparation Plant |
| Conditions of this approval | Conditions contained in Schedules 2 to 5 inclusive |
| Council | Singleton Shire Council |
| Day | The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays |
| Department | Department of Planning and Environment |
| DRG | Division of Resources and Geoscience, within the Department |
| DPI Water | Department of Primary Industries - Water |
| EA Mod 1 | *Integra Mine Complex Modification 1 Environmental Assessment,* prepared by EMGA Mitchell McLennan, dated 2 December 2011 |
| EA Mod 2 | *Integra Mine Complex Modification 2 Environmental Assessment,* prepared by EMGA Mitchell McLennan, dated September 2012 |
| EA Mod 4 | *Integra Mine Complex Modification 4 Environmental Assessment*, prepared by EMGA Mitchell McLennan and dated 16 May 2014; and associated response to submissions titled *Integra Mine Complex Modification 4 Response to Submissions,* dated 9 July 2014 |
| EA Mod 5 | *Environmental Assessment for Proposed Modifications to Rix's Creek DA 49/94 N90/00356 (Mod 7) and Integra Open Cut Project 08_0102 (Mod 5),* prepared by Bloomfield Collieries Pty Ltd, dated 4 February 2016 |
| EA Mod 6 | *Application to Modify Project Approval for Integra Underground Project (MP 08_0101) and Integra Open Cut Project (MP 08_0102),* prepared by HV Coking Coal Pty Limited and Bloomfield Collieries Pty Limited, dated February 2016; and associated additional information provided by the Proponent in a letter titled *PA 08_0101 and PA 08_0102 – Modifications to Integra Underground and Integra Open Cut Coal Projects*, dated 4 July 2016 |
| EA Mod 7 | *Environmental Assessment for Proposed Modifications to Rix's Creek DA 49/94 N90/00356 (Mod 9) and Rix's Creek North Open Cut Project 08_0102 (Mod 7)*, and associated response to submissions titled *Rixs Creek – (DA 49/94 Mod 9) and Rixs Creek North (DA 08_0102 Mod 7) Response to Submissions* |
| EEC | Endangered Ecological Community as defined under the NSW *Threatened Species Conservation Act 1995* |
| Environmental consequences | The environmental consequences of subsidence impacts, including: damage to built features; loss of surface water flows to the subsurface; loss of standing pools; adverse water quality impacts; development of iron bacterial mats; rock falls; damage to Aboriginal heritage sites; impacts on aquatic ecology; and ponding |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EP&A Regulation | *Environmental Planning and Assessment Regulation 2000* |
| EPA | Environment Protection Authority |
| EPL | Environment Protection Licence issued under the POEO Act |
| Evening | The period from 6pm to 10pm |
| Exploration drilling program | The exploration drilling activities as described in EA (Mod 7) |
| Feasible | Feasible relates to engineering considerations and what is practical to build or carry out |
| Heritage Division | Heritage Division of OEH |
| IEA | Independent environmental audit required by condition 11 of Schedule 5 |

| | |
|---|---|
| Incident | A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval |
| INP | *NSW Industrial Noise Policy*, or its latest version as replacement |
| Integra Underground | All land to which project approval 08_0101 applies |
| Land | In general, the definition of land is consistent with the definition in the EP&A Act. However, in relation to the noise and air quality conditions in Schedules 3 and 4 it means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval |
| Material harm to the environment | Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial |
| Minister | Minister for Planning, or delegate |
| Mitigation | Activities associated with reducing the impacts of the project |
| Mount Owen Complex | Includes Glendell, Mt Owen and Ravensworth East coal mines |
| MSB | NSW Mine Subsidence Board |
| NAG | Noise assessment group, see the figures in Appendix 5 for more detail |
| Negligible | Small and unimportant, such as to be not worth considering |
| Night | The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays |
| Northern mining area | The area outlined with a solid white line on the figure in Appendix 3 titled "open cut project area" |
| OEH | Office of Environment and Heritage |
| Open cut mining operations | Includes overburden removal and the extraction, processing, handling, storage and transportation of coal within the project area |
| Open cut project EA | Environmental assessment titled *Integra Open Cut Project*, dated June 2009, and the associated response to submissions titled *Submissions Report*, dated March 2010 |
| POEO Act | *Protection of the Environment Operations Act 1997* |
| Previous EAs | Previous environmental impact assessments or environmental impact statements for the project, as listed in Appendix 2 |
| Privately-owned land | Land that is not owned by a public agency, or a mining company (or its subsidiary) |
| Project | The open cut project as described in the documents listed in condition 2 of Schedule 2, including the implementation of any development associated with the previous EAs |
| Project area | All land within the solid maroon line on the figure in Appendix 3 |
| Proponent | Bloomfield Collieries Pty Limited, or its successors |
| Public infrastructure | Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, gas supply, drainage, sewerage, telephony, telecommunications etc |
| Reasonable | Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements |
| Rehabilitation | The treatment or management of land disturbed by the project for the purpose of establishing a safe, stable and non-polluting environment, and includes remediation |
| Remediation | Activities associated with partially or fully repairing the impacts and/or environmental consequences of the project |
| Rix's Creek | Rix's Creek coal mine |
| RMS | Roads and Maritime Services |
| ROM coal | Run-of-mine coal |
| Safe, serviceable and repairable | Safe means no danger to users, serviceable means available for its intended purpose, and repairable means damaged components can be repaired economically |
| Secretary | Secretary of the Department, or nominee |
| Site | The land listed in Appendix 1 |
| Statement of Commitments | The Proponent's commitments in Appendix 9 |
| Underground project EA | Environmental assessment titled *Proposed Integra Underground Coal Project*, dated July 2009, and the associated response to submissions, titled *Integra Underground Project Collated Response to Submissions*, dated March 2010 |
| Western mining area | The area outlined with a solid light blue line on the figure in Appendix 3 titled "open cut project area" |

## SCHEDULE 2
## ADMINISTRATIVE CONDITIONS

### OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this project approval, the Proponent must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation or rehabilitation of the project.

### TERMS OF APPROVAL

2. The Proponent must carry out the project generally in accordance with the:
   (a) previous EAs;
   (b) open cut project EA;
   (c) EA Mod 1;
   (d) EA Mod 2;
   (e) EA Mod 4;
   (f) EA Mod 5;
   (g) EA Mod 6;
   (h) EA Mod 7; and
   (i) project layout plan.

3. The Proponent must carry out the project in accordance with the:
   (a) Statement of Commitments; and
   (b) conditions of this approval.

   *Notes to conditions 2 and 3:*
   - *Previous EAs for the project are listed in Appendix 2;*
   - *The project layout plan is shown in Appendix 3;*
   - *The Statement of Commitments is reproduced in Appendix 9; and*
   - *This project approval is intended to regulate all existing and approved development on site.*

4. If there is any inconsistency between the above documents then the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.

5. The Proponent must comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
   (a) any reports, strategies, plans, programs, reviews, audits, or correspondence that are submitted in accordance with the conditions of this approval;
   (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with the conditions of this approval; and
   (c) the implementation of any actions or measures contained in these documents.

### LIMITS OF APPROVAL

#### Mining Operations

6. The Proponent may carry out open cut mining operations on site until 31 December 2035.

   *Note: Under this approval, the Proponent is required to rehabilitate the site and carry out additional undertakings to the satisfaction of both the Secretary and DRG. Consequently, this approval will continue to apply in all respects - other than the right to conduct mining operations - until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.*

#### Coal Production

7. The Proponent must not extract more than:
   (a) 1.5 million tonnes of ROM coal from the open cut mining operations in the northern mining area in a calendar year; and
   (b) 4.5 million tonnes of ROM coal from the open cut mining operations in the western mining area in a calendar year.

#### Coal Transport

8. The Proponent must not:
   (a) export more than 7.3 million tonnes of coal from the site in a calendar year;
   (b) dispatch more than 7 trains a day from the site; and

(c) dispatch more than 3 trains a day from the site, when averaged over each calendar year.

9. The Proponent must not transport coal from the site by public road, except in an emergency situation and with the prior approval of the Secretary.

**Hours of Operation**

10. The Proponent must only carry out:
    (a) open cut mining operations in the northern mining area from 7am to 10pm, seven days a week (including public holidays); and
    (b) vegetation clearing and topsoil stripping on site between 7am and 6pm.

**SURRENDER OF CONSENTS AND APPROVALS**

11. By the end of June 2017, or as otherwise agreed by the Secretary, the Proponent must surrender all existing development consents and project approvals for the site (other than this approval and the development consent for the Glennies Creek to Ashton Water Pipeline granted by Council on 13 February 2004) in accordance with Sections 75YA and 104A of the EP&A Act.

    *Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrender of a consent or approval should not be understood as implying that works legally constructed under a valid consent or approval can no longer be legally maintained or used.*

12. Prior to the surrender of these consents and/or approvals, the conditions of this approval (including any notes) shall prevail to the extent of any inconsistency with the conditions of these consents and/or approvals.

**STRUCTURAL ADEQUACY**

13. The Proponent must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

    *Notes:*
    - *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works;*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project; and*
    - *The project is located in the Patrick Plains Mine Subsidence District. Under Section 15 of the Mine Subsidence Compensation Act 1961, the Proponent is required to obtain the MSB's approval before constructing or relocating any improvements on site.*

**DEMOLITION**

14. The Proponent must ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures,* or its latest version.

**INFRASTRUCTURE**

**Protection of Public Infrastructure**

15. Unless the Proponent and the applicable authority agree otherwise, the Proponent must:
    (a) repair or pay the full costs associated with repairing, any public infrastructure that is damaged by the project; and
    (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the project,

    except where impacts to such works have otherwise been fully compensated through the compensation provisions of the *Mining Act 1992*.

**OPERATION OF PLANT AND EQUIPMENT**

16. The Proponent must ensure that all the plant and equipment used on site, or to transport coal from the site, is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

**COMPLIANCE**

17. The Proponent must ensure that all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

## SCHEDULE 3
## ENVIRONMENTAL PERFORMANCE CONDITIONS

### ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from an owner of the land containing a residential receiver listed in Table 1, the Proponent must acquire the land in accordance with the procedures in conditions 6 and 7 of Schedule 4.

*Table 1: Land subject to acquisition upon request*

| *Residential Receiver No.* | *Acquisition Basis* |
|---|---|
| 11 – F Ferraro | Noise |
| 64 – W & A Gardner | Noise |
| 87 – B & R Richards | Noise |
| 106 – B & R Richards | Noise |
| 111 – T Burgess | Noise |
| 153 – R & D Hall | Noise and Air Quality |
| 351 – Andrews | Noise |
| 352 – Andrews | Noise |

For the purposes of acquisition under this condition, parcels of land that are in close proximity and operated as a single agricultural enterprise by the owner of a listed residential receiver should be included as part of the land to be acquired. Where the Proponent and the owner(s) cannot agree whether non-contiguous parcels of land should be included, either party may refer the matter to the Secretary for resolution. The Secretary's decision as to the lands to be included for acquisition under the procedures in conditions 7 and 8 of Schedule 4 shall be final.

*Note: To interpret the locations referred to in Table 1, see the applicable figures in Appendix 4.*

### NOISE

#### Noise Criteria

2. Except for the land referred to in Table 1 for which the acquisition basis is noise, the Proponent must ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

*Table 2: Noise criteria dB(A)*

| *Location* | | *Day* | *Evening* | *Night* | |
|---|---|---|---|---|---|
| | | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ | $L_{A1(1min)}$ |
| NAG 1 | All privately-owned land | 38 | 38 | 36 | 46 |
| NAG 2 | All privately-owned land | 39 | 39 | 37 | 47 |
| NAG 3 | All privately-owned land | 40 | 40 | 39 | 49 |
| NAG 4 | 99, 100 | 39 | 39 | 39 | 47 |
| | 88, 91, 95 | 40 | 40 | 40 | 47 |
| | 105, 161 | 41 | 41 | 41 | 47 |
| | All other privately-owned land | 42 | 42 | 37 | 47 |
| NAG 5 | 104 | 35 | 35 | 35 | 52 |
| | 139 | 36 | 36 | 36 | 52 |
| | 103 | 37 | 37 | 37 | 52 |
| | 121 | 40 | 40 | 40 | 52 |
| | 118, 154 | 43 | 43 | 43 | 52 |
| | Deleted | 45 | 45 | 45 | 52 |
| | Deleted | 47 | 47 | 47 | 52 |
| | All other privately-owned land | 50 | 46 | 42 | 52 |
| NAG 6 | 137 | 35 | 35 | 35 | 48 |
| | 133 | 37 | 37 | 37 | 48 |

| | | | | | |
|---|---|---|---|---|---|
| | 132 | 38 | 38 | 38 | 48 |
| | All other privately-owned land | 41 | 41 | 38 | 48 |
| NAG 7 | All privately-owned land | 45 | 42 | 39 | 49 |
| NAG 8 | 142 | 35 | 35 | 35 | 45 |
| | All other privately-owned land | 42 | 42 | 35 | 45 |
| NAG 9 | 146, 148, 149 | 35 | 35 | 35 | 48 |
| | 143, 144, 145, 147, 150, 151, 152 | 36 | 36 | 36 | 48 |
| | 2 | 37 | 37 | 37 | 48 |
| | 3, 4 | 39 | 39 | 39 | 48 |
| | All other privately-owned land | 40 | 40 | 38 | 48 |
| NAG 10 | 5 | 40 | 40 | 40 | 47 |
| | 6, 11 | 41 | 41 | 41 | 47 |
| | 8 | 42 | 42 | 42 | 47 |
| | All other privately-owned land | 39 | 39 | 37 | 47 |
| NAG 11 | 18 | 35 | 35 | 35 | 49 |
| | 20, 21 | 37 | 37 | 36 | 49 |
| | 19 | 37 | 37 | 37 | 49 |
| | 17 | 38 | 38 | 38 | 49 |
| | 7 | 39 | 39 | 39 | 49 |
| | 12, 15 | 40 | 40 | 40 | 49 |
| | 14, 16 | 42 | 42 | 42 | 49 |
| | All other privately-owned land | 41 | 41 | 39 | 49 |
| NAG 12 | 52, 55 | 35 | 35 | 35 | 45 |
| | 51, 56 | 37 | 37 | 37 | 45 |
| | 53, 57 | 38 | 38 | 38 | 45 |
| | 50, 54 | 39 | 39 | 39 | 45 |
| | 62 | 40 | 40 | 40 | 45 |
| | All other privately-owned land | 38 | 38 | 35 | 45 |
| NAG A | 24, 25, 26, 27, 28, 29, 30, 36, 37, 38, 39, 40, 41 | 35 | 35 | 35 | 46 |
| | 31 | 36 | 36 | 35 | 46 |
| | 42, 43 | 36 | 36 | 36 | 46 |
| | 32 | 37 | 37 | 35 | 46 |
| | 22, 23 | 37 | 37 | 37 | 46 |
| | 34 | 39 | 39 | 36 | 46 |
| | 35 | 39 | 39 | 35 | 46 |
| | All other privately-owned land | 39 | 39 | 36 | 46 |
| NAG B | All privately-owned land | 37 | 37 | 35 | 45 |
| NAG C | 47 | 39 | 39 | 39 | 45 |
| | 63 | 40 | 40 | 40 | 45 |
| | All other privately-owned land | 37 | 37 | 35 | 45 |
| NAG D | 44, 48 | 36 | 36 | 36 | 48 |
| | 49 | 39 | 39 | 39 | 48 |
| | All other privately-owned land | 40 | 40 | 38 | 48 |
| NAG F | 65, 66 | 39 | 39 | 39 | 50 |
| | 67 | 40 | 40 | 40 | 50 |
| | 68 | 42 | 42 | 42 | 50 |
| | All other privately-owned land | 40 | 40 | 40 | 50 |
| NAG G | All privately-owned land | 41 | 41 | 39 | 50 |
| All other privately-owned land | | 35 | 35 | 35 | 45 |

However, these criteria do not apply if the Proponent, or another mining company, has acquired the land or if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

Noise generated by the project is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

*Note: To interpret the locations referred to in Table 2, see the applicable figures in Appendix 4.*

**Noise Acquisition Criteria**

3. If noise generated by the project exceeds the criteria in Table 3 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, then upon receiving a written request for acquisition from the owner, the Proponent must acquire the land in accordance with the procedures in conditions 7 and 8 of Schedule 4.

*Table 3: Noise acquisition criteria dB(A)*

| ***Location*** | ***Day*** | ***Evening*** | ***Night*** |
|---|---|---|---|
| | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ |
| All privately-owned land in NAG 1 | 44 | 44 | 42 |
| All privately-owned land in NAG 2 | 45 | 45 | 43 |
| All privately-owned land in NAG 3 | 46 | 46 | 45 |
| All privately-owned land in NAG 4 | 48 | 48 | 43 |
| All privately-owned land in NAG 5 | 56 | 52 | 48 |
| All privately-owned land in NAG 6 | 47 | 47 | 44 |
| All privately-owned land in NAG 7 | 51 | 48 | 45 |
| All privately-owned land in NAG 8 | 48 | 48 | 41 |
| All privately-owned land in NAG 9 | 46 | 46 | 44 |
| All privately-owned land in NAG 10 | 45 | 45 | 43 |
| All privately-owned land in NAG 11 | 47 | 47 | 45 |
| All privately-owned land in NAG 12 | 44 | 44 | 41 |
| All privately-owned land in NAG A | 45 | 45 | 42 |
| All privately-owned land in NAG B | 43 | 43 | 41 |
| All privately-owned land in NAG C | 43 | 43 | 41 |
| All privately-owned land in NAG D | 46 | 46 | 44 |
| All privately-owned land in NAG F | 46 | 46 | 46 |
| All privately-owned land in NAG G | 47 | 47 | 45 |
| All other privately-owned land | 41 | 41 | 41 |

Noise generated by the project is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

*Notes:*
- *To interpret the locations referred to in Table 3, see the applicable figures in Appendix 4; and*
- *For this condition to apply, the exceedances of the criteria must be systemic.*

**Cumulative Noise Criteria**

4. The Proponent must implement all reasonable and feasible measures to ensure that the noise generated by the project combined with the noise generated by other mines in the vicinity does not exceed the criteria in Table 4 at any residence on privately-owned land or on more than 25 percent of any privately-owned land (except for the residential receivers in Table 1 for which the acquisition basis is noise). The Proponent must share the costs associated with implementing these measures on as equitable basis as possible with the relevant mines.

*Table 4: Cumulative noise criteria dB(A) $L_{Aeq\ (period)}$*

| **Location** | **Day** | **Evening** | **Night** |
|---|---|---|---|
| NAGs 4, 5, 8 and 9 | 55 | 45 | 40 |

| | | | |
|---|---|---|---|
| All other privately-owned land | 50 | 45 | 40 |

Cumulative noise is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

For the purposes of this condition, 'reasonable and feasible avoidance and mitigation measures' includes, but is not limited to, the requirements in conditions 9 and 10 to develop and implement a real-time noise management system that ensures effective operational response to the risk of exceedance of the criteria.

*Note: To identify the locations referred to in Table 4, see the figures in Appendix 4.*

**Cumulative Noise Acquisition Criteria**

5. If the noise generated by the project combined with the noise generated by other mines in the vicinity exceeds the criteria in Table 5 at any residence on privately-owned land or on more than 25 percent of privately-owned land (except for the residential receivers in Table 1 for which the acquisition basis is noise), then upon receiving a written request for acquisition from the landowner, the Proponent must acquire the land on as equitable basis as possible with the relevant mines in accordance with the procedures in conditions 7 and 8 of Schedule 4.

*Table 5: Cumulative noise acquisition criteria dB(A) $L_{Aeq\ (period)}$*

| ***Location*** | ***Day*** | ***Evening*** | ***Night*** |
|---|---|---|---|
| NAGs 4, 5, 8 and 9 | 60 | 50 | 45 |
| All other privately-owned land | 55 | 50 | 45 |

Cumulative noise is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

*Notes:*
- *To interpret the locations referred to in Table 5, see the applicable figures in Appendix 4; and*
- *For this condition to apply, the exceedances of the criteria must be systemic.*

**Additional Noise Mitigation Measures**

6. Upon receiving a written request from the owner of any residence:
   (a) on the land listed in Table 1 for which the acquisition basis is noise; or
   (b) on land listed in Table 6; or
   (c) on privately-owned land where subsequent noise monitoring shows the noise generated by the project is greater than or equal to the criteria in Table 7,

   the Proponent must implement additional noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner.

   If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

*Table 6: Land where additional noise mitigation measures are available on request*

| | |
|---|---|
| 5 – D P Cox | 6 – W G Cox |
| 8 – DK Geelan | 16 – A Lambkin |
| 14 – M Hoggan | 31 – C Craven |
| 20 – Mr Garvie | 48 - G Cheetham |
| 32 – M Langdon | 50 – D & M Bridge |
| 47 – B & R Cherry | 54 – G Holmes |
| 53 – K & J Badior | 63 – J & M Moore |
| 62 – D Moran | 95 – J & T Clarke |
| 91 – T & D Olofsson | 161 – V Lopes |
| 105 – J & G McInerney | 363 – D & L Bynon |

*Note: To interpret the locations referred to in Table 6, see the applicable figures in Appendix 4.*

*Table 7: Additional noise mitigation criteria dB(A)*

| Location | Day | Evening | Night |
|---|---|---|---|
| | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ | $L_{Aeq(15min)}$ |
| All privately-owned land in NAG 1 | 41 | 41 | 39 |
| All privately-owned land in NAG 2 | 42 | 42 | 40 |
| All privately-owned land in NAG 3 | 43 | 43 | 42 |
| All privately-owned land in NAG 4 | 45 | 45 | 40 |
| All privately-owned land in NAG 5 | 53 | 49 | 45 |
| All privately-owned land in NAG 6 | 44 | 44 | 41 |
| All privately-owned land in NAG 7 | 48 | 45 | 42 |
| All privately-owned land in NAG 8 | 45 | 45 | 38 |
| All privately-owned land in NAG 9 | 43 | 43 | 41 |
| All privately-owned land in NAG 10 | 42 | 42 | 40 |
| All privately-owned land in NAG 11 | 44 | 44 | 42 |
| All privately-owned land in NAG 12 | 41 | 41 | 38 |
| All privately-owned land in NAG A | 42 | 42 | 39 |
| All privately-owned land in NAG B | 40 | 40 | 38 |
| All privately-owned land in NAG C | 40 | 40 | 38 |
| All privately-owned land in NAG D | 43 | 43 | 41 |
| All privately-owned land in NAG F | 43 | 43 | 43 |
| All privately-owned land in NAG G | 44 | 44 | 42 |
| All other privately-owned land | 38 | 38 | 38 |

Cumulative noise is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

*Notes:*
- *To interpret the locations referred to in Table 7, see the applicable figures in Appendix 4; and*
- *For this condition to apply, the exceedances of the criteria must be systemic.*

7. If the cumulative noise generated by the project combined with the noise generated by other mines in the vicinity exceeds the criteria at any residence on the land referred to in Table 8, then upon receiving a written request from the owner, the Proponent must implement additional noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. The Proponent must share the costs associated with implementing these measures on as equitable basis as possible with the relevant mines.

   If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

*Table 8: Cumulative noise mitigation criteria dB(A) $L_{Aeq\ (period)}$*

| Location | Day | Evening | Night |
|---|---|---|---|
| NAGs 4, 5, 8 and 9 | 57 | 47 | 42 |
| All other privately owned land | 52 | 47 | 42 |

Cumulative noise is to be measured in accordance with the relevant requirements of the INP. Appendix 5 sets out the requirements for evaluating compliance with these criteria.

*Notes:*
- *To interpret the locations referred to in Table 8, see the applicable figures in Appendix 4; and*
- *For this condition to apply, the exceedances of the criteria must be systemic.*

**Rail Noise**

8. The Proponent must seek to ensure that its rail spur is only accessed by locomotives that are approved to operate on the NSW rail network in accordance with noise limits L6.1 to L6.4 in RailCorp's EPL (No. 12208) and ARTC's EPL (No. 3142) or a Pollution Control Approval issued under the former *Pollution Control Act 1970*.

**Operating Conditions**

9. The Proponent must:
   (a) implement best practice noise management, including all reasonable and feasible noise mitigation measures, to minimise the operational, low frequency, and rail noise generated by the project at all times, including during temperature inversions;
   (b) operate a comprehensive noise management system that uses a combination of predicted meteorological forecasting and real-time noise monitoring data to guide the day-to-day planning of mining operations and the implementation of both proactive and reactive mitigation measures to ensure compliance with the relevant conditions of this approval;
   (c) maintain or improve the effectiveness of noise suppression equipment on plant at all times and ensure defective plant is not used operationally until fully repaired;
   (d) ensure that noise attenuated plant is deployed preferentially in locations relevant to sensitive receivers;
   (e) minimise the noise impacts of the project during meteorological conditions under which data is to be excluded for the purposes of assessing compliance with these conditions (see Appendix 5); and
   (f) co-ordinate the noise management on site with noise management at nearby mines (including Integra Underground, Ashton, Rix's Creek and the Mount Owen Complex) to minimise cumulative noise impacts,

   to the satisfaction of the Secretary.

**Noise Management Plan**

10. The Proponent must prepare a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with the EPA, and then submitted to the Secretary for approval;
   (b) describe the measures that would be implemented to ensure:
      - compliance with the noise criteria and operating conditions of this approval; and
      - best management practice is being employed;
   (c) describe the noise management system in detail;
   (d) include a noise monitoring program that:
      - uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the project;
      - includes a protocol for determining exceedances of the relevant conditions in this approval;
      - evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
   (e) includes a protocol that has been prepared in consultation with the owners of nearby mines (including Integra Underground, Ashton, Rix's Creek and the Mount Owen Complex) to minimise the cumulative noise impacts of the mines.

   The Proponent must implement the approved management plan as approved from time to time by the Secretary.

**BLASTING**

**Blasting Criteria**

11. The Proponent must ensure that the blasting on site does not cause exceedances of the criteria in Table 9.

*Table 9: Blasting criteria*

| ***Receiver*** | ***Airblast Overpressure (dB(Lin Peak))*** | ***Ground Vibration (ppv(mm/s))*** | ***Allowable Exceedance*** |
|---|---|---|---|
| Residence on privately-owned land | 115 | 5 | 5% of the total number of blasts over a period of 12 months |
| | 120 | 10 | 0% |
| Main Northern Railway culverts and bridges | - | 25 | 0% |
| All public infrastructure | - | 50 | 0% |

However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner or infrastructure owner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

**Blasting Hours**

12. The Proponent must only carry out blasting on site between 9am and 5pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Secretary.

**Blasting Frequency**

13. The Proponent must not carry out more than:
    (a) 1 blast a day in the northern mining area unless an additional blast is required following a blast misfire;
    (b) 2 blasts a day in the existing Camberwell south pit, and then 1 blast a day when the mining moves from this pit into the western mining area unless an additional blast is required following a blast misfire; and
    (c) 10 blasts a week on site, averaged over any 12 month period.

**Property Inspections**

14. If the Proponent receives a written request from the owner of any privately-owned land within 2 kilometres of the approved open cut mining pits on site for a property inspection to establish the baseline condition of any buildings and/or structures on his/her land, or to have a previous property inspection report updated, then within 2 months of receiving this request the Proponent must:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary to:
        - establish the baseline condition of the buildings and/or structures on the land or update the previous property inspection report; and
        - identify any measures that should be implemented to minimise the potential blasting impacts of the project on these buildings and/or structures; and
    (b) give the landowner a copy of the new or updated property inspection report.

**Property Investigations**

15. If any landowner of privately-owned land within 2 kilometres of any approved open cut mining pit on site claims that the buildings and/or structures on his/her land have been damaged as a result of blasting on site, then within 2 months of receiving this request the Proponent must:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to investigate the claim; and
    (b) give the landowner a copy of the property investigation report.

    If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent must repair the damages to the satisfaction of the Secretary.

    If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.

**Operating Conditions**

16. The Proponent must:
    (a) implement best blasting management practice on site to:
        - protect the safety of people and livestock in the surrounding area;
        - protect private or public property in the surrounding area;
        - minimise the dust and fume emissions of the blasting; and
    (b) co-ordinate the blasting on site with the blasting at nearby mines (including Ashton, Rix's Creek and the Mount Owen Complex) to minimise cumulative blasting impacts;
    (c) co-ordinate the blasting on site with nearby underground mines (including Integra Underground) to minimise operational disturbance and to ensure the safety of underground personnel; and
    (d) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site,
    to the satisfaction of the Secretary.

17. The Proponent must not undertake blasting within 500 metres of:
    (a) Middle Falbrook Road or Stony Creek Road without the approval of Council;
    (b) the New England Highway without the approval of the RMS; and
    (c) the Main Northern Railway without the approval of the ARTC.

18. The Proponent must not carry out blasting in the northern or western mining areas that is within 500 metres of any privately-owned land or land not owned by the Proponent unless:

(a) the Proponent has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Proponent has advised the Department in writing of the terms of this agreement; or
(b) the Proponent has:
- demonstrated to the satisfaction of the Secretary that the blasting can be carried out without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and
- updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land.

**Blast Management Plan**

19. The Proponent must prepare a Blast Management Plan for the project to the satisfaction of the Secretary. This plan must:
(a) be prepared in consultation with OEH, and then submitted to the Secretary for approval;
(b) describe the blast mitigation measures that would be implemented to ensure compliance with the relevant condition of this approval;
(c) describe the measures that would be implemented to ensure that the public can get up-to-date information on the proposed blasting schedule on site;
(d) include an agreed strategy for the management of potential blast interactions with Integra Underground, including details of agreed:
- systems for the prior and timely notification of scheduled blasting and subsidence activities;
- personnel evacuation and safety protocols for specific blast events; and
- procedures and protocols for managing the interaction of the two mines; and
(e) include a blast monitoring program to evaluate the performance of the project; and
(f) include a protocol that has been prepared in consultation with the owners of the nearby mines (including Ashton, Rix's Creek and the Mount Owen Complex) for minimising and managing the cumulative blasting impacts of the mines.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.

**AIR QUALITY & GREENHOUSE GAS**

**Odour**

20. The Proponent must ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

**Greenhouse Gas Emissions**

21. The Proponent must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.

**Air Quality Criteria**

22. Except for the land referred to in Table 1 for which the acquisition basis is air quality, the Proponent must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the project does not or contribute to exceedance of the criteria listed in Table 10 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

*Table 10: Air quality criteria*

| ***Pollutant*** | ***Averaging Period*** | ***Criterion*** [d] | |
|---|---|---|---|
| Particulate matter < 10 µm ($PM_{10}$) | Annual | [a] 30 µg/m$^3$ | |
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | [a] 50 µg/m$^3$ | |
| Total suspended particulates (TSP) | Annual | [a] 90 µg/m$^3$ | |
| [c] Deposited dust | Annual | [b] 2 g/m$^2$/month | [a] 4 g/m$^2$/month |

*Notes to Table 10:*
- [a] *Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources);*

- [b] *Incremental impact (i.e. incremental increase in concentrations due to the project on its own);*
- [c] *Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and*
- [d] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity which has been endorsed by the EPA and then agreed to by the Secretary.*

For the purposes of this condition, 'reasonable and feasible avoidance and mitigation measures' includes, but is not limited to, the requirements in conditions 26 and 27 to develop and implement a real-time air quality management system that ensures effective operational response to the risk of exceedance of the criteria.

**Air Quality Acquisition Criteria**

23. If particulate matter emissions generated by the project cause or contribute to exceedance of the cumulative criteria in Table 11 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, then upon receiving a written request for acquisition from the landowner the Proponent must acquire the land in accordance with the procedures in condition 7 and 8 of Schedule 4.

*Table 11: Air quality acquisition criteria*

| ***Pollutant*** | ***Averaging Period*** | ***Criterion*** [d] | |
|---|---|---|---|
| Particulate matter < 10 µm ($PM_{10}$) | Annual | [a] 30 µg/m$^3$ | |
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | [a] 150 µg/m$^3$ | |
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | [b] 50 µg/m$^3$ | |
| Total suspended particulates (TSP) | Annual | [a] 90 µg/m$^3$ | |
| [c] Deposited dust | Annual | [b] 2 g/m$^2$/month | [a] 4 g/m$^2$/month |

*Notes to Tables 11:*
- [a] *Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources);*
- [b] *Incremental impact (i.e. incremental increase in concentrations due to the project on its own);*
- [c] *Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and*
- [d] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity which has been endorsed by the EPA and then agreed to by the Secretary.*

**Additional Dust Mitigation Measures**

24. Upon receiving a written request from the owner of any residence:
    (a) on the land listed in Table 1 for which the acquisition basis is air quality;
    (b) on the land listed in Table 12; or
    (c) on privately-owned land where subsequent air quality monitoring shows the dust generated by the project exceeds the air quality limits in Table 10,

    the Proponent must implement additional reasonable and feasible dust mitigation measures (such as a first flush roof system, internal or external air filters, and/or air conditioning) at the residence in consultation with the owner.

    If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

*Table 12: Land subject to dust mitigation on request*

| | |
|---|---|
| 88 – M & T De Jong | 106 – B & R Richards |
| 112 – S & C Ernst | 111 – T Burgess |

*Notes:*

- *To interpret the locations referred to in Table 12, see the applicable figures in Appendix 4; and*
- *For this condition to apply, the exceedances of the criteria must be systemic.*

**Mine-owned Land**

25. The Proponent must ensure that particulate matter emissions generated by the project do not exceed the criteria in Table 10 at any occupied residence on any mine-owned land (including land owned by adjacent mines), unless:
    (a) the tenant and/or landowner has been notified of any health risks in accordance with the notification requirements under Schedule 4 of this approval;
    (b) the tenant on land owned by the Proponent can terminate the tenancy agreement without penalty, subject to giving reasonable notice, and the Proponent uses its best endeavours to provide assistance with relocation and sourcing of alternative accommodation;
    (c) air mitigation measures such as air filters, a first flush roof water drainage system and/or air conditioning) are installed at the residence, if requested by the tenant and landowner (where owned by another mine other than the Proponent);
    (d) particulate matter air quality monitoring is undertaken to inform the tenant and landowner (where owned by a mine other than the Proponent) of potential health risks; and
    (e) monitoring data is presented to the tenant in an appropriate format, for a medical practitioner to assist the tenant in making an informed decision on the health risks associated with occupying the property,

    to the satisfaction of the Secretary.

**Operating Conditions**

26. The Proponent must:
    (a) implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the project, including those generated by spontaneous combustion;
    (b) minimise any visible air pollution generated by the project;
    (c) operate a comprehensive air quality management system on site that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day to day planning of mining operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this approval;
    (d) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d in conditions 22 and 23);
    (e) minimise surface disturbance on the site; and
    (f) co-ordinate the air quality management on site with the air quality management of nearby mines (including Integra Underground, Ashton, Rix's Creek and the Mount Owen Complex) to minimise cumulative air quality impacts,

    to the satisfaction of the Secretary.

**Air Quality & Greenhouse Gas Management Plan**

27. The Proponent must prepare an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with EPA, and then submitted to the Secretary for approval;
    (b) describe the measures that would be implemented to ensure:
        - compliance with the air quality criteria and operating conditions of this approval; and
        - best practice air quality management is being employed;
    (c) describe the air quality management system in detail;
    (d) include an air quality monitoring program that:
        - uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the project;
        - includes a protocol for determining any exceedances of the relevant conditions of this approval;
        - adequately supports the proactive and reactive air quality management system;
        - includes $PM_{2.5}$ monitoring (although this obligation could be satisfied by the regional air quality monitoring network if sufficient justification is provided);
        - evaluates and reports on the effectiveness of the air quality management system and the best practice air quality management measures; and
    (e) include a protocol that has been prepared in consultation with the owners of nearby mines (including Integra Underground, Ashton, Rix's Creek and the Mount Owen Complex) to minimise the cumulative air quality impacts of the mines.

    The Proponent must implement the approved management plan as approved from time to time by the Secretary.

**METEOROLOGICAL MONITORING**

28. For the life of the project, the Proponent must ensure that there is a meteorological station in the vicinity of the site that:
    (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline; and
    (b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the *NSW Industrial Noise Policy* or as otherwise approved by the EPA.

**SOIL & WATER**

**Water Supply**

29. The Proponent must obtain all necessary water licences for the project under the *Water Act 1912* or the *Water Management Act 2000*.

30. The Proponent must ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of mining operations to match its available water supply, to the satisfaction of the Secretary.

**Baseflow Offsets**

31. The Proponent must offset the loss of any baseflow to the surrounding watercourses and/or associated creeks caused by the project to the satisfaction of the Secretary.

    *Notes:*
    - *This condition does not apply in the case of losses of baseflow which are negligible.*
    - *Offsets should be provided via the retirement of adequate water entitlements to account for the loss attributable to the project.*
    - *The Proponent is not required to provide additional baseflow offsets where such offsets have already been provided under previous consents or approvals for the project. These existing offsets are to be described and evaluated in the Surface and Ground Water Response Plan (see below).*

**Compensatory Water Supply**

32. The Proponent must provide compensatory water supply to any landowner of privately-owned land whose water entitlements are impacted (other than an impact that is negligible) as a result of the project, in consultation with DPI Water, and to the satisfaction of the Secretary.

    The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the project. Equivalent water supply must be provided (at least on an interim basis) as soon as practicable after the loss being identified.

    If the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

    If the Proponent is unable to provide an alternative long-term supply of water, then the Proponent must provide alternative compensation to the satisfaction of the Secretary.

**Surface Water Discharges**

33. The Proponent must ensure that all surface water discharges from the site comply with the:
    (a) discharge limits (both volume and quality) set for the project in any EPL; or
    (b) relevant provisions of the POEO Act or *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002*.

**Glennies Creek and Station Creek Alluvial Aquifers**

34. The Proponent must not undertake any open cut mining operations within 150 metres of the Glennies Creek alluvial aquifer or Station Creek alluvial aquifer without the prior written approval of the Secretary. In seeking this approval, the Proponent must consult with DPI Water and demonstrate to the satisfaction of the Secretary that adequate safeguards have been incorporated into the Surface and Groundwater Response Plan (see below) to minimise, prevent and/or adequately offset groundwater leakage from the alluvial aquifers.

    *Notes: The alluvial aquifers and 150 metre buffer zones are shown conceptually on the figure in Appendix 6. This condition does not restrict the Proponent's right to construct and use water management works, access tracks, environmental bunds, remediation works and other similar works.*

**Water Management Performance Measures**

35. The Proponent must comply with the performance measures in Table 13 to the satisfaction of the Secretary.

*Table 13: Water management performance measures*

| ***Feature*** | ***Performance Measure*** |
|---|---|
| Water management – General | • Maximise water sharing with the other mines in the region<br>• Minimise the use of clean water on site<br>• Minimise the need for supplementary water from external supplies |
| Glennies Creek and Station Creek alluvial aquifers | • Negligible environmental consequences to the alluvial aquifer beyond those predicted in the documents referred to in conditions 2 and 3 of Schedule 2, including:<br>o negligible change in groundwater levels;<br>o negligible change in groundwater quality; and<br>o negligible impact to other groundwater users |
| Construction and operation of infrastructure | • Design, install and maintain erosion and sediment controls generally in accordance with the series *Managing Urban Stormwater: Soils and Construction* including *Volume 1, Volume 2A – Installation of Services* and *Volume 2C – Unsealed Roads*<br>• Design, install and maintain all new infrastructure within 40 m of watercourses generally in accordance with the *Guidelines for Controlled Activities on Waterfront Land (DPI 2007)*, or its latest version<br>• Design, install and maintain creek crossings generally in accordance with the *Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW Fisheries, 2003) and *Why Do Fish Need To Cross The Road*? *Fish Passage Requirements for Waterway Crossings* (NSW Fisheries 2003), or their latest versions |
| Mine sediment dams | • Design, install and maintain the dams generally in accordance with the series *Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries*<br>• Design, install and maintain dams to capture site runoff and minimise any sediment and salt loads from entering nearby watercourses |
| Clean water diversion & storage infrastructure | • Design, install and maintain the clean water system to capture and convey the 100 year ARI flood<br>• Maximise as far as reasonable and feasible the diversion of clean water around disturbed areas on site |
| Mine water storages | • Design, install and maintain mine water storage infrastructure to store a 100 year ARI 72 hour storm event<br>• Design, install and maintain on-site storages (including tailings dams, mine infrastructure dams, groundwater storage and treatment dams) to ensure they are suitably lined to minimise permeability<br>• Ensure adequate freeboard within all pit voids to minimise the risk of discharge to surface waters |
| Tailings storage | • Design and maintain tailings storage areas to encapsulate and prevent the movement of tailings seepage/leachate offsite |
| Overburden emplacement | • Design, install and maintain emplacements to encapsulate and prevent migration of tailings, acid forming and potentially acid forming materials, and saline and sodic material |

| | |
|---|---|
| | • Design, install and maintain emplacements to prevent and/or manage long term saline groundwater seepage |
| Chemical and hydrocarbon storage | • Chemical and hydrocarbon products to be stored in bunded areas in accordance with the relevant Australian Standards |
| Aquatic and riparian ecosystems | • Maintain or improve baseline channel stability<br>• Develop site-specific in-stream water quality objectives in accordance with ANZECC 2000 and *Using the ANZECC Guidelines and Water Quality Objectives in NSW* procedures (DECC 2006), or its latest version |

**Water Management Plan**

36. The Proponent must prepare a Water Management Plan for the project to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH, EPA, DRG and Council, and be endorsed by DPI Water and then submitted to the Secretary for approval;
    (b) include detailed performance criteria and describe measures to ensure that the Proponent complies with the Water Management Performance Measures (see Table 13);
    (c) include a Site Water Balance, which must:
        - include details of:
            - sources and security of water supply;
            - water use on site;
            - water management on site; and
            - any off-site water transfers, and
        - describe what measures would be implemented to minimise clean water use on site;
    (d) include an Erosion and Sediment Control Plan, which must:
        - identify activities that could cause soil erosion and generate sediment;
        - describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters, and manage flood risk;
        - describe the location, function and capacity of erosion and sediment control structures and flood management structures; and
        - describe what measures would be implemented to maintain the structures over time;
    (e) include a Surface Water Management Plan, which must include:
        - detailed baseline data on surface water flows and quality in creeks and other waterbodies that could potentially be affected by the project;
        - surface water and stream health impact assessment criteria including trigger levels for investigating any potentially adverse surface water impacts from the project (for existing creeks and reinstated/rehabilitated creeks);
        - a program to monitor and assess:
            - surface water flows and quality;
            - impacts on water users;
            - stream health; and
            - channel stability.
    (f) Include a Groundwater Management Plan, which must include:
        - detailed baseline data of groundwater levels, yield and quality in the region, particularly for privately-owned groundwater bores that could be affected by the project;
        - groundwater impact assessment criteria including trigger levels for investigating any potentially adverse groundwater water impacts; and
        - a program to monitor and assess:
            - groundwater inflows to the mining operations;
            - impacts on regional aquifers;
            - impacts on the groundwater supply of potentially affected landowners;
            - impacts on the Glennies Creek and Station Creek; and
            - impacts on groundwater dependent ecosystems and riparian vegetation;
    (g) a Surface and Groundwater Response Plan, which must include:
        - a response protocol for any exceedances of the surface water and groundwater assessment criteria, including provisions for independent investigation by a suitable qualified hydrogeologist whose appointment has been approved by the Secretary;
        - measures to offset the loss of any baseflow to watercourses caused by the project;
        - measures to compensate landowners of privately-owned land whose water supply is adversely affected by the project; and

- measures to mitigate and/or offset any adverse impacts on groundwater dependent ecosystems or riparian vegetation.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.

**BIODIVERSITY**

**Biodiversity Offset**

37. The Proponent must implement the biodiversity offset strategy summarised in Table 14, described in the open cut and underground project EAs (as amended by EA Mod 4), and shown conceptually in the figures in Appendix 8 to the satisfaction of the Secretary.

*Table 14: Biodiversity offset strategy*

| *Area* | *Offset Type* | *Minimum Size (hectares)* |
|---|---|---|
| Northern Biodiversity Offset Area | Existing vegetation to be enhanced and restored to re-establish functioning ecosystems, and additional vegetation to be established, including regeneration of a minimum of 87 hectares of Derived Grassland/Native Pasture to vegetation communities representative of the Central Hunter Ironbark-Spotted Gum-Grey Box Forest EEC. | 88 |
| Southern Biodiversity Offset Area | | 30 |
| Bridgeman Biodiversity Offset Area | | 86 |
| Martins Creek Biodiversity Offset Area | | 194 |
| Appletree Flat Biodiversity Offset Area | Existing vegetation to be enhanced and restored to re-stablish functioning ecosystems. | 216 |
| **TOTAL** | | 614 |

38. The biodiversity offset strategy must:
    (a) ensure provision of at least 140 hectares of Narrow-leafed Ironbark-Spotted Gum-Forest Red Gum Forest (or a suitable equivalent) to further offset the impact of the open cut project;
    (b) include an additional 6 hectares of Central Hunter Swamp Oak Forest (or a suitable equivalent) to offset the impacts from Integra Underground on the Glendell Biodiversity Offset Area; and
    (c) include an offer to transfer the Appletree Flat Biodiversity Offset Area to OEH for long term conservation purposes. This offer must include sufficient funding for the ongoing management of the Appletree Flat Biodiversity Offset Area to the satisfaction of the Secretary.

**Long Term Security of Offsets**

39. By 31 October 2016, or as otherwise agreed by the Secretary, the Proponent must make suitable arrangements to provide appropriate long term security for all the areas in the biodiversity offset strategy to the satisfaction of the Secretary.

**Biodiversity Management Plan**

40. The Proponent must prepare a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with OEH and then submitted to the Secretary for approval;
    (b) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
    (c) include:
        - a description of the short, medium, and long term measures that would be implemented to:
            - implement the biodiversity offset strategy; and
            - manage the remnant vegetation and habitat, both on site and in the biodiversity offset areas;
        - detailed performance and completion criteria for the implementation of the biodiversity offset strategy;
        - a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:
            - enhancing the quality of existing vegetation and fauna habitat in the biodiversity offset areas with ecological functions that are comparable with similar, undisturbed ecosystems;

- restoring native vegetation and fauna habitat in the biodiversity offset areas through focusing on assisted natural regeneration;
- targeting vegetation establishment including a program for active revegetation of 87.2 ha of Central Hunter Ironbark-Spotted Gum-Grey Box Forest EEC on the site and the timeframe in which this will be achieved;
- introducing naturally scarce elements of fauna habitat (where practicable);
- acquiring quantitative baseline data for existing ecosystems in the Appletree Flat Biodiversity Offset Area and on the site, including the Northern, Southern, Bridgeman and Martins Creek Biodiversity Offset areas – these must include habitat, flora and fauna baseline data;
- maximising salvage and beneficial use of resources in areas that are to be impacted, including vegetative, soil and cultural heritage resources;
- protecting vegetation and soil outside the areas that are to be impacted;
- managing salinity;
- conserving and reusing topsoil;
- undertaking pre-clearance surveys;
- managing impacts on fauna;
- landscaping the site to minimise visual impacts;
- collecting and propagating seed;
- salvaging and reusing material from the site for habitat enhancement;
- controlling weeds and feral pests, including terrestrial and aquatic species;
- managing grazing and agriculture on site and in the biodiversity offset areas;
- controlling access;
- bushfire management; and
- managing potential conflicts between the biodiversity offset areas and Aboriginal cultural heritage values;

- a description of the potential risks to the successful implementation of the biodiversity offset strategy, and a description of the contingency measures that would be implemented to mitigate these risks;
- a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria; and
- details of who would be responsible for monitoring, reviewing, and implementing the plan.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.

41. The Proponent must commission a suitably qualified, experienced and independent person approved by the Secretary to conduct an audit by 31 December 2020, and a second audit 5 years thereafter, of all biodiversity areas subject to regeneration, restoration and/or protection as Central Hunter Ironbark-Spotted Gum-Grey Box Forest EEC, as referred to in condition 37. A report on each audit is to be submitted to the Secretary within 6 months of completing the audit for approval.

Each report must, for each area of Derived Grassland/Native Pasture proposed for regeneration and restoration as Central Hunter Ironbark-Spotted Gum-Grey Box Forest EEC and for each existing area of Central Hunter Ironbark-Spotted Gum-Grey Box Forest EEC:

(a) report all relevant baseline data (as at the date of project approval) concerning flora and fauna, ecosystem condition and ecosystem function;
(b) report all relevant current data (as at the time of the audit) concerning flora and fauna, ecosystem condition and ecosystem function;
(c) provide a scientifically-valid comparison of the baseline data with the current data;
(d) provide a scientifically-valid comparison of the current data with the data from the first audit and including the baseline data (in the case of the second audit);
(e) report on any works and/or other disturbance that has taken place in the areas since project approval;
(f) describe the management measures undertaken to regenerate and/or restore the areas, including the dates and/or periods during which those measures were implemented;
(g) evaluate the effectiveness of the management measures undertaken; and
(h) recommend any additional management measures to regenerate, restore and/or protect the EEC and provide a schedule for their implementation.

**Conservation Bond**

42. Within 6 months of the approval of the Biodiversity Management Plan (see above), the Proponent must lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan.

The sum of the bond must be determined by:

(a) calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and
(b) employing a suitably qualified quantity surveyor to verify the calculated costs,
to the satisfaction of the Secretary.

The calculation of the conservation bond must be submitted to the Department for approval at least 1 month prior to lodgement of the final bond.

If the biodiversity offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond. If the biodiversity offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will call in all or part of the conservation bond and arrange for the satisfactory completion of the relevant works.

*Notes:*
- *Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate (or any other mechanism agreed with OEH) can be used to reduce the liability of the conservation bond.*
- *The sum of the bond may be reviewed in conjunction with any revision to the biodiversity offset strategy or the completion of major milestones within the approved plan.*

**Targeted Survey**

42A. Prior to the commencement of the exploration drilling program, the Proponent must:
a) conduct a targeted survey for *Diuris tricolor* during its known flowering time (mid-September to mid-October) within the area of disturbance of each proposed borehole, in consultation with OEH.
b) prepare a report, to the satisfaction of the Secretary, detailing:
- the results of the survey;
- whether the proposed exploration activities would harm Diuris tricolor;
- what measures would be implemented to avoid impacts on Diuris tricolor and other threatened species, populations or their habitats; and
- suitable offset arrangements in accordance with the *NSW Biodiversity Offsets Policy for Major Projects*, if the survey concludes that Diuris tricolor would be harmed by the proposed boreholes.

The Proponent must implement the findings of the report, to the satisfaction of the Secretary.

**HERITAGE**

**Further Archaeological Investigation**

43. Prior to carrying out any development in the parts of the site outlined in purple on the figure in Appendix 8, unless the Secretary agrees otherwise, the Proponent must carry out further archaeological testing and investigation within the broader area outlined in purple on the figure in Appendix 7 to the satisfaction of the Secretary.

**Heritage Management Plan**

44. The Proponent must prepare a Heritage Management Plan for the project to the satisfaction of the Secretary. This plan must:
(a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
(b) be prepared in consultation with OEH, the Aboriginal community, the Heritage Division, Council, local historical organisations and any relevant landowners;
(c) be submitted to the Secretary for approval;
(d) include the following for the management of Aboriginal cultural heritage on site:
- recording, salvaging and/or managing all Aboriginal sites, objects and deposits that are to be destroyed within the open cut project area;
- conserving, managing and monitoring all Aboriginal sites, objects and deposits that are to be protected within the open cut project area, including the 3 scarred trees identified within the western mining area;
- maintaining and managing access to Aboriginal sites, objects and deposits by the Aboriginal community, including provision of an appropriate Keeping Place;
- managing the discovery of any new Aboriginal objects or skeletal remains identified during the project; and

- ongoing consultation and involvement of the Aboriginal community in the conservation and management of Aboriginal cultural heritage values on the site.

(e) include programs/ procedures for the following, in accordance with the applicable guidelines of the Heritage Division:
- further historical investigation of the area outlined in purple on the figure in Appendix 7 to identify the potential archaeological resources within the area;
- archaeological testing of the potential archaeological resources within the area outlined in purple on the figure in Appendix 7;
- further archaeological investigation of any areas where the archaeological testing (referred to above) identifies significant archaeological deposits;
- archaeological excavation of the known grave on site, identified as the James Halliday Glennie grave site;
- detailed archival recording of the Dulwich property if it is to be mined, or the preparation of a detailed conservation management plan for the Dulwich property if it is not to be mined (subject to the agreement of the landowner);
- archival recording of any other heritage items to be destroyed by the project;
- conserving, managing, monitoring, and where appropriate, relocating any non-Aboriginal sites, objects and deposits on the site;
- interpreting the findings of the additional heritage or archaeological investigations carried out on the site; and
- managing the discovery of any new non-Aboriginal objects or skeletal remains identified during the project.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.

**TRANSPORT**

**Monitoring of Coal Transport**

45. The Proponent must:
(a) keep accurate records of:
- amount of coal transported from the site (on a monthly basis);
- the date and time of each train movement from the site; and

(b) make these records publicly available on its website at the end of each calendar year.

**VISUAL**

**Visual Amenity and Lighting**

46. The Proponent must:
(a) implement all reasonable and feasible measures to mitigate visual and off-site lighting impacts of the project;
(b) ensure no unshielded outdoor lights shine above the horizontal; and
(c) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 - Control of Obtrusive Effects of Outdoor Lighting*, or its latest version,

to the satisfaction of the Secretary.

**Additional Visual Mitigation Measures**

47. Upon receiving a written request from the owner of any residence on privately-owned land which has significant direct views of the open cut mining operations on site, the Proponent must implement additional visual mitigation measures (such as landscaping treatments or vegetation screens) on the land in consultation with the landowner. These measures must be reasonable and feasible, and directed towards minimising the visibility of the mining operations from the residence.

If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

**WASTE**

48. The Proponent must:
(a) minimise and monitor the waste generated by the project; and
(b) ensure that the waste generated by the project is appropriately stored, handled, and disposed of;
(c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and

(d) report on waste management and minimisation in the annual review,

to the satisfaction of the Secretary.

**BUSHFIRE MANAGEMENT**

49. The Proponent must:
    (a) ensure that the project is suitably equipped to respond to fires on site; and
    (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

**REHABILITATION**

**Rehabilitation Objectives**

50. The Proponent must rehabilitate the site in a manner that is generally consistent with the rehabilitation strategy described in the documents referred to in conditions 2 and 3 of Schedule 2 – and depicted conceptually in the figure in Appendix 8 – and the objectives in Table 15.

*Table 15: Rehabilitation objectives*

| ***Area/Domain*** | ***Rehabilitation Objectives*** |
|---|---|
| Site (as a whole) | • Safe, stable & non-polluting<br>• Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms<br>• Constructed landforms maximise surface water drainage to the natural environment (excluding final void catchments)<br>• Minimise long term groundwater seepage zones<br>• Minimise visual impact of final landforms as far as is reasonable and feasible |
| Final voids | • Safe, stable & non-polluting<br>• Minimise the size and depth of the final void as far as is reasonable and feasible<br>• Minimise the drainage catchment of the final void as far as is reasonable and feasible<br>• Minimise the risk of flood interaction for all flood events up to and including the Probable Maximum Flood<br>• Negligible high wall instability risk |
| Surface infrastructure | To be decommissioned and removed, unless DRG agrees otherwise |
| Historic underground workings | Safe, stable & non-polluting |
| Other land affected by the project | Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:<br>• local native plant species (unless DRG agrees otherwise); and<br>• a landform consistent with the surrounding environment |
| Community | • Ensure public safety<br>• Minimise the adverse socio-economic effects associated with mine closure |

**Progressive Rehabilitation**

51. The Proponent must carry out rehabilitation of the site progressively, that is, as soon as reasonably practicable following the disturbance.

**Rehabilitation Management Plan**

52. The Proponent must prepare a Rehabilitation Management Plan for the project to the satisfaction of DRG. This plan must:
    (a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC;
    (b) be submitted to the DRG for approval;
    (c) be prepared in accordance with any relevant DRG guideline, and be consistent with the rehabilitation objectives in Table 15 and in the documents referred to in conditions 2 and 3 of Schedule 2;
    (d) build, to the maximum extent practicable, on the other management plans required under this approval; and
    (e) address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.

The Proponent must implement the approved management plan as approved from time to time by the Secretary.

53. Within 12 months of the completion of the exploration drilling program, the Proponent shall plant 2 trees for every established tree removed during the exploration drilling program. The replacement trees must be of like-for-like species, planted in the same area from which they were removed, and be maintained until established.

*Note: An established tree is considered to be two metres or greater in height*.

54. Rehabilitation of all areas disturbed by the exploration drilling program is to be undertaken in accordance with an approved Mining Operations Plan / Rehabilitation Management Plan, to the satisfaction of DRG.

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## SCHEDULE 4
## ADDITIONAL PROCEDURES

### NOTIFICATION OF LANDOWNERS

1. By the end of December 2010, the Proponent must:
   (a) notify in writing the owners of:
      - the land listed in Table 1 of Schedule 3 that they have the right to require the Proponent to acquire their land at certain stages during the project;
      - any residence on the land listed in Table 1, for which the acquisition basis is noise, or Table 6 of Schedule 3 that they are entitled to ask for additional noise mitigation to be installed at their residence at certain stages during the project;
      - any residence on the land listed in Table 1, for which the acquisition basis is air quality, or Table 12 of Schedule 3 that they are entitled to ask for additional air quality mitigation measures to be installed at their residence at certain stages of the project; and
      - any privately-owned land within 2 kilometres of any approved open cut mining pit on site that they are entitled to ask for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated; and
   (b) send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the open cut project EAs identify that dust emissions from the project are likely to be greater than the relevant air quality criteria in Schedule 3 at any time during the life of the project.

2. Prior to entering into any tenancy agreement for any land owned by the Proponent that is predicted to experience exceedances of the relevant noise criteria or dust criteria in Schedule 3, the Proponent must:
   (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land and give them a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time); and
   (b) advise the prospective tenants of the rights they would have under this approval,
   to the satisfaction of the Secretary.

3. As soon as practicable after obtaining monitoring results showing:
   (a) an exceedance of any relevant criteria in Schedule 3, the Proponent must notify the affected landowner and/or tenants in writing of the exceedance, and provide regular monitoring results to each of these parties until the project is again complying with the relevant criteria;
   (b) an exceedance of any relevant criteria in conditions 6(c) or 7 of Schedule 3, the Proponent must notify the applicable owner in writing that they are entitled to ask for additional noise mitigation to be installed at their residence;
   (c) an exceedance of any relevant criteria in condition 22 or 23 of Schedule 3, the Proponent must send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land); and
   (d) an exceedance of the relevant criteria in condition 24(c) of Schedule 3, the Proponent must notify the applicable owner of any residences on the land that they are entitled to ask for additional air quality mitigation measures to be installed at their residence.

### INDEPENDENT REVIEW

4. If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impact of the project on his/her land.

   If the Secretary is not satisfied that an independent review is warranted, the Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 60 days of the request for a review.

   If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Proponent must:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and
      - if the project is not complying with these criteria then:
         - determine if more than one mine is responsible for the exceedance, and if so the relative share of each mine towards the impact on the land;

- identify the measures that could be implemented to ensure compliance with the relevant criteria; and

(b) give the Secretary and landowner a copy of the independent review.

5. If the independent review determines that the project is complying with the relevant criteria in Schedule 3, then the Proponent may discontinue the independent review with the approval of the Secretary.

If the independent review determines that the project is not complying with the relevant criteria in Schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent must:

(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until there is compliance with the relevant criteria; or

(b) secure a written agreement with the landowner to allow the exceedances of the relevant criteria,

to the satisfaction of the Secretary.

If the independent review determines that the project is not complying with the relevant acquisition criteria in Schedule 3, and that the project is primarily responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent must acquire all or part of the landowner's land in accordance with the procedures in conditions 8 to 9 below.

6. If the independent review determines that the relevant criteria in Schedule 3 are being exceeded, but that more than one mine is responsible for this exceedance, then together with the relevant mine/s the Proponent must:

(a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until there is compliance with the relevant criteria; or

(b) secure a written agreement with the landowner to allow exceedances of the relevant criteria,

to the satisfaction of the Secretary.

If the independent review determines that relevant acquisition criteria in Schedule 3 are being exceeded, but that more than one mine is responsible for the exceedance, then upon receiving a written request from the landowner, the Proponent must acquire all or part of the landowner's land on as equitable a basis as possible with the relevant mine/s in accordance with the procedures in conditions 7 to 8 below.

**LAND ACQUISITION**

7. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent must make a binding written offer to the landowner based on:

(a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the project, having regard to the:
- existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
- presence of improvements on the land and/or any approved building or structure which has been physically commenced on the land at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of any additional mitigation measures required under conditions 6, 7 or 24 of Schedule 3;

(b) the reasonable costs associated with:
- relocating within the Singleton or Muswellbrook local government areas, or to any other local government area determined by the Secretary; and
- obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and

(c) reasonable compensation for any disturbance caused by the land acquisition process.

However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution.

Upon receiving such a request, the Secretary will request the President of the NSW Division of the Australian Property Institute (the API) to appoint a qualified independent valuer to:
- consider submissions from both parties;
- determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;
- prepare a detailed report setting out the reasons for any determination; and
- provide a copy of the report to both parties.

Within 14 days of receiving the independent valuer's report, the Proponent must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report disputing the independent valuer's determination, and any other relevant submissions.

Within 14 days of this determination, the Proponent must make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination.

If the landowner refuses to accept the Proponent's binding written offer under this condition within 6 months of the offer being made, then the Proponent's obligations to acquire the land shall cease, unless the Secretary determines otherwise.

8. The Proponent must pay all reasonable costs associated with the land acquisition process described above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.

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## SCHEDULE 5
## ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

### ENVIRONMENTAL MANAGEMENT

#### Environmental Management Strategy

1. If the Secretary requires, the Proponent must prepare an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval;
   (b) provide the strategic framework for the environmental management of the project;
   (c) identify the statutory approvals that apply to the project;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;
   (e) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance; and
      - respond to emergencies; and
   (f) include:
      - copies of any strategies, plans and programs approved under the conditions of this approval; and
      - a clear plan depicting all the monitoring required to be carried out under the conditions of this approval.

   The Proponent must implement the approved strategy as approved from time to time by the Secretary.

#### Evidence of Consultation

1A. Where consultation with any public authority is required by the conditions of this approval, the Proponent must:
   (a) consult with the relevant public authority prior to submitting the required document to the Secretary for approval;
   (b) submit evidence of this consultation as part of the relevant document;
   (c) describe how matters raised by the authority have been addressed and any matters not resolved; and
   (d) include details of any outstanding issues raised by the authority and an explanation of disagreement between any public authority and the Proponent.

#### Management Plan Requirements

2. The Proponent must ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the project; and
      - effectiveness of any management measures (see (c) above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences;
   (f) a program to investigate and implement ways to improve the environmental performance of the project over time;
   (g) a program to regularly review management practices to align with contemporary best practice industry standards;
   (h) a protocol for managing and reporting any:
      - incidents;
      - complaints;
      - non-compliances with the conditions of this approval and statutory requirements; and
      - exceedances of the impact assessment criteria and/or performance criteria; and

(i) a protocol for periodic review of the plan.

*Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

**Preparation of Management Plans**

3. Prior to approval of management plans required under Schedule 3, all existing management plans, monitoring programs, strategies, programs, protocols, etc approved as at the date of approval of Modification 6 shall continue to have full force and effect, and may be revised under the requirements of condition 5 below as if subject to the conditions of this approval that applied prior to the approval of Modification 6, or otherwise with the approval of the Secretary.

**Relationships between Management Plans**

4. With the agreement of the Secretary, the Proponent may combine any strategy, plan or program required by this approval with any similar strategy, plan or program required for Rix's Creek.

**Revision of Strategies, Plans & Programs**

5. Within 3 months of:
(a) the submission of an incident report under condition 8 below;
(b) the submission of an annual review under condition 10 below;
(c) the submission of an audit report under condition 11 below, or
(d) any modification of the conditions of this approval (unless the conditions require otherwise),
the Proponent must review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. The Proponent must notify the Department in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document must be submitted for the approval of the Secretary.

*Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.*

**Updating & Staging Submissions of Strategies, Plans or Programs**

6. The Proponent must regularly review the strategies, plans and programs required under this approval and ensure that these documents are updated to incorporate measures to improve the environmental performance of the project and reflect current best practice in the mining industry. To facilitate these updates, the Proponent may at any time submit revised strategies, plans or programs for the approval of the Secretary. With the agreement of the Secretary, the Proponent may also submit any strategy, plan or program required by this approval on a staged basis.

The Secretary may approve a revised strategy, plan or program required under this approval, or the staged submission of any of these documents, at any time. With the agreement of the Secretary, the Proponent may revise any strategy, plan or program approved under this approval without consulting with all the parties nominated under the applicable conditions of approval.

While any strategy, plan or program may be submitted on a staged basis, the Proponent will need to ensure that the operations associated with the development are covered by suitable strategies, plans or programs at all times.

If the submission of any strategy, plan or program is to be staged; then the relevant strategy, plan or program must clearly describe the specific stage/s of the development to which the strategy, plan or program applies; the relationship of this stage/s to any future stages; and the trigger for updating the strategy, plan or program.

*Notes:*
- *While any strategy, plan or program may be submitted on a progressive basis, the Proponent must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and*
- *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

**Community Consultative Committee**

7. The Proponent must operate a Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. This CCC must be operated in general accordance with the *Department's Community Consultative Committee Guidelines, November 2016 (or later version).*

*Notes:*

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval;*
- *In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Proponent, Council, recognised environmental groups and the local community;*
- *The Proponent may, with the approval of the Secretary, combine the function of this CCC with the function of other CCCs in the area.*

## REPORTING

### Incident Reporting

8. The Proponent must immediately notify the Secretary (using the contact name, email address and phone number provided by the Department from time to time) and any other relevant agencies of any incident.

8A. Within 7 days of the date of the incident, the Proponent must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested. This report must include the time and date of the incident, details of the incident, measures implemented to prevent re-occurrence and must identify and non-compliance with this approval.

### Regular Reporting

9. The Proponent must provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any approved plans or programs of the conditions of this approval.

### Annual Review

10. By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent must submit a report to the Department reviewing the environmental performance of the project to the satisfaction of the Secretary. This review must:
    (a) describe the works (including any rehabilitation) that were carried out during the previous calendar year, and the works that are proposed to be carried out over the current calendar year;
    (b) include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the:
        - relevant statutory requirements, limits or performance measures/criteria;
        - monitoring results of previous years; and
        - relevant predictions in the documents referred to in condition 2 of Schedule 2;
    (c) identify any non-compliance over the previous calendar year, and describe what actions were (or are being) taken to ensure compliance;
    (d) identify any trends in the monitoring data over the life of the project;
    (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and
    (f) describe what measure will be implemented over the current calendar year to improve the environmental performance of the project.

## INDEPENDENT ENVIRONMENTAL AUDIT

11. By the end of December 2011, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent must commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
    (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
    (b) include consultation with the relevant agencies;
    (c) assess the environmental performance of the project and whether it is complying with the relevant requirements in this approval and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);
    (d) review the adequacy of any approved strategies, plans or programs required under these approvals, with particular reference to management practices to ensure that they align with contemporary best practice industry standards;
    (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy, plan or program required under the abovementioned approvals; and
    (f) be conducted and reported to the satisfaction of the Secretary.

*Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.*

12. Within 12 weeks of commissioning this audit, or as otherwise agreed by the Secretary, the Proponent must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report. The Proponent must implement these recommendations, to the satisfaction of the Secretary.

**ACCESS TO INFORMATION**

13. The Proponent must:
    (a) make copies of the following publicly available on its website:
        - the documents referred to in conditions 2 and 3 of Schedule 2;
        - all current statutory approvals for the project;
        - all approved strategies, plans and programs required under the conditions of this approval;
        - the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans or programs;
        - a complaints register, which is to be updated on a monthly basis;
        - minutes of CCC meetings;
        - the annual reviews over the life of the project;
        - any independent environmental audit, and the Proponent's response to the recommendations in any audit; and
        - any other matter required by the Secretary;
    (b) keep this information up-to-date,

    to the satisfaction of the Secretary.

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## APPENDIX 1: SCHEDULE OF LAND

| *Lot Number* | *Deposited Plan Number* | *Lot Number* | *Deposited Plan Number* |
|---|---|---|---|
| G | 37613 | 73 | 752455 |
| 6 | 113538 | 74 | 752455 |
| 7 | 113538 | 75 | 752455 |
| 1 | 113540 | 76 | 752455 |
| 2 | 113540 | 77 | 752455 |
| 3 | 113540 | 78 | 752455 |
| 4 | 113540 | 81 | 752455 |
| 5 | 113540 | 86 | 752455 |
| 1 | 212284 | 95 | 752455 |
| 2 | 212284 | 98 | 752455 |
| 3 | 212284 | 136 | 752455 |
| 1 | 246434 | 13 | 753776 |
| 2 | 246434 | 14 | 753776 |
| 4 | 246434 | 70 | 777661 |
| 5 | 246434 | 71 | 777661 |
| 6 | 246434 | 1 | 783398 |
| 8 | 246434 | 1 | 802596 |
| 8 | 251618 | 2 | 802596 |
| 5 | 264089 | 221 | 809958 |
| 51 | 551899 | 1 | 810309 |
| 791 | 580967 | 2 | 810309 |
| 792 | 586255 | 1 | 823098 |
| 1 | 597205 | 231 | 829334 |
| 2 | 597205 | 233 | 829334 |
| 4 | 606344 | 240 | 829334 |
| 710 | 624852 | 2391 | 829334 |
| 1 | 628652 | 12 | 855251 |
| 2 | 628652 | 1 | 873260 |
| 100 | 633743 | 2 | 873260 |
| 1 | 725247 | 123 | 1067863 |
| 174 | 729917 | 7 | 1075078 |
| 91 | 752442 | 1 | 1083482 |
| 92 | 752442 | 2 | 1083482 |
| 93 | 752442 | 1 | 1111102 |
| 2 | 752450 | 2 | 1111102 |
| 6 | 752450 | 3 | 1111102 |
| 10 | 752450 | 4 | 1111102 |
| 119 | 752450 | 6 | 1111104 |
| 120 | 752450 | 2372 | 1171745 |
| 30 | 752455 | 221 | 1171746 |
| 31 | 752455 | 222 | 1171746 |
| 32 | 752455 | 2351 | 1171747 |
| 43 | 752455 | 2352 | 1171747 |
| 44 | 752455 | 2391 | 1171750 |
| 45 | 752455 | 2 | 1183034 |

## APPENDIX 2: PREVIOUS EAS

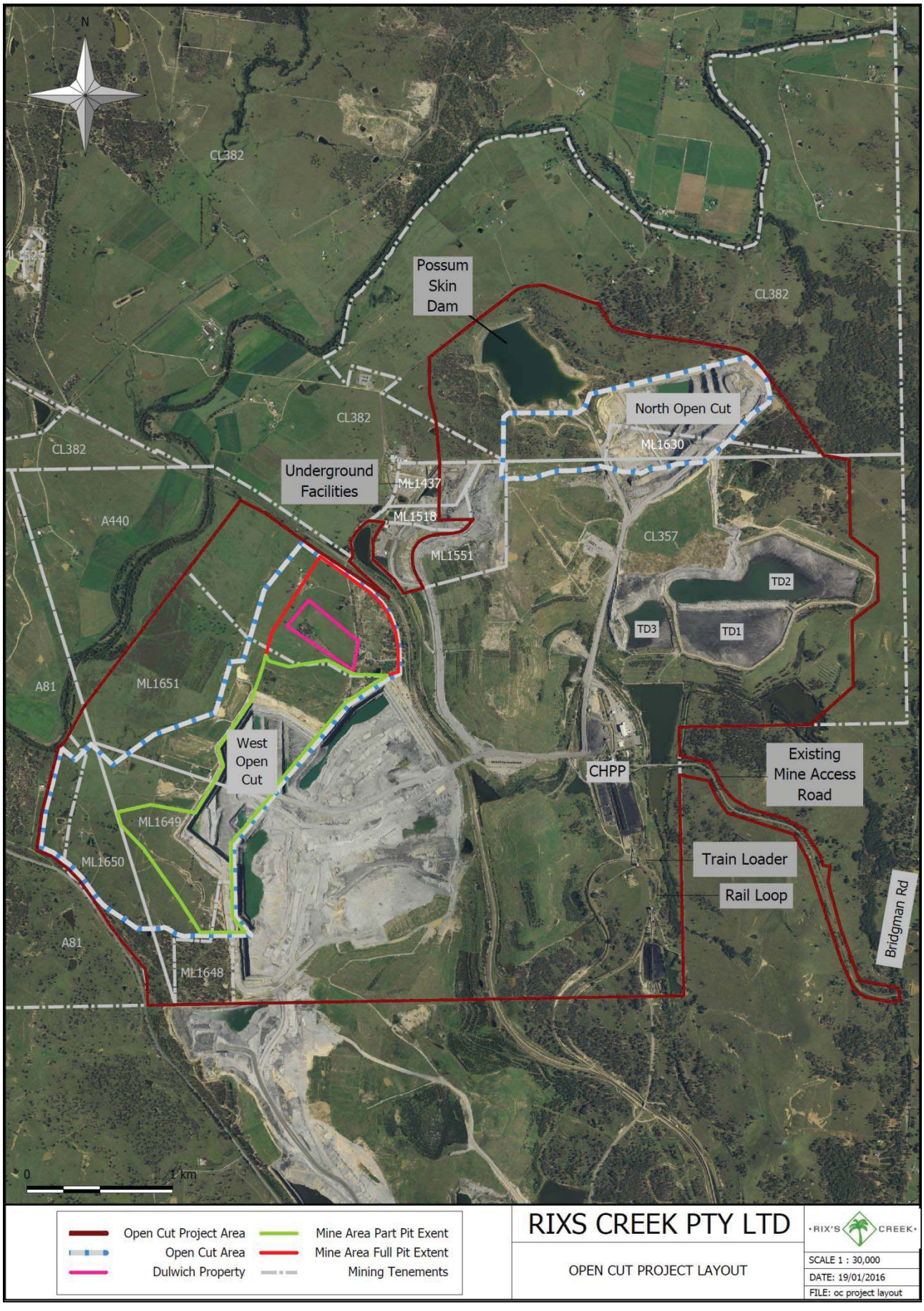
**Camberwell Coal Project (86/2889)**

- Camberwell Coal Project, Glennies Creek - Environmental Impact Statement, dated October, 1989, as modified by the works set out in figures 1 and 2 attached to the April 1992 Notice of Amendment;
- Camberwell Coal Pty Limited to the Singleton Shire Council letter dated 21 December, 1989 advising on rail facilities;
- Letter from Camberwell Coal Pty Limited to the Singleton Shire Council, dated 29 January, 5 February, 6 February, 1990;
- Responses to letters of objection submitted to Council by Camberwell Coal Pty Limited dated 25 January, 1990;
- Responses by Camberwell Coal Pty Limited to comments submitted by government bodies, dated 5 February, 1990;
- Statement of Environmental Effects in support of a Section 96(2) application for the Camberwell Coal Mine, dated 2 July 2001, prepared by HLA-Envirosciences Pty Ltd;
- Additional information provided by PJ Murray in response to submissions received on the proposal in a letter dated 29 August 2001;
- Information provided by Camberwell coal Pty Limited accompanying the application to modify development consent received 20 November 2003;
- Statement of Environmental Effects in support of a Section 96(2) application for the Camberwell Coal Mine, dated July 2004, prepared by David Lane Associates;
- Statement of Environmental Effects Coal Handling and Preparation Plant Upgrade Camberwell Coal Mine, dated 31 March 2005, prepared by HLA Envirosciences Pty Limited;
- Statement of Environmental Effects Coal Handling and Preparation Plant Workshop, dated 31 July 2006, prepared by Camberwell Coal Pty Limited;
- Environmental Assessment for the Proposed Modification of Development Consent DA 86/2889 Integra Open Cut Increase in Annual ROM (ROM) Coal Production from 3.8Mt to 4.5Mt, dated 29 February 2008, prepared by Integra Coal Operations Pty Ltd; and
- Statement of Environmental Effects titled Relocation of Explosives Magazine Compound and Reload Facilities, dated 22 March 2010, prepared by Integra Coal Operations Pty Limited.

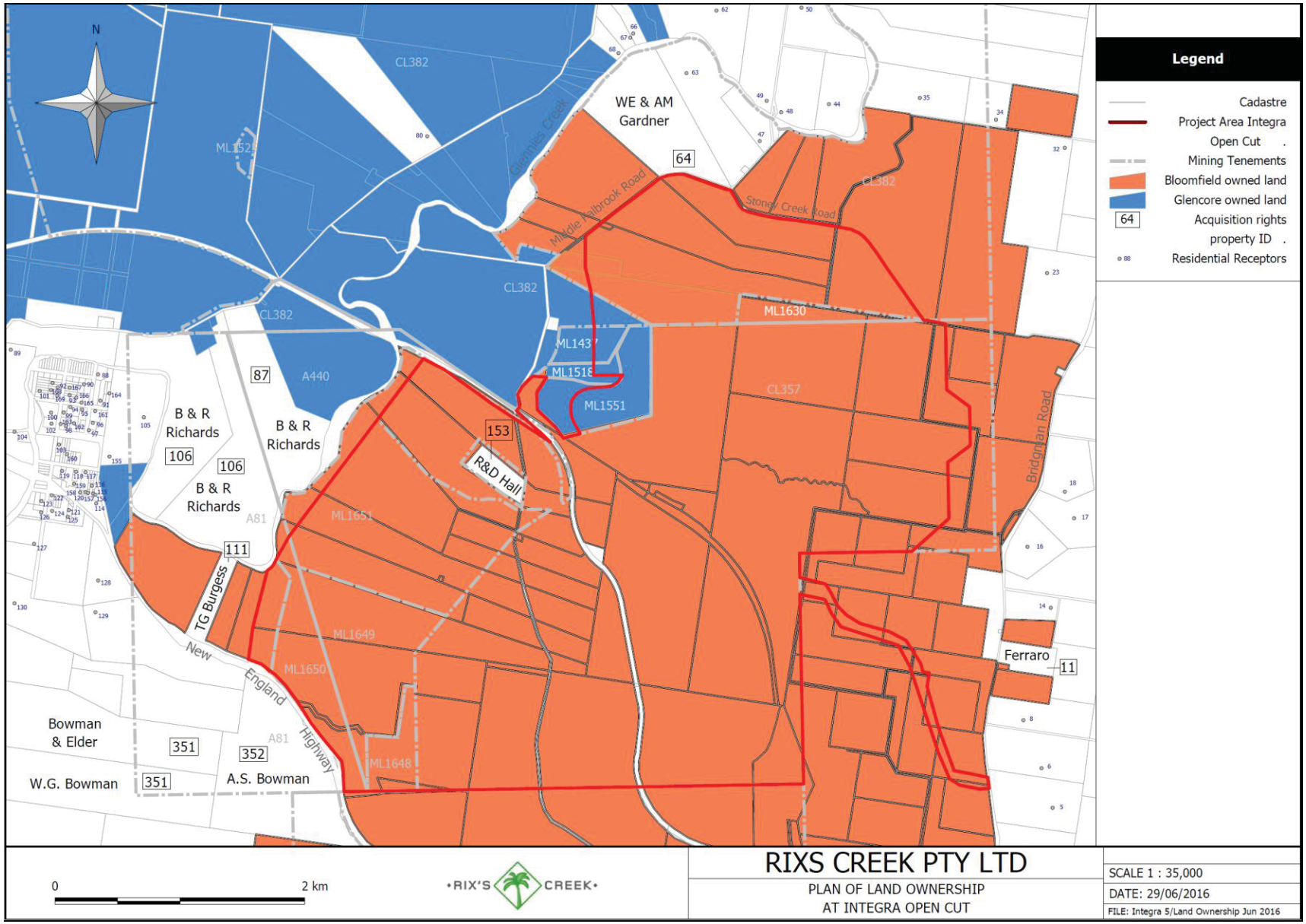
**Glennies Creek Open Cut Coal Project (06_0073)**

- Environmental Assessment titled Environmental Assessment Glennies Creek Open Cut Coal Mine, Volumes 1-3, dated October 2007, and the associated responses to submissions, titled Response to Government Agency Submissions Glennies Creek Open Cut Coal Mine, dated February 2008 and Supplementary Response to Government Agency Submissions Glennies Creek Open Cut Coal Mine, dated June 2008 prepared by RW Corkery & Co Pty Ltd.

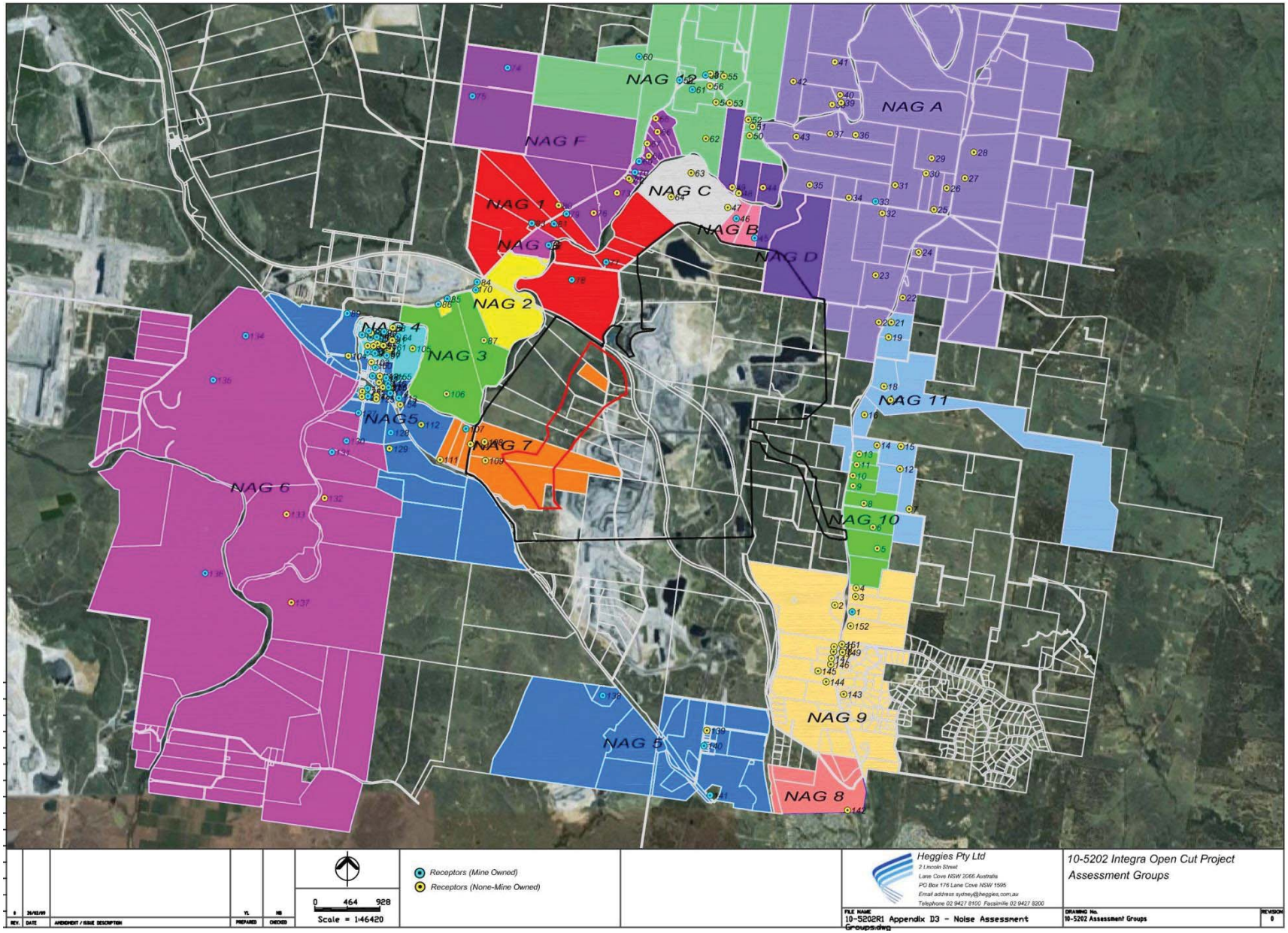
## APPENDIX 3: PROJECT LAYOUT PLAN



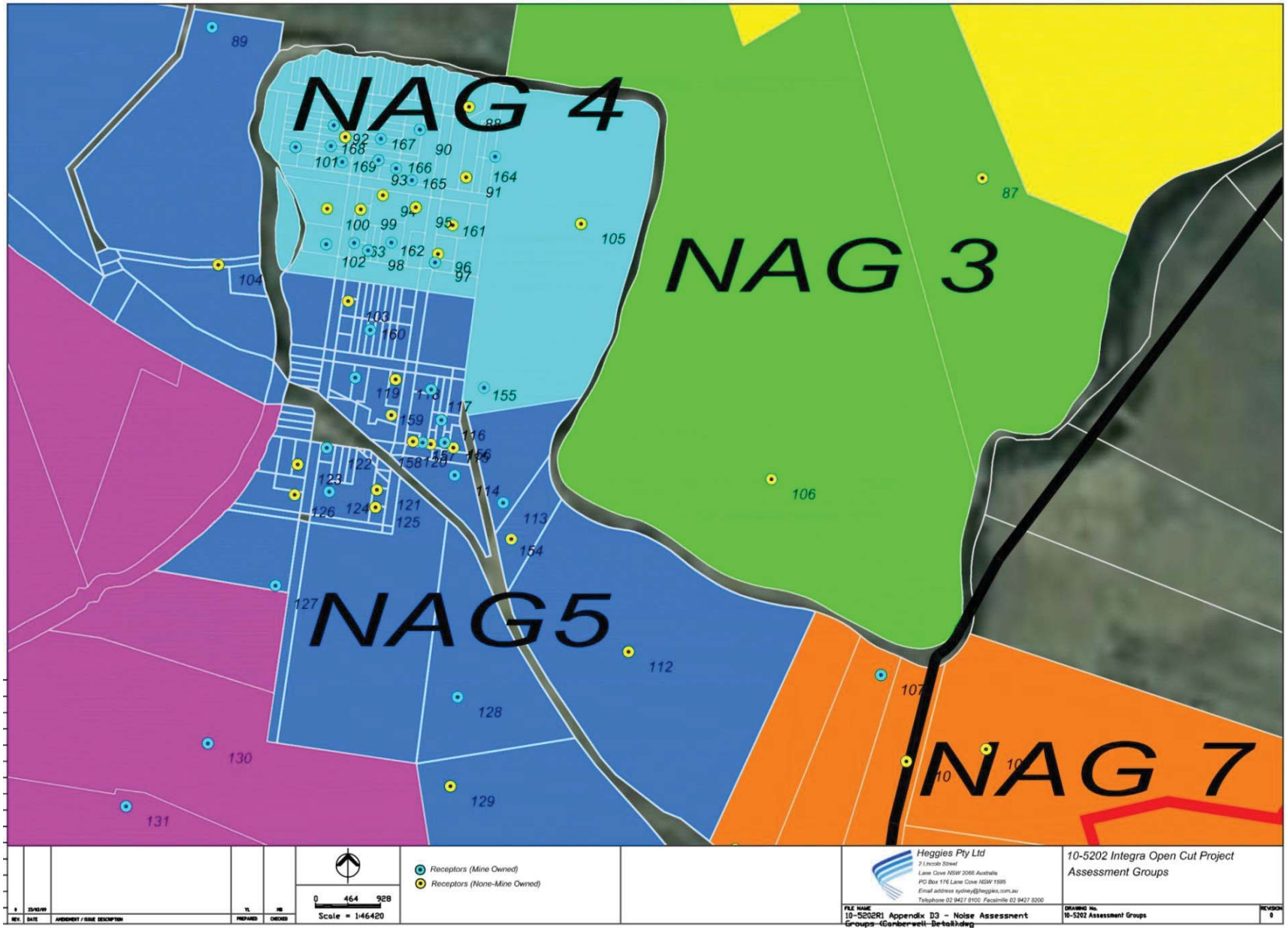
## APPENDIX 4: LAND OWNERSHIP & RESIDENTIAL RECEIVERS




**Open Cut Project Land Ownership (at time of EA Mod 6 Production)**




**Residential Receivers**




**Residential Receivers in Camberwell Village**

## APPENDIX 5: NOISE COMPLIANCE ASSESSMENT

**Compliance Monitoring**

1. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.

2. Data collected for the purposes of determining compliance with the relevant conditions of this approval is to be excluded under the following meteorological conditions:
   a) during periods of rain or hail;
   b) average wind speed at microphone height exceeds 5 m/s;
   c) wind speeds greater than 3 m/s measures at 10 m above ground level; and
   d) temperature inversion conditions greater than 3°C/100m.

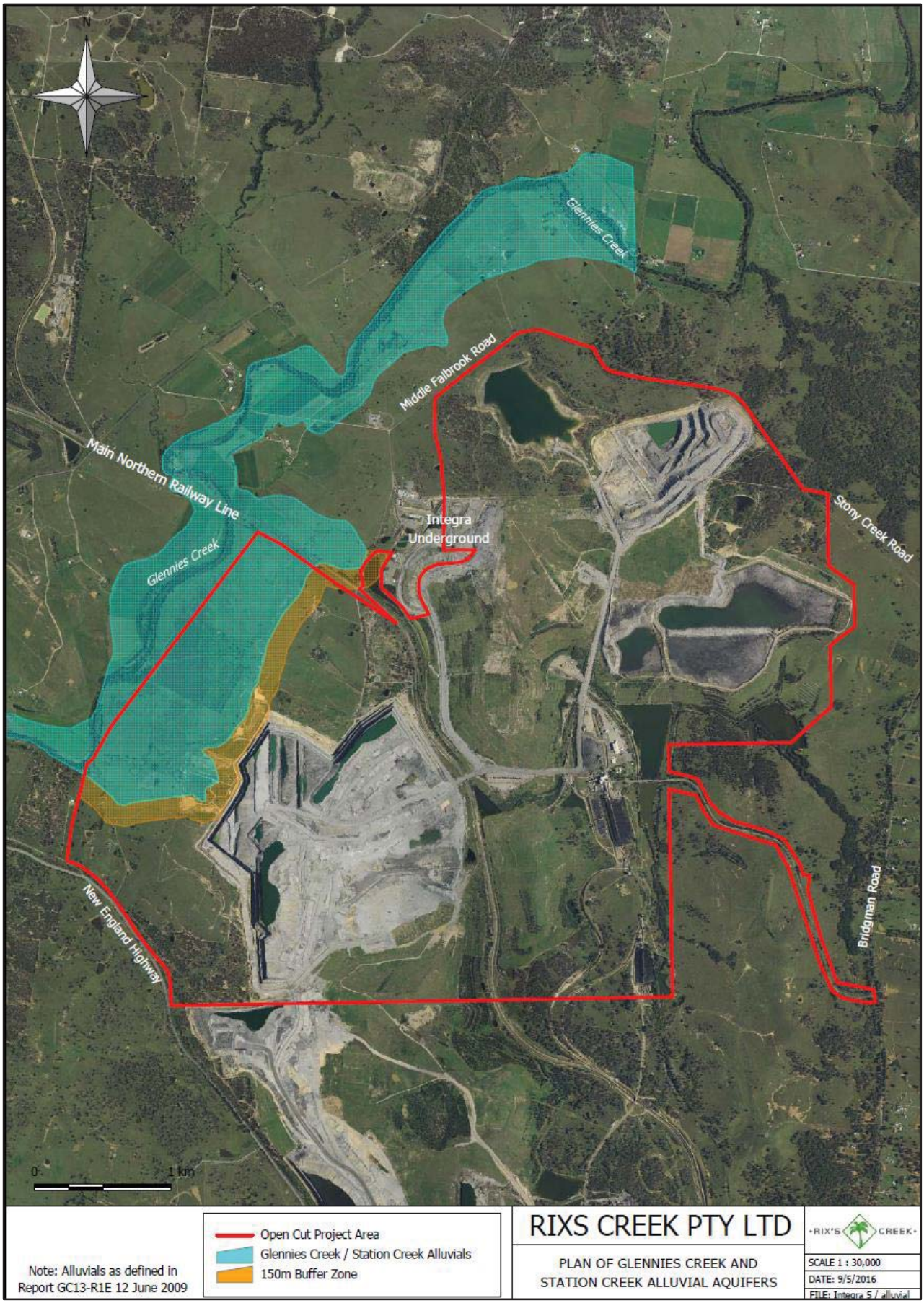
3. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements relating for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   a) monitoring locations for the collection of representative noise data;
   b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

4. To the extent that there is any inconsistency between the *NSW Industrial Noise Policy* and the requirements set out in this Appendix, the Appendix prevails to the extent of the inconsistency.

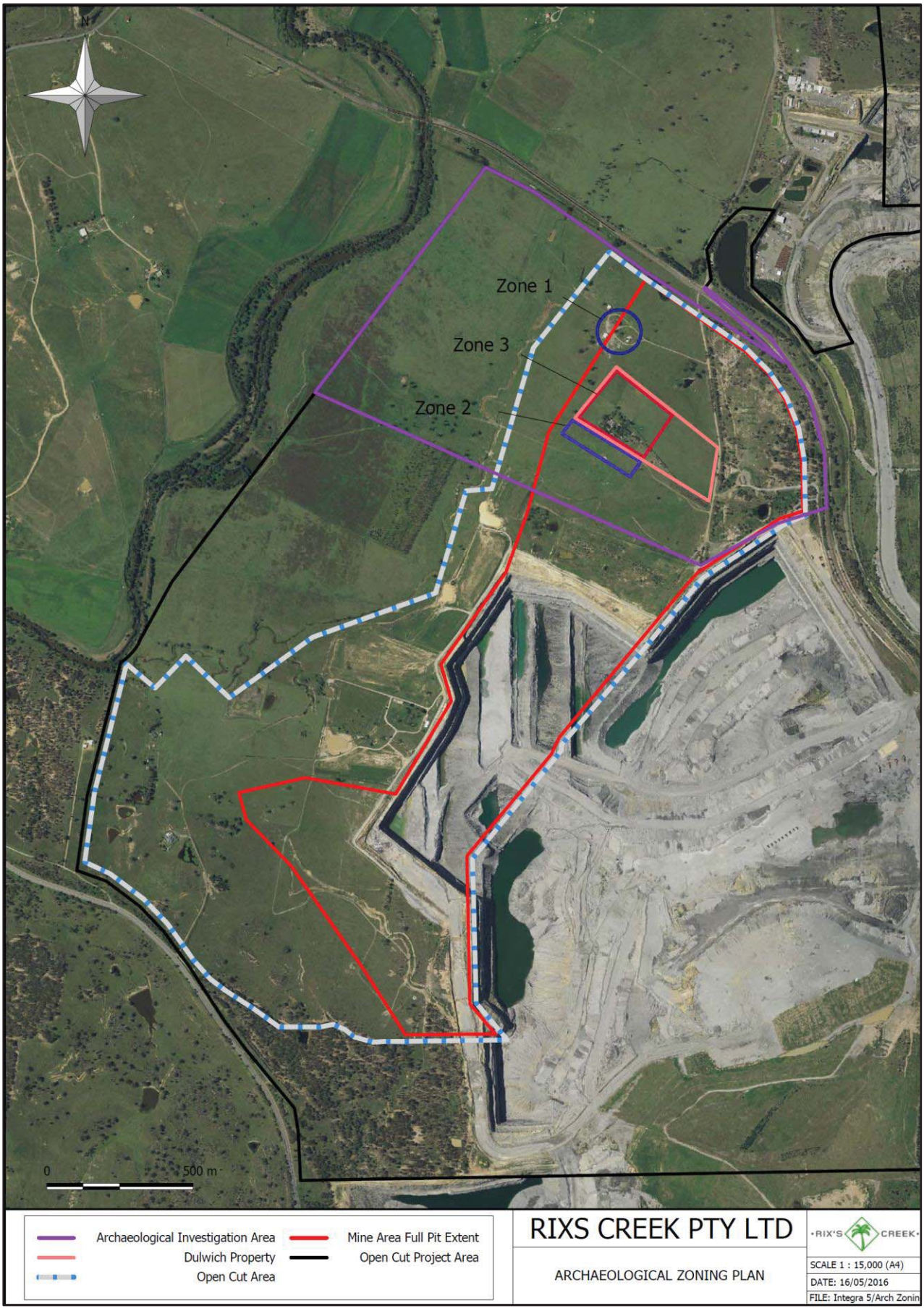
**Determination of Meteorological Conditions**

5. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site (as required by condition 28 of Schedule 3).

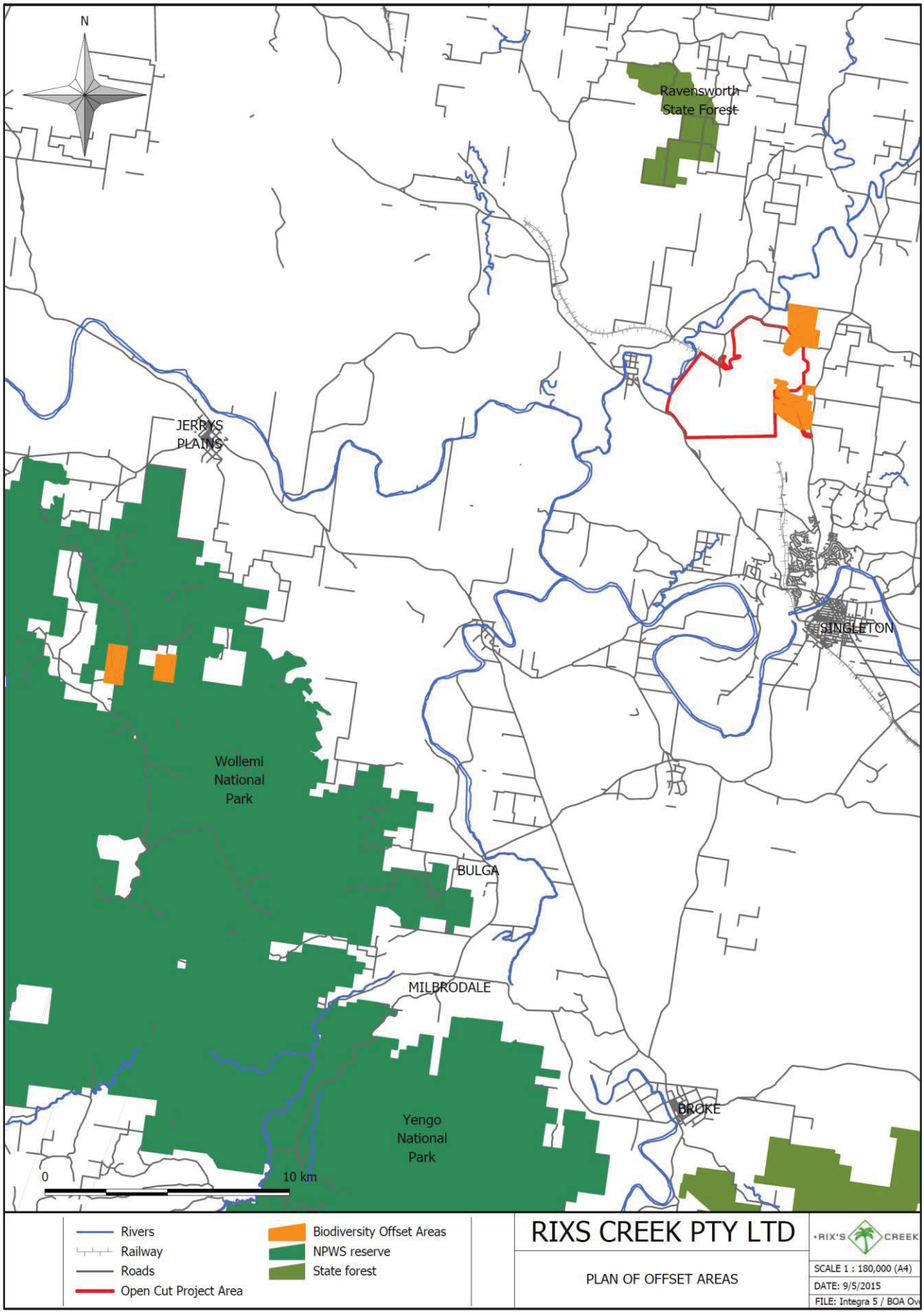
## APPENDIX 6: GLENNIES CREEK AND STATION CREEK ALLUVIAL AQUIFERS

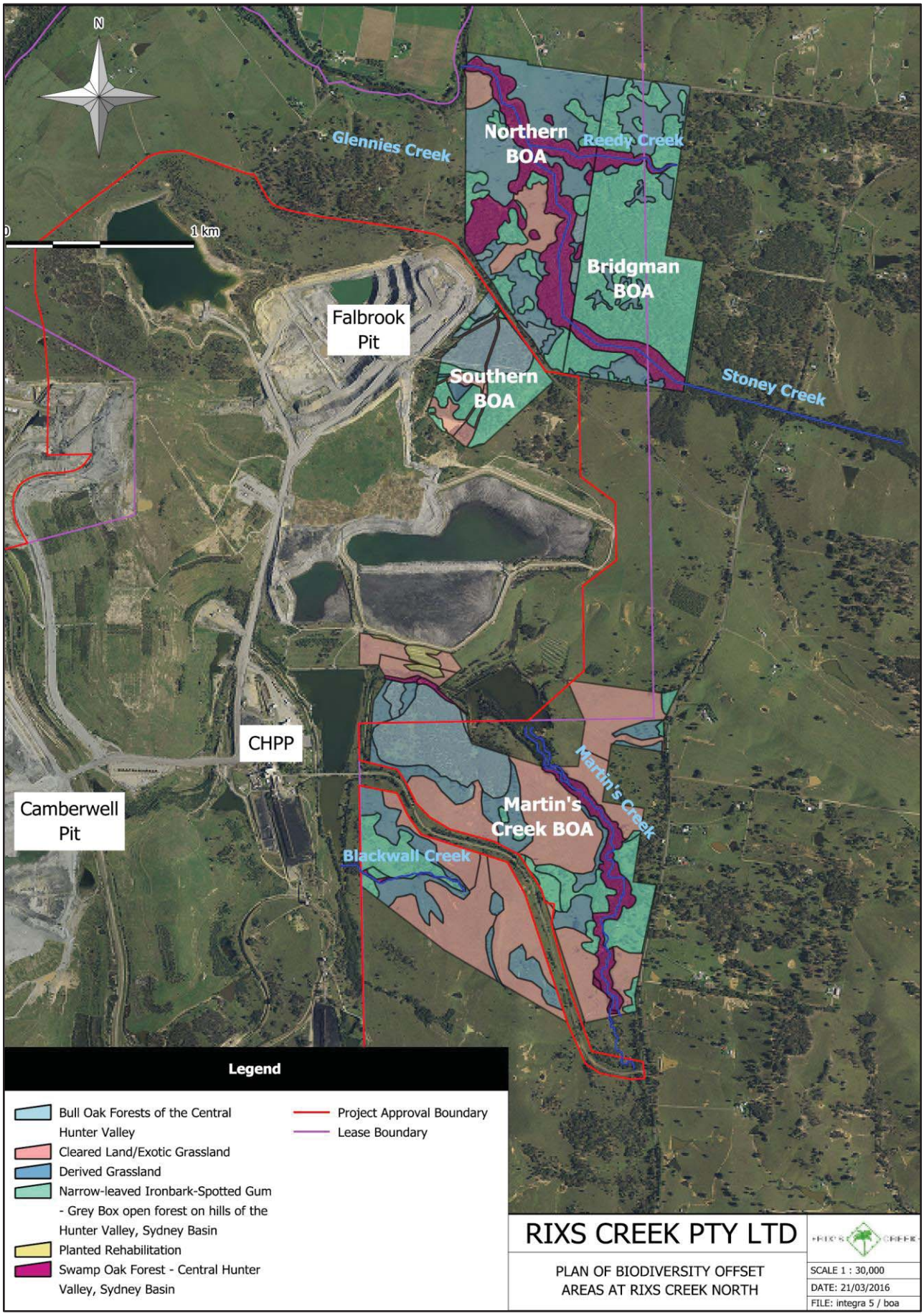


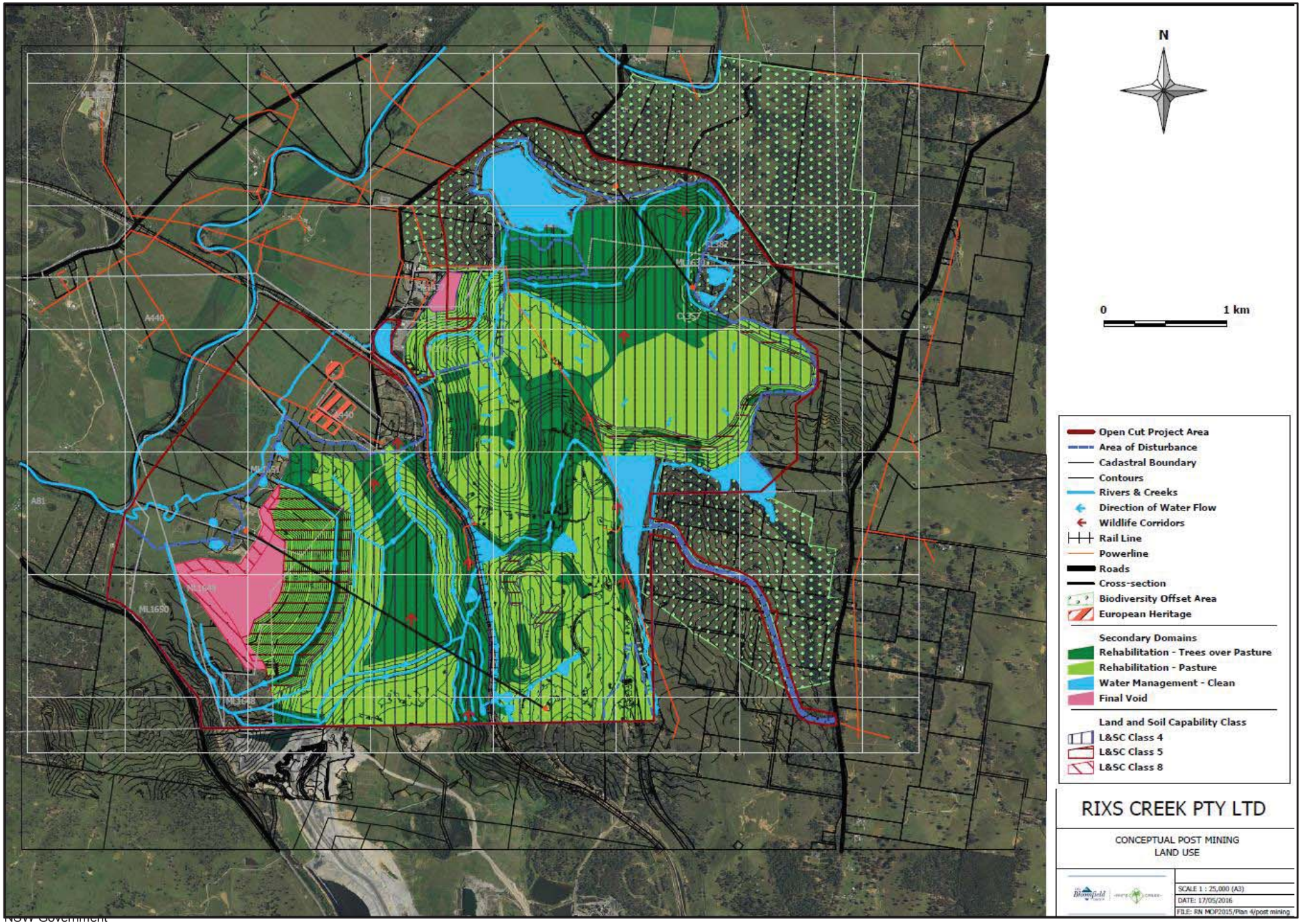
## APPENDIX 7: AREA FOR FURTHER ARCHAEOLOGICAL INVESTIGATION



## APPENDIX 8: CONCEPTUAL FINAL LANDFORM AND OFFSETS




N
1 km
Glennies Creek
Northern BOA
Reedy Creek
Bridgman BOA
Falbrook Pit
Southern BOA
Stoney Creek
CHPP
Camberwell Pit
Martin's Creek BOA
Martin's Creek
Blackwall Creek
Legend
Bull Oak Forests of the Central Hunter Valley
Cleared Land/Exotic Grassland
Derived Grassland
Narrow-leaved Ironbark-Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin
Planted Rehabilitation
Swamp Oak Forest - Central Hunter Valley, Sydney Basin
Project Approval Boundary
Lease Boundary
RIXS CREEK PTY LTD
PLAN OF BIODIVERSITY OFFSET AREAS AT RIXS CREEK NORTH
SCALE 1 : 30,000
DATE: 21/03/2016
FILE: integra 5 / boa


N
0
1 km
Open Cut Project Area
Area of Disturbance
Cadastral Boundary
Contours
Rivers & Creeks
Direction of Water Flow
Wildlife Corridors
Rail Line
Powerline
Roads
Cross-section
Biodiversity Offset Area
European Heritage
Secondary Domains
Rehabilitation - Trees over Pasture
Rehabilitation - Pasture
Water Management - Clean
Final Void
Land and Soil Capability Class
L&SC Class 4
L&SC Class 5
L&SC Class 8
RIXS CREEK PTY LTD
CONCEPTUAL POST MINING
LAND USE
SCALE 1 : 25,000 (A3)
DATE: 17/05/2016
FILE: RN MOP2015/Plan 4/post mining

## APPENDIX 9: STATEMENT OF COMMITMENTS

### Open Cut Project Statement of Commitments

| *Item* | *Mitigation Measure and Commitment* | *Implementation* |
|---|---|---|
| **General** | | |
| A1 | Bloomfield will comply with all conditional requirements in all approvals, licences and leases. | Throughout the life of the Project. |
| A2 | Bloomfield will conduct all operations in accordance with all relevant documentation including:<br>• Mining Operations Plan;<br>• environmental procedures; and<br>• safety management plans and/or site specific documentation. | Continuous as required |
| **Soils and Land Capability** | | |
| B1 | Strip material to the depths stated in **Table 6.3**. | Continuous during operations |
| B2 | Material will not be stripped in either extremely wet or dry conditions. | Continuous during operations |
| B3 | Stripped material will be used immediately (where practicable) to avoid the requirement for stockpiling. | Continuous during operations |
| B4 | Tracking over previously laid soil will be avoided to minimise compression effects. | Continuous during operations |
| B5 | The surface of soil stockpiles will be left in as a coarsely textured a condition as possible to promote rainfall infiltration and minimise erosion. | Continuous during operations |
| B6 | A maximum stockpile height of 3m will be maintained where practicable. | Continuous during operations |
| B7 | Stockpiles will be positioned away from drainage lines and/or upslope water diversion banks or similar controls will be installed. | Continuous during operations |
| B8 | Downslope sedimentation controls will be installed until the soil stockpiles are appropriately stabilised. | Continuous during operations |
| B9 | If long-term stockpiling is planned (i.e. greater than 3 months), stockpiles will be seeded and fertilised as soon as possible. | Continuous during operations |
| B10 | Prior to re-spreading stockpiled topsoil onto reshaped overburden, it will be decided if individual stockpiles require herbicide application and / or 'scalping' of weed species prior to topsoil spreading. | As required |
| B11 | An inventory of available soil will be maintained to ensure adequate topsoil materials are available for planned rehabilitation activities. | Continuous during operations |
| B12 | Topsoil will be spread to a nominal depth of 0.10m. | Continuous during operations |
| **Groundwater** | | |
| C1 | Standing water levels and groundwater quality will be assessed in accordance with **Table 7.3**, **Table 7.4** and **Table 7.5**. | Continuous during and after operations |
| C2 | All results will be reviewed and updated monitoring and remediation plans will be developed as required in consultation with DPI Water, DRG and OEH. | Continuous during and after operations |
| C3 | If required, contingency measures will be developed to manage any adverse impacts identified by monitoring that may indicate unanticipated effects in the groundwater system's response to mining in the proposed Pit. | Continuous during and after operations |
| C4 | If the impacts of mining on the alluvium and Foybrook Formation groundwater systems are demonstrated to be greater than anticipated, Bloomfield will:<br>• assess the significance of these impacts;<br>• investigate measures to minimise these impacts; and<br>• describe what measures will be implemented to reduce, minimise, mitigate or remediate these impacts in the future to the satisfaction of the Director–General. | Continuous during and after operations |
| C5 | Rehabilitation of groundwater dependent ecosystems will be incorporated as part of the Offset Strategy (refer Commitment E10). Trigger thresholds for the groundwater management response will be identified and included in the Rehabilitation Strategy. | Continuous during and after operations |

| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| C6 | The amount of water pumped into or out of the proposed Pit will be monitored to assess the actual volume of water stored within the pit as well as to assess the groundwater inflows and evaporation effects. | Continuous during operations |
| C7 | All new bores will be installed by suitably licensed drillers after obtaining the relevant license from DPI Water. | Continuous during and after operations |
| C8 | If monitoring results indicate the agreed standard or performance indicators are not being achieved, remedial actions will be implemented as appropriate. | Continuous during and after operations |
| C9 | An annual report will be prepared by a qualified hydrogeologist and include a statistical analysis of the results of the parameters measured, an interpretation of water quality and standing water level changes. | Annually during and after operations |
| C10 | All relevant monitoring and management activities for each year will be reported in the Annual Review. | Annually |
| C11 | ICO will adhere to the operating rules of the Hunter Regulated River Water Sharing Plan (HRRWSP) and the Hunter Unregulated River Water Sharing Plan (HURRWSP), thereby ensuring that the operation of the proposed extended Pit will protect Glennies Creek and its associated well connected alluvial water sources. | Continuous during and after operations |
| C12 | Ongoing verification of the EA predictions and contingency measures will be attained by development and adherence to a surface water and groundwater monitoring and management plan (SW&GWMP) that will be prepared, in consultation with DPI Water. Cut off thresholds that relate to potential mining induced depressurisation impacts in the connected Glennies Creek Alluvium will be established and documented in the SW&GWMP. | Continuous during and after operations |
| C13 | During excavation of the western periphery of the pit, geological mapping will be used to assess the potential southerly extension of a fault identified in the drift to Integra Underground and, if identified, its significance. If the fault is present in the pit, it will be investigated to assess whether it can provide a connective hydrological pathway between the pit and the Glennies Creek alluvium through re-activation of the fault. If appropriate, the hydrological significance of the fault will be assessed through incorporating its hydrological properties into the existing FEFLOW groundwater model. | Continuous during operations |
| **Surface Water** | | |
| D1 | Construct diversions to direct clean water away from areas of disturbance, to a standard suitable to contain an ARI 50 year rainfall event. | Prior to and progressively during operations. |
| D2 | Construct dirty water diversions to collect stormwater runoff from disturbed areas and deliver this water to sedimentation basins. | Prior to and progressively during operations. |
| D3 | Construct sedimentation basins to treat disturbed area runoff prior to discharge. | Prior to and progressively during operations. |
| D4 | Continue and extend existing Water Management System. | Continuous during operations |
| D5 | Continue the existing Surface Water Monitoring Program and extend to include:<br>• collection of grab samples along ephemeral watercourses such as Station Creek, during or immediately after surface runoff events;<br>• monthly water quality sampling of water storages on the site; and<br>• regular collection of data on water quality, storage water levels (including the Portal Sump) and pumping volumes between storages. | Continuous during operations |
| D6 | All pumped inflows to dirty water storages will cease when the storage water level reaches a defined Maximum Operating Level. | Continuous during operations |
| D7 | If the weather outlook indicates future significant rainfall, water will be pumped out of any dirty water storage (with the potential to discharge offsite) that is within 100 mm of spilling, provided that a suitable alternative storage location is available elsewhere on the site. | Continuous during operations |
| D8 | In the event of a dirty water discharge offsite, water samples will be collected at the overflow from the spilling storage and at the surface water sampling locations along Station Creek (for spills within the Station Creek catchment). For a spill from Possum Skin Dam, a sample will be collected at the discharge point and at the point of inflow to Glennies Creek. | Continuous during operations |
| D9 | If a spill occurs, an incident report will be prepared which documents the circumstances leading to the spill, the measures taken to prevent the spill, the estimated spill volume and duration, and the measured water quality results. Any spillage will be reported to EPA in accordance with the requirements of the site's Environment Protection Licence. | Continuous during operations |

| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| D10 | After construction of drainage works is complete, disturbed areas will be topsoiled and revegetated using a combination of pasture grasses and cover crops to stabilise the ground surface. | During and following operations as appropriate. |
| D11 | As part of the rehabilitation activities, above ground landforms will feature drainage provisions designed to effectively capture and divert surface water run-off to stable disposal areas prior to being discharged into surrounding watercourses. | During and following operations as appropriate. |
| **Biodiversity** | | |
| E1 | A Flora and Fauna Management Plan will be developed and include measurements for the minimisation or avoidance of impacts on native flora and fauna. This will include:<br>• pre-clearance surveys;<br>• groundcover clearance protocol;<br>• site management measures such a temporary exclusion fencing, maximum vehicle speeds and reducing the use of lighting to decrease impacts on nocturnal fauna; and<br>• limiting vehicular and personnel entry into retained vegetation through temporary exclusion fencing, locating access roads and tracks to avoid habitat and use of signage where necessary. | Prior to commencement of operations. |
| E2 | Fauna management procedures will include:<br>• monitoring of trees for fauna before and during clearing operations;<br>• avoiding trees with resident fauna as much as practicable;<br>• demarcation and avoidance of identified hollow bearing trees wherever possible;<br>• carefully sawing and placing intact hollow-bearing trunks and branches into adjacent areas of native vegetation;<br>• replacing habitat, such as nest boxes, where habitat trees are to be removed;<br>• maintaining existing maximum vehicle speed limits within the Open Cut Project Area to reduce fauna road fatalities;<br>• limiting vehicular and personnel entry into retained vegetation through temporary exclusion fencing; and<br>• directing lighting at operating equipment to reduce light spill onto nocturnal fauna species in adjacent vegetation. | Prior to and during operations. |
| E3 | Pre-clearance surveys will involve:<br>• diurnal searches for birds, nests and roosts including targeted searches for communal nests of the Grey-crowned Babbler;<br>• active searches for microbats, including checking under exfoliating bark; and<br>• nocturnal surveys, including stag watching of identified habitat trees, specifically focusing on observing use of trees by microbats. | Prior to clearing activities. |
| E4 | If threatened species nests or nestlings are observed within or close to the Open Cut Area then clearing will be postponed until the nestlings have hatched and fully-fledged. If operational constraints mean that this delay is not practicable then OEH will be consulted to determine if relocating the species is acceptable. | Prior to and during clearing operations. |
| E5 | A groundcover clearance protocol will be implemented and involve:<br>• removal of large woody debris using excavator grabs or raking if practicable;<br>• placing of intact large woody debris within adjacent areas of intact vegetation;<br>• stripping and stockpiling leaf litter and topsoil separately from deeper fill material; and<br>• reusing leaf litter and topsoil in rehabilitation works. | During clearing and soil stripping activities. |
| E6 | Fencing will be implemented to exclude grazing by cattle within retained patches of remnant vegetation to improve habitat value and floral diversity. | Prior to, continuous, during and following operations. |
| E7 | A weed and pest management plan will be prepared and implemented as part of management procedures in order to control feral animals and to limit the spread of weeds. | Prior to commencement of and during operations. |
| E8 | Revegetation of suitable components of the Open Cut Area will be undertaken using species representative of the Ironbark Woodland. | During rehabilitation and revegetation programs. |
| E9 | Subject to the receipt of all necessary approvals/permits, a creek rehabilitation program will be undertaken along Station and Glennies Creeks and will include: | Prior to, continuous during and following mining operations. |

| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| | • erosion control, rubbish removal, complementary planting, weed control, habitat enhancement and exclusion of grazing stock from riparian zones; and<br>• a monitoring and management program to identify and manage noxious weed infestations. | |
| E10 | Bloomfield will implement a biodiversity offset package in consultation with OEH to compensate for the potential clearing of 19ha of remnant native vegetation and will include:<br>1. Revegetation of suitable components of the Open Cut Area;<br>2. Conservation and rehabilitation of the degraded riparian and forest habitat along Glennies and Station Creeks; and<br>3. Identification and permanent conservation of a suitable woodland offset in the locality, a minimum of 30ha in size, in consultation with OEH.<br>• Pending the satisfaction of the 3 components above, Bloomfield will provide a bond or security to OEH which could be used in the event that Bloomfield does not identify a suitable offset in the specified timeframe. | In accordance with Project Approval requirements. |
| **Traffic and Transportation** | | |
| F1 | Adhere to RMS and Council restrictions on transport hours and safety/warning requirements for transportation of oversize loads on local roads. | Continuous during operations. |
| F2 | Minimise the duration of road closures on the southern end of Middle Falbrook Road during blasting. | When blasting within 500m of the open sections of Middle Falbrook Road. |
| F3 | Blasting within 500m of the Main Northern Railway line will be controlled under the existing procedure (PRO_2029 Blasting Adjacent to the Main Northern Railway Line) that has been developed in consultation with ARTC. | When blasting within 500m of the Main Northern Railway Line. |
| F4 | Provide notification on the morning prior to a blast of blast times to residents and others who request to be included on the blast notification list. | Prior to all blasts. |
| **Noise and Blasting** | | |
| G1 | Use noise mitigated mobile equipment to achieve the predicted noise emission levels at the identified receptors. | Continuous during operations |
| G2 | Restrict evening and night-time mining operations, where practicable, to areas that minimise emission levels outside of the Project boundary. | Continuous during operations |
| G3 | Undertake development activities such as tree clearing and soil stripping during day time operations only, where practicable. | Continuous during operations |
| G4 | Refine on-site noise mitigation measures and operating procedures, i.e. based upon monitoring results. | Continuous during operations |
| G5 | Initiate regular discussions with potentially affected residents to proactively identify noise-related issues of concern. | Continuous during operations |
| G6 | Consider acoustic mitigation at residences where exceedances of the project specific criteria are substantiated by monitoring. | Continuous during operations |
| G7 | Consider negotiated agreements with landowners where exceedances of the project specific criteria are substantiated by monitoring. | Continuous during operations |
| G8 | Continued implementation of the existing Explosive Hazard Management Plan to ensure the safety of employees and the public during explosives handling and blasting operations. | Continuous during operations |
| G9 | Restrict blasting to between the hours of 9.00am and 5.00pm Monday to Saturday, unless blasts outside this time are required for misfire re-blast, emergency or safety reasons. | Continuous during operations |
| G10 | Blast design and implementation to be undertaken by a suitably qualified blasting engineer and/or experienced shot-firer to ensure ANZEC Guidelines are met at all non-project related residences surrounding the Open Cut Project Area. | Continuous during operations |
| G11 | Refine blast mitigation measures and operating procedures as required, based on monitoring results. | Continuous during operations |
| G12 | Provide notification on the morning prior to a blast of blast times to local residents and others who request to be included on the notification list. | Continuous during operations |
| G13 | Use aggregate as the stemming material (not drill dust) in order to fully contain the explosives within the blasthole. | Continuous during operations |
| G14 | In the case of the Part Pit Extent (i.e. Bloomfield is unable to acquire Residence 153 or negotiate an agreement with the owner), blasting will not be undertaken within a 500m Exclusion Zone surrounding the 'Dulwich' residence and 200m from the property boundary until such time that it can demonstrate to the Secretary that blasting can be undertaken without an unacceptable risk to the resident, residents, their stock or residence. | Continuous during operations |

| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| **Air Quality** | | |
| H1 | Only the minimum area required for the operation of the Open Cut Project will be disturbed. Reshaping, topsoil emplacement and rehabilitation of overburden emplacement areas will occur as soon as practicable after the completion of overburden emplacement. | Continuous during operations. |
| H2 | Coal handling areas/stockpiles will be kept in a moist condition using water carts to minimise wind-blown and traffic-generated dust. | Continuous during operations. |
| H3 | Water sprays will be available for use on ROM coal stockpiles as required to reduce airborne dust. | Continuous during operations. |
| H4 | All roads and trafficked areas will be watered when required using water trucks. | Continuous during operations. |
| H5 | All haul roads would be clearly defined, especially where they cross overburden emplacement areas. | Continuous during operations. |
| H6 | Development of minor roads will be limited and the locations of these will be clearly defined. | Continuous during operations. |
| H7 | Minor roads used regularly for access etc will be watered. | Continuous during operations. |
| H8 | Obsolete roads will be ripped and re-vegetated. | Continuous during operations. |
| H9 | Access tracks used by topsoil stripping equipment during their loading and unloading cycle will be watered. | Continuous during operations. |
| H10 | Long term soil stockpiles (not used for over 3 months) will be revegetated. | Continuous during operations. |
| H11 | Dust aprons, dust extraction systems or water injection will be used during drilling operations. | Continuous during operations. |
| H12 | Adequate stemming will be used during blasting. | Continuous during operations. |
| H13 | A real-time $PM_{10}$ monitor (TEOM) will be implemented at the location agreed with the EPA in accordance Conditions of Consent for North Open Cut (PA 06_0073). This will be located in the vicinity of Residence 48. Should the 24-hour average concentrations of $PM_{10}$ approach the cumulative assessment criteria 150 $\mu g/m^3$, the Operations Manager (Open Cut) of the mine would review the current Open Cut operations and take remedial action to ensure the impact on the property is kept below the criteria. Should the criteria be reached, then all Open Cut operations will cease. | Continuous during operations. |
| H14 | A real-time $PM_{10}$ (TEOM) will be located in the vicinity of Residences 108 to 112. Should the 24-hour average concentrations of $PM_{10}$ approach the cumulative assessment criteria 150 $\mu g/m^3$, the Operations Manager (Open Cut) will review the current Open Cut operations and take remedial action to ensure the impact on the property is kept below the criteria. Should the criteria be reached, then all Open Cut operations will cease. | Continuous during operations. |
| H15 | Rather than establish an additional monitor at Residence 87, Bloomfield will negotiate with Ashton mine the joint use of data from the existing real-time $PM_{10}$ (TEOM) monitor at this location (see TEOM No. 3 on **Figure 12-3** for location**)**. | Continuous during operations. |
| H16 | Bloomfield will negotiate with Ashton Coal for the joint use of data from the other sites in the Ashton mine monitoring network (see **Figure 12-3** for locations). This will enable real-time monitoring of the impacts of the operations to the west of the Open Cut Project Area. | Continuous during operations. |
| H17 | The results from the dust monitoring program will be regularly reviewed to ensure the data being collected is meaningful. Where warranted, the program will be adjusted in consultation with EPA, with operating/management measures modified accordingly. | Continuous during operations. |
| H18 | During Years 1 -3 of the Part Pit Extent (i.e. in the case that Bloomfield is unable to acquire Residence 153 or negotiate an agreement with the owner), additional controls will be implemented and will include:<br>• re-positioning of the main waste and coal haul routes to reduce impacts on Dulwich;<br>• treatment of the main haul routes to achieve a level of dust control greater than 75%;<br>• development of an Environmental Management Plan that will address environmental controls to be implemented as part of pre-operational phase soil removal activities;<br>• control of emissions from drilling operations through the application of water; and<br>• increasing the moisture content of the ROM coal in-pit. | Prior to the commencement of operations and continuous during operations. |
| **Aboriginal Archaeology** | | |
| I1 | All actions and strategies for the management of cultural heritage values will be defined in an Aboriginal Cultural Heritage Management Plan developed in consultation with participating Aboriginal groups. | Prior to the commencement of operations. |

| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| I2 | Prior to any soil disturbing activities, archaeological surveys will be conducted in those areas within the Open Cut Area to be impacted but which have not been surveyed to date. These areas include the Dulwich Property. | Prior to commencement of operations within potentially affected area not previously surveyed. |
| I3 | Sites which will not be impacted by open cut mining will be identified on mine plans with the requirement not to disturb the ground in these areas. If there is risk of impact, temporary fencing will be erected and restrictions placed on access. | Prior to commencement of operations. |
| I4 | Sites which may be directly or indirectly impacted by activities associated with mining will be identified on mine plans with development avoiding impact to these sites. Where development associated activities occur in close proximity to sites, temporary fencing will be constructed. Where direct impact is unavoidable the strategies outlined in I5 will be followed. | Prior to commencement of operations. |
| I5 | Sites which will be directly impacted by open cut mining will be subject to:<br>• collection and recording of surface artefacts and storage in accordance with the requirements of Aboriginal Groups; and<br>• targetted subsurface salvage excavation programs as determined in consultation with the Aboriginal stakeholders. | Prior to disturbance. |
| I6 | A 'Keeping Place' will be provided for the secure storage of cultural material collected. The Keeping Place will be determined and agreed in consultation with the Aboriginal Groups during the formulation of the Aboriginal Cultural Heritage Management Plan. The Keeping Place will be retained in perpetuity subject to the recommendations of the Aboriginal Groups with regard to the long-term positioning of the sites. | Prior to commencement of operations. |
| **European Heritage** | | |
| J1 | Work Method Statements for archaeological investigation will be prepared for Zone 1 and, dependant on the acquisition of Dulwich, for Zone 2 as identified in **Figure 14-2**. | Prior to commencement of operations within Zone 1 and/or 2. |
| J2 | Project planning and timing will take into consideration any heritage management requirements. | Continuous during operations. |
| J3 | If Dulwich is acquired, a WMS for heritage management and archaeological investigation will be prepared specifically for Zone 3 (**Figure 14-2**);<br>or<br>If Dulwich is not acquired, a Conservation Management Plan will be prepared to minimise and monitor project impacts on Dulwich. | Prior to commencement of mine operations in Zone 3.<br><br>Prior to commencement of activities which may impact on Zone 3. |
| J4 | A forensic anthropologist will be engaged to prepare a detailed management plan for the excavation of the grave of James Glennie. | Prior to commencement of mine operations within 200m of European Heritage Zone 2. |
| J5 | Should any other burial sites be exposed during surface scraping operations within the Mine Area, work will cease and appropriate personnel and authorities informed. If the remains are identified as historical in nature, management for skeletal remains will be undertaken by appropriate personnel and a report issued to the Coroner. | Continuous during operations. |
| J6 | In the case of an intersection between European and Indigenous management strategies, or any other environmental management strategy, Bloomfield will co-ordinate appropriate consultation between the parties in order to develop and agreement on how to proceed. | Continuous during operations |
| J7 | Copies of final excavation reports will be issued to local libraries, historical societies, the NSW Heritage Branch Library and State Library of NSW. | On completion of excavation reports. |
| **Visual** | | |
| K1 | To the extent practicable, reduce the potential visual impact through the construction of visual amenity bunds/screens or soil stockpiles to temporarily screen views towards the proposed Open Cut Area. | Continuous during operations |
| K2 | To reduce lighting impacts to sensitive receptors, work programs will be arranged, where possible, so that some activities that may be visible from surrounding view locations, occur within daylight hours of operation. | Continuous during operations |
| K3 | Floodlights within the Open Cut Extension Area will be positioned to minimise the potential for lighting to impact sensitive receptors. | Continuous during operations |
| K4 | Where possible, haulage roads and overburden tipping areas will be configured to minimise the potential impact associated with headlights and flashing lights associated with vehicles travelling across the Open Cut Project Area. | Continuous during operations |

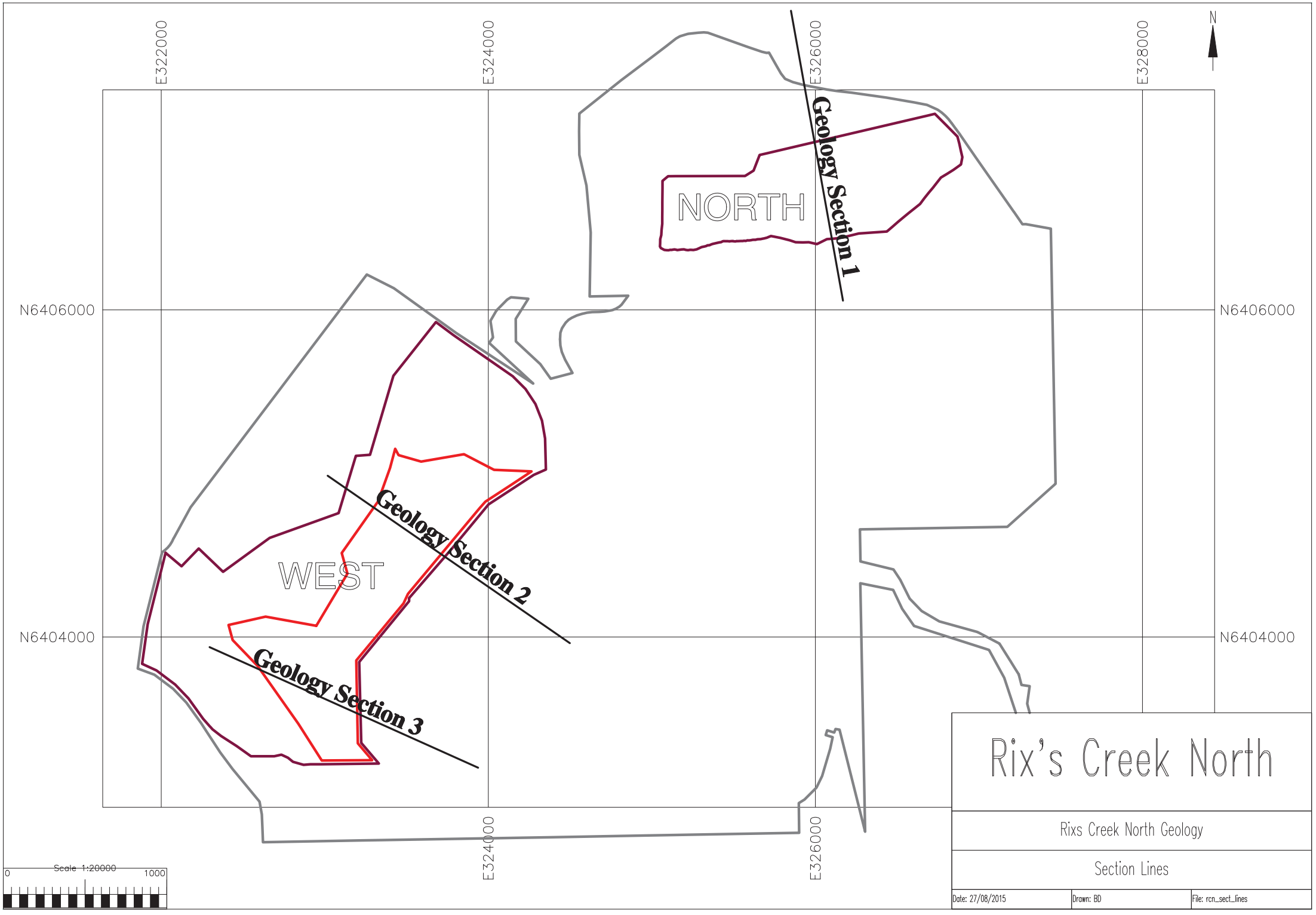
| Item | Mitigation Measure and Commitment | Implementation |
|---|---|---|
| K5 | Bloomfield will consider any reasonable request by a residential receptor for assistance to establish a visual screen within their property through planting and/or landscape works, where such works would effectively reduce the visual impact of activities associated with the proposed Open Cut Extension. | Continuous during operations |
| **Rehabilitation** | | |
| L1 | Suitable species of vegetation will be planted and established to achieve the nominated post-mine land uses. The rehabilitation plan will clarify the project rehabilitation goals and outcomes and will confirm the monitoring and management proposals. | Continuous during operations |
| L2 | The majority of the post-mine landform will be revegetated with a combination of native and improved pasture species with scattered tree lots and tree corridors linking the surrounding rehabilitated areas, proposed tree planting corridors and surrounding existing native vegetation. | Progressively during operations |
| L3 | The final landform will be stable and not subject to slumping or excessive erosion which would result in the agreed post mining landform not being achieved. | Prior to completion of Project activities and lease relinquishment |
| L4 | The outside facing slopes of the post-mine landform will generally be a maximum of 10° where they are above the natural land surface. The internal facing slopes and those below natural surface reporting to the final void (including the low wall areas) will generally be a maximum of 18°. | Progressively during operations |

Appendix C

# Geological Cross Sections

# Appendix C Geological Cross Sections

*Insert in PDF version*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NORTH
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Geology Section 3
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Rix's Creek North
Rixs Creek North Geology
Section Lines
Date: 27/08/2015
Drawn: BD
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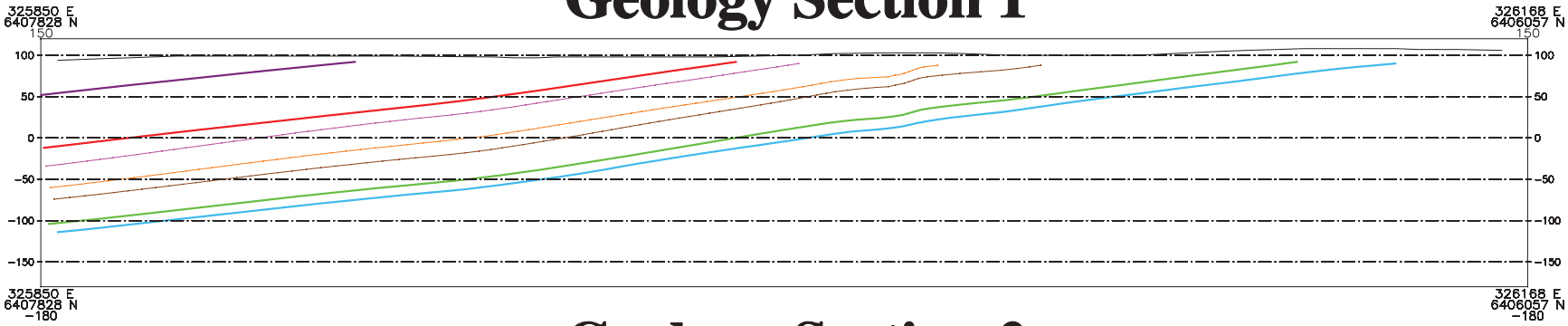
# Geology Section 1

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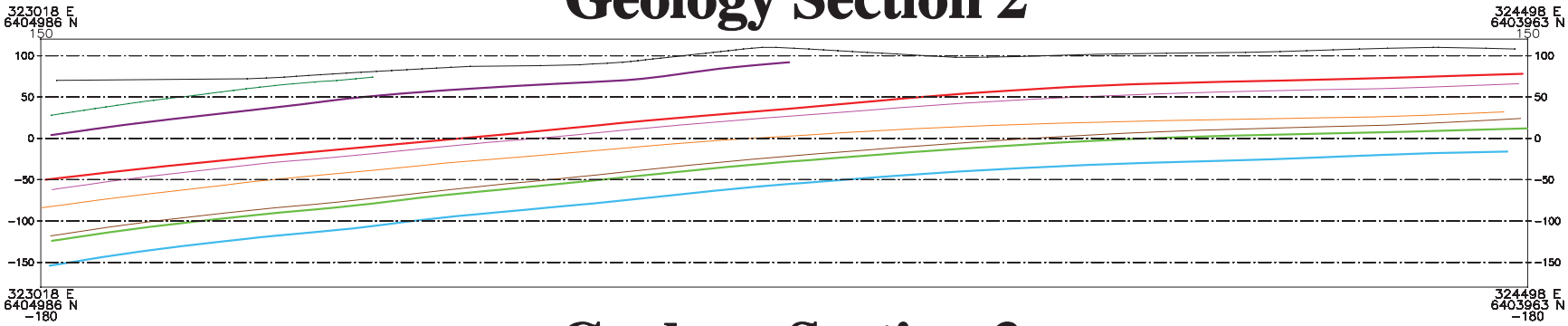
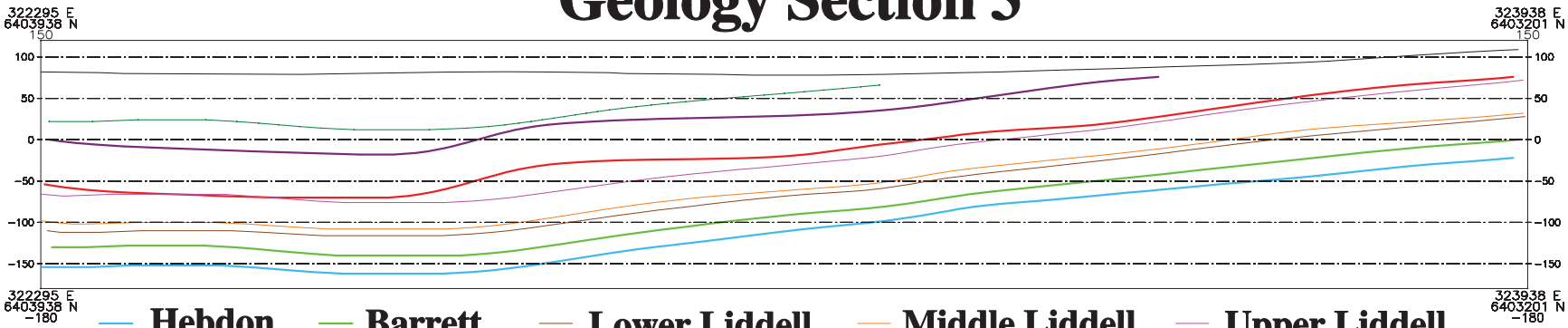



# Geology Section 3




Hebdon — Barrett — Lower Liddell — Middle Liddell — Upper Liddell

Arties — Pikes Gully — Lemington

Scale 1:6000

0 400

# Rix's Creek North

Rixs Creek North Geology

Sections

| Date: 27/08/2015 | Drawn: BD | File: rcn_sections |
|---|---|---|

Appendix D

# Environmental Risk Assessment

# Appendix D Environmental Risk Assessment

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| Exploration | Survey of the drill locations | Damage to vegetation | ❑ Induction System<br>❑ Experienced people<br>❑ Use of existing tracks where possible<br>❑ Escort for contractors<br>❑ Contractor Management Plan | 5 | d | 24 | | | | |
| | | Disturbance of Aboriginal heritage | ❑ Inductions System<br>❑ Surveys completed to identify sites and assess significance<br>❑ Aboriginal Groups have been consulted<br>❑ All known artefacts have been fenced off<br>❑ The sites will be salvaged with the Aboriginal Community prior to the area being disturbed by mining<br>❑ Heritage Management Plan | 3 | d | 17 | | | | |
| | | Disturbance of European heritage | ❑ Induction System<br>❑ Surveys completed to identify sites and assess significance<br>❑ Heritage items have been identified | 3 | d | 17 | | | | |
| | | Wheel track erosion | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams where required<br>❑ Use existing tracks where possible | 4 | e | 23 | | | | |
| | | Fire hazard | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability | 5 | e | 25 | ❑ | 5 | e | 25 |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Air Quality and GHG Management Plan | | | | | | | |
| | | Potential for spills of hydrocarbons from vehicle accident | ❑ Mine Transport Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | Clearing of drill lines, site establishment and digging pits | Injury to or loss of threatened flora and fauna (note work area mostly cleared) | ❑ Mine Transport Management Plan<br>❑ Induction System<br>❑ Daylight operations<br>❑ Permit to Disturb | 4 | d | 21 | | | | |
| | | Sediment leaving the site | ❑ Use existing tracks where possible<br>❑ Water Management Plan<br>❑ Scheduled Environmental Inspections<br>❑ EPL<br>❑ Induction System<br>❑ Supervisor Audits/ Inspections<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ External Audits (including Government)<br>❑ Use existing tracks where possible | 4 | d | 21 | | 4 | d | 21 |
| | | Disturbance of Aboriginal heritage | ❑ Inductions System<br>❑ Surveys completed to identify sites and assess significance<br>❑ Aboriginal Groups have been consulted<br>❑ All known artefacts have been fenced off<br>❑ The sites will be salvaged with the Aboriginal Community prior to the area being disturbed by mining | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Aboriginal Heritage Management System<br>❑ Land Disturbance Management Procedure<br>❑ Permit to Disturb | | | | | | | |
| | | Disturbance of European heritage | ❑ Induction System<br>❑ Surveys completed to identify sites and assess significance<br>❑ Heritage items have been identified<br>❑ Land Disturbance Management Procedure<br>❑ Permit to Disturb | 3 | d | 17 | | 5 | e | 25 |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan | 4 | e | 23 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | c | 18 | | 4 | c | 18 |
| | | Fire hazard | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Hydraulic hose oil spill | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting | 4 | d | 21 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | | | | | | | |
| | Establish drill rig and drilling (including demobilisation) | Erosion with sediment leaving site (wheel tracks) | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Use existing tracks where possible | 5 | d | 24 | | 5 | d | 25 |
| | | Hydrocarbon spill | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | | Potential to introduce weeds | ❑ Vehicle wash at entrance<br>❑ Induction System<br>❑ Scheduled Environmental Inspections<br>❑ Weed Control Contractor<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | | | |
| | | Injury to or loss of threatened flora and fauna | ❑ 1. Mine Transport Management Plan<br>❑ 2. Employee Inductions<br>❑ 3. Daylight operations<br>❑ Ground Disturbance permit | 5 | e | 25 | | | | |
| | | Spillage of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response | 4 | d | 21 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | | | | | | |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | c | 18 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Contractor Management Plan | 4 | c | 18 | ❑ Review Airborne Dust Management Plan | 4 | c | 18 |
| | | Fire hazard | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Waste management e.g. oily rags, empty drums | ❑ Contractor Management Plan<br>❑ Induction System<br>❑ Onsite waste bins<br>❑ Supervisor Audits/ Inspections<br>❑ Waste Management System | 5 | d | 24 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | Traffic movement e.g. water cart, geologist, driller, logger | Potential to introduce weeds | ❑ Vehicle wash at entrance<br>❑ Induction System<br>❑ Scheduled Environmental Inspections<br>❑ Weed Control Contractor<br>❑ Supervisor Audits/ Inspections | 5 | d | 24 | | | | |
| | | Wheel track erosion | ❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Use existing tracks where possible | 4 | d | 21 | | | | |
| | | Fire hazard | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan | 4 | d | 21 | | 4 | d | 21 |
| | | Potential for spills of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System | 4 | e | 23 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | | | | | | | |
| | | Loss of radiation source | ❑ Contractor Management Plan<br>❑ Induction System<br>❑ Use of NATA approved contractor | 4 | e | 23 | | | | |
| | Open holes and pits after drilling | Injury to or loss of threatened flora and fauna | ❑ Fill in pits and cap holes<br>❑ DPI guidelines<br>❑ Mining Lease Conditions | 5 | e | 25 | | | | |
| | | Aquifer contamination | ❑ Dry area<br>❑ Capping holes<br>❑ Deep hard rock aquifer<br>❑ No alluvial aquifers involved<br>❑ Poor water quality | 5 | e | 25 | | | | |
| | Rehabilitation | Potential to introduce weeds | ❑ Vehicle wash at entrance<br>❑ Employee inductions<br>❑ Scheduled Environmental Inspections<br>❑ Weed Control Contractors | 4 | d | 21 | | | | |
| | | Erosion with sediment leaving site | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Use existing tracks where possible | 5 | d | 24 | | | | |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | e | 23 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan | 5 | e | 25 | ❑ | 5 | e | 25 |
| | | Hydrocarbon spillage | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ Spill kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management System<br>❑ Incident Notification and Reporting Procedure | 5 | d | 24 | | | | |
| | | Fire hazard | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| Pre-stripping | Clearing of vegetation | Injury to or loss of threatened flora and fauna | ❑ Ground Disturbance Permit<br>❑ Assessment has been made on the presence / absence of threatened species | 3 | d | 17 | | | | |
| | | Disturbance of Aboriginal heritage sites | ❑ Inductions System<br>❑ Surveys completed to identify sites and assess significance<br>❑ Aboriginal Groups have been consulted<br>❑ All known artefacts have been fenced off<br>❑ The sites will be salvaged with the Aboriginal Community prior to the area being disturbed by mining<br>❑ Aboriginal Heritage Management System<br>❑ Land Disturbance Management Procedure<br>❑ Permit to Disturb | 3 | d | 17 | | | | |
| | | Disturbance of European heritage sites | ❑ Induction System<br>❑ Surveys completed to identify sites and | 5 | e | 25 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | assess significance<br>❑ No heritage items have been identified in disturbance area | | | | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Airborne Dust Management Plan<br>❑ Land Disturbance Management Procedures<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | e | 23 | | | | |
| | | Erosion with sediment leaving site | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Use existing tracks where possible<br>❑ Mine Inspection System<br>❑ Internal drainage | 4 | d | 21 | | 4 | d | 21 |
| | | Potential to introduce weeds | ❑ Weed Control Contractor<br>❑ Scheduled Environmental Inspections<br>❑ Vehicle wash at entrance<br>❑ Induction System<br>❑ Consultation Representation and Participation Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Contractor Management Plan | 5 | d | 24 | | | | |
| | | Disposal of cleared timber | ❑ Land Management Plan (Rehab | 4 | e | 23 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | (potential loss of habitat) | Management)<br>❑ Ground Disturbance Permit | | | | | | | |
| | | Spillage of hydrocarbon | ❑ Engineering (Maintenance) Management System<br>❑ On-site On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management System<br>❑ Incident Notification and Reporting Procedure<br>❑ Mobile equipment<br>❑ Training and Competency Management System<br>❑ Environmental Incident Emergency Response Management System | 4 | d | 21 | | | | |
| | Stripping of Top-dressing Material | Loss of top dressing material | ❑ Mining Operations Plan includes topsoil suitability study<br>❑ Worker awareness and supervision<br>❑ Consultation Representation and Participation Management System<br>❑ Scheduled Environmental Inspections<br>❑ Training and Competency Management System | 4 | d | 21 | | 4 | d | 21 |
| | | Quality of top dressing material reduced through damage to soil structure | ❑ Direct placement wherever possible<br>❑ Top dressing material stockpile management<br>❑ Mining Operations Plan<br>❑ Worker awareness and supervision<br>❑ Consultation Representation and Participation Management System<br>❑ Scheduled Environmental Inspections<br>❑ Training and Competency Management System | 4 | e | 23 | | | | |
| | Overburden drilling | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol | 3 | c | 13 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | | | | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Dust Extraction Systems<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections | 3 | c | 13 | ❑ Review Airborne Dust Management Plan | 3 | c | 13 |
| | | Spillage of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | Blasting | Noise/ overpressure | ❑ Explosives Management Plan<br>❑ Blast Fume Management Strategy<br>❑ 2. Competent, experienced employees<br>❑ 3. Drill and Blast Supervisor<br>❑ 4. Access to external specialist input<br>❑ Induction System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Air Quality Operational procedures | 3 | c | 13 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ EPL | | | | | | | |
| | | Vibration | ❑ Explosives Management Plan<br>❑ Blast Fume Management Strategy<br>❑ Competent, experienced employees<br>❑ Drill and Blast Supervisor<br>❑ Access to external specialist input<br>❑ Supervisor Audits/ Inspections<br>❑ Complaints Protocol<br>❑ Air Quality Operational Procedures<br>❑ EPL | 3 | c | 13 | | | | |
| | | Dust/ Fume | ❑ Explosives Management Plan<br>❑ Blast Fume Management Strategy<br>❑ Competent/ experienced workers<br>❑ Drill and Blast Supervisor<br>❑ Access to external specialist input<br>❑ Supervisor Audits/ Inspections<br>❑ Complaints Protocol<br>❑ Air Quality Operational Procedures<br>❑ Airborne Dust Management Plan<br>❑ EPL | 3 | c | 13 | ❑ Review Airborne Dust Management Plan | 3 | c | 13 |
| | Excavation of overburden (using the excavator) | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | c | 13 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections | 3 | c | 13 | ❑ Review Airborne Dust Management Plan | 3 | c | 13 |
| | | Visual | ❑ Progressive/ Temporary Rehabilitation | 4 | d | 21 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Mine Planning<br>❑ Visual Bund and screens<br>❑ Health and Safety Overview Document<br>❑ Community Consultation<br>❑ Complaints Protocol<br>❑ Supervisor Inspection/ Audits | | | | | | | |
| | | Spillage of hydocarbon | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | | Waste Management (during service days) | ❑ Environmental Protection Licence<br>❑ Onsite Waste bins<br>❑ Use of Licensed Contractor for waste removal<br>❑ Contractor Management Plan<br>❑ Induction System<br>❑ Supervisor Audits/ Inspections<br>❑ Engineering (Maintenance) Management System | 5 | d | 24 | | | | |
| | | Major shut downs (contractor) | ❑ Environmental Protection Licence<br>❑ Onsite Waste bins<br>❑ Use of Licensed Contractor for waste removal<br>❑ Contractor Management Plan<br>❑ Induction System<br>❑ Supervisor Audits/ Inspections<br>❑ Engineering (Maintenance) Management System | 5 | d | 24 | | | | |
| | Mining of coal | Noise | ❑ Daylight activity<br>❑ Induction System | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | | | | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure | 4 | d | 21 | | 4 | d | 21 |
| | | Spillage of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | Hauling with rear dump trucks | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | | | | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure | 4 | d | 21 | | 4 | d | 21 |
| | | Spillage of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | Overburden dumping area (includes tipping with trucks) | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure | 4 | d | 21 | | 4 | d | 21 |
| | | Noise | ❑ Daylight activity | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | | | | | | | |
| | | Lighting of the dumps being directed into the residents houses resulting in visual impact issues | ❑ Direction of lights are changed so that they are not pointed towards the residents<br>❑ Opportunity to enable dumping in an alternative dump or location on the dump after dark<br>❑ Visual Bund and screens<br>❑ Health and Safety Overview Document<br>❑ Community Consultation<br>❑ Complaints Protocol<br>❑ Supervisor Inspection/ Audits | 4 | d | 21 | | | | |
| | Mining of coal | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure | 4 | d | 21 | | 4 | d | 21 |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | Spillage of hydrocarbons | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | | Taking coal (sponcom) | ❑ Burial of oxidised coal material<br>❑ Supervisor Audits/ Inspections<br>❑ Mining Operation Plan<br>❑ Mine Inspection Management System<br>❑ Trained and Competent Operators<br>❑ Consultation Representation and Participation Management System | 5 | e | 25 | | | | |
| | Hauling with rear dump trucks | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Land Disturbance Management Procedure | | | | | | | |
| | | Visual | ❑ Progressive Rehabilitation<br>❑ Mine Planning<br>❑ Visual Bund and screens<br>❑ Health and Safety Overview Document<br>❑ Community Consultation<br>❑ Complaints Protocol<br>❑ Supervisor Inspection/ Audits | 3 | d | 17 | | | | |
| | | Spillage of Hydrocarbons when transferring from Service Truck | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | In pit water management | Broken leaking pipes (on surface) | ❑ Engineering (Maintenance) Management System<br>❑ Scheduled Environmental Inspections<br>❑ Inspection Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Engineering principles applied to design<br>❑ Incident Reporting Procedure<br>❑ Dedicated experienced person<br>❑ Water Management Plan | 4 | d | 21 | | 4 | d | 21 |
| | | Failure of clean water segregation | ❑ Scheduled Environmental Inspections<br>❑ Mine Inspection Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Engineering principles applied to design<br>❑ Incidents Reporting Procedure<br>❑ Nominated Experienced person | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Water Management Plan | | | | | | | |
| | Bulk fuel storage | Bulk fuel storage leak | ❑ Supervisor Audits/ Inspections<br>❑ Scheduled Environmental Inspections<br>❑ Engineering (Maintenance) Management System<br>❑ Dangerous Goods Licence<br>❑ Emergency Management System | 3 | d | 17 | | | | |
| | | Spillage from the fuel fill point during filling of equipment | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Toolbox Talks<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Emergency Management System | 4 | d | 21 | | | | |
| | Sewerage treatment plant | Contamination of water ways | ❑ Engineering (Maintenance) Management System<br>❑ Environmental Incident Emergency Response Management System<br>❑ Scheduled Environmental Inspections<br>❑ Council Approved System | 4 | d | 21 | | | | |
| Rehabilitation | Reshaping (Overburden dumps) | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure<br>❑ Training and Competence Management System<br>❑ Toolbox Talks | 4 | d | 21 | | 4 | d | 21 |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Toolbox Talks | | | | | | | |
| | | Spillage of Hydrocarbons when transferring from Service Truck | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | | Erosion and sediment control | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government) | 4 | c | 18 | | | | |
| | Top dressing material spreading and contour ripping | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management | 4 | d | 21 | | 4 | d | 21 |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | Procedure<br>❑ Training and Competence Management System<br>❑ Toolbox Talks | | | | | | | |
| | | Noise | ❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Spillage of Hydrocarbons when transferring from Service Truck | ❑ Engineering (Maintenance) Management System<br>❑ Emergency Spill Response<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation Representation and Participation Management Systems<br>❑ Incident Notification and Reporting Procedure<br>❑ Supervisor Audits/ Inspections<br>❑ Mobile equipment<br>❑ Contractor Management Plan<br>❑ Bushfire Management Plan<br>❑ SDS Database | 4 | d | 21 | | | | |
| | | Erosion and sediment control | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government) | 4 | c | 18 | | | | |
| | | Lime and gypsum dust | ❑ Control moisture levels of lime | 5 | d | 24 | | | | |
| | | Biosolids / runoff (including | ❑ Use of DECC guidelines | 3 | d | 17 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | odour) | ❑ Bunded storage areas<br>❑ Use of low odour material<br>❑ Mixing with topsoil prior to spreading | | | | | | | |
| | Revegetation | Erosion with sediment leaving site | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government) | 4 | d | 21 | | | | |
| | | Potential to introduce weeds | ❑ Buy certified seed from reputable supplier<br>❑ Vehicle wash at entrance<br>❑ Induction Systems<br>❑ Scheduled Environmental Inspections<br>❑ Weed Control Contractor | 4 | d | 21 | | | | |
| | | Failure of seed to germinate and establishment | ❑ Buy certified seed from reputable supplier<br>❑ Contractor Management Plan | 5 | d | 24 | | | | |
| | | Bush fire hazard burning revegetated areas | ❑ Induction System<br>❑ Hazard reduction program<br>❑ Training and Competency Management System<br>❑ Bushfire Management Plan<br>❑ Onsite fire fighting capabilities<br>❑ Smoking Onsite Management System<br>❑ Contractor Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | d | 21 | | 4 | d | 21 |
| | | Sponcom in rehabilitated areas (odour) | ❑ Burial of oxidised coal material<br>❑ Supervisor Audits/ Inspections<br>❑ Mining Operation Plan<br>❑ Mine Inspection Management System<br>❑ Trained and Competent Operators<br>❑ Consultation Representation and Participation Management System | 5 | e | 25 | | | | |
| Maintenance / Open Cut Workshop | Waste Management | General Refuse (including oily rags) | ❑ Licensed Recycling Contractor<br>❑ Contractor Management Plan<br>❑ Induction System | 5 | d | 24 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Environmental Protection Licence<br>❑ Toolbox Talks<br>❑ Scheduled Environmental Inspections<br>❑ Waste Management System | | | | | | | |
| | | Scrap steel | ❑ Licensed Recycling Contractor<br>❑ Contractor Management Plan<br>❑ Induction System<br>❑ Environmental Protection Licence<br>❑ Toolbox Talks<br>❑ Scheduled Environmental Inspections<br>❑ Waste Management System | 5 | e | 25 | | | | |
| | | Contaminated Wastes | ❑ Licensed Recycling Contractor<br>❑ Contractor Management Plan<br>❑ Induction System<br>❑ Environmental Protection Licence<br>❑ Incident Reporting Procedure<br>❑ Toolbox Talks<br>❑ Scheduled Environmental Inspections<br>❑ Waste Management System | 5 | d | 24 | | | | |
| | | Oil spills on ground | ❑ On-site Spill Kits<br>❑ Induction System<br>❑ Consultation, Representation and Participation Management System Systems<br>❑ Environmental Incident Emergency Response Management System<br>❑ Incident Reporting Procedure<br>❑ Toolbox Talks<br>❑ Scheduled Environmental Inspections<br>❑ Waste Management System | 5 | d | 24 | | | | |
| | | Tyres | ❑ Disposed of in the pit at depth and record location | 5 | d | 24 | | | | |
| | Bulk fuel storage area<br>(fuel farm) | Spills and leaks | ❑ AS1940 approved area<br>❑ Work Cover notified<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Toolbox Talks<br>❑ Environmental Incident Emergency Response Management System<br>❑ Incident Reporting Procedure<br>❑ Engineering (Maintenance) Management | 4 | d | 21 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | System | | | | | | | |
| | | Damage to above ground pipes (fuel and oil) | ❑ AS1940 approved area<br>❑ Work Cover notified<br>❑ Incident Reporting Procedure<br>❑ Environmental Incident Emergency Response Management System<br>❑ Scheduled Environmental Inspections<br>❑ Toolbox Talks<br>❑ Engineering (Maintenance) Management System | 4 | d | 21 | | | | |
| | | Bunded area filling with storm water reducing containment and resulting in bund breach during major spill | ❑ AS1940 approved area<br>❑ Work Cover notified<br>❑ Bilge Pump system in place in bunded areas<br>❑ Incident Reporting Procedure<br>❑ Environmental Incident Emergency Response Management System<br>❑ Scheduled Environmental Inspections<br>❑ Toolbox Talks<br>❑ Engineering (Maintenance) Management System<br>❑ Oil water separator | 5 | d | 24 | | | | |
| | Transformers | Release of PCB's in transformer oil | ❑ PCB Disposal Procedure<br>❑ Transformers in bunded areas | 5 | e | 25 | ❑ Check site for potential PCB's on site | 5 | e | 25 |
| | | Oil spills | ❑ Recycled<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Transformers in bunded areas<br>❑ Environmental Incident Emergency Response Management System<br>❑ Scheduled Environmental Inspections<br>❑ Engineering (Maintenance) Management System | 5 | d | 24 | | | | |
| | Parts washer | Failure and release degreasers/ contaminants to the environment | ❑ Serviced by licensed contractor<br>❑ Contractor Management Plan<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Environmental Incident Emergency Response Management System | 5 | d | 24 | | | | |
| | Oil water separator | Failure and release of oil | ❑ Waste oil tank with overflow monitor | 5 | d | 24 | | 5 | d | 24 |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Scheduled Environmental Inspections<br>❑ Serviced by licensed contractor<br>❑ Contractor Management Plan<br>❑ On-site Spill Kits<br>❑ Induction System<br>❑ Environmental Incident Emergency Response Management System | | | | | | | |
| | Workshop | Noise | ❑ Isolated location<br>❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections | 4 | e | 23 | | | | |
| | Field Maintenance<br>1. Scheduled shut downs<br>2. breakdowns/ running repairs | Noise | ❑ Where ever possible maintenance conducted off site<br>❑ Daylight activity<br>❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | e | 20 | | | | |
| | | Contaminated Waste Material | ❑ Licensed Waste Contractor<br>❑ Contractor Management Plan<br>❑ Induction System<br>❑ EPL<br>❑ Toolbox Talks<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections | 5 | d | 24 | | | | |
| | | Spills and leaks | ❑ AS1940 approved area<br>❑ WorkCover notified<br>❑ On-site Spill Kits<br>❑ Induction System | 5 | d | 24 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Toolbox Talks<br>❑ Environmental Incident Emergency Response Management System<br>❑ Incident Notification and Reporting Procedure<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections | | | | | | | |
| | | Transfer of diesel and lubes around site in service truck (accident - rollover) | ❑ Mine Transport Management Plan<br>❑ Induction System<br>❑ Purpose designed service truck<br>❑ Compartmentalised tank<br>❑ Competency Standard for service truck<br>❑ Environmental Incident Emergency Response Management System<br>❑ Bushfire Management Plan<br>❑ Incident Notification and Reporting Procedure | 4 | d | 21 | | | | |
| Supply | Transfer of fuel from road transport | Spillage of fuel during delivery of bulk fuel and oil | ❑ Fuel & Bulk Oil Delivery Procedures<br>❑ Contractor Management Plan<br>❑ Contained delivery point<br>❑ Use of competent delivery contractor<br>❑ System audits<br>❑ Incident Notification and Reporting Procedure<br>❑ Scheduled Environmental Inspections<br>❑ Environmental Incident Emergency Response Management System | 3 | d | 17 | | | | |
| | | Damage to transport vehicle on site at refuelling point (e.g. Light vehicle running into fuel truck) | ❑ Engineering separation from earthwork equipment<br>❑ Delivery trucks have segregated tanks<br>❑ Environmental Incident Emergency Response Management System<br>❑ Tanks located away from traffic areas | 4 | e | 23 | | | | |
| | | Release of fuel to the environment as a result of a vehicle involved in accident on site | ❑ Mine Transport Management Plan<br>❑ Fuel & Bulk Oil Delivery Procedures<br>❑ Contractor Management Plan<br>❑ Toolbox Talks<br>❑ Training and Competency Management System | 4 | d | 21 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Emergency Management System<br>❑ Environmental Incident Emergency Response Management System | | | | | | | |
| | | Fuel transfer truck driving away from fill point without disconnecting fuel supply hose | ❑ Contractor has cut-off system whereby they cannot start the vehicle if a hose is still connected<br>❑ Use of competent contractor<br>❑ Contractor Management Plan<br>❑ Bunded Area (AS1940)<br>❑ Environmental Incident Emergency Response Management System<br>❑ Fuel & Bulk Oil Delivery Procedures | 5 | e | 25 | | | | |
| CHPP and Train Loader | ROM Stockpile | Noise | ❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure<br>❑ Training and Competence Management System<br>❑ Toolbox Talks | 4 | d | 21 | | 4 | d | 21 |
| | | Erosion and sediment control | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence | 4 | c | 18 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government)<br>❑ Use existing tracks where possible | | | | | | | |
| | CHPP | Noise | ❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure<br>❑ Training and Competence Management System<br>❑ Toolbox Talks | 4 | d | 21 | | 4 | d | 21 |
| | | Erosion and sediment control | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government)<br>❑ Use existing tracks where possible | 4 | c | 18 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | Clean Coal Stockpile/ Train Loading | Noise | ❑ Induction System<br>❑ Engineering (Maintenance) Management System<br>❑ Complaints Protocol<br>❑ Contractor Management Plan<br>❑ Noise Management Plan<br>❑ Supervisor Audits/ Inspections<br>❑ Altered operating conditions at set times (e.g. night time) to reduce noise | 3 | d | 17 | | | | |
| | | Dust | ❑ Induction System<br>❑ Air Quality Operational Procedures<br>❑ Water Cart availability<br>❑ Complaints Protocol<br>❑ Mindful of weather (wind) conditions<br>❑ Airborne Dust Management Plan<br>❑ Engineering (Maintenance) Management System<br>❑ Supervisor Audits/ Inspections<br>❑ Land Disturbance Management Procedure<br>❑ Training and Competence Management System<br>❑ Toolbox Talks | 4 | d | 21 | | 4 | d | 21 |
| | | Erosion and sediment control | ❑ Induction System<br>❑ Water Management Plan<br>❑ Environmental Inspections<br>❑ Supervisor Audits/ Inspections<br>❑ Environmental Protection Licence<br>❑ Contractor Management Plan<br>❑ Sediment Control Dams<br>❑ Mine Inspection System<br>❑ Internal drainage<br>❑ External Audits (including Government)<br>❑ Use existing tracks where possible | 4 | c | 18 | | | | |
| Tailings emplacement | Tailing storage | Failure of dam | ❑ Authorised section 100 approval tailings emplacement area<br>❑ Health and Safety Management System<br>❑ Environmental Inspections<br>❑ Mine Inspection System<br>❑ Supervisor Audits/ Inspections | 1 | e | 11 | | | | |

| Process Area | Activity | Hazard/ Risk | Existing Controls | Risk Rank | | | Proposed Controls | Risk Rank | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C | L | R | | C | L | R |
| | | | ❑ Emergency Management System | | | | | | | |
| Mine Water Storage | Possum Skin Dam | Failure of Dam/ Overflow of Dam | ❑ Prescribed Dam, as per Dam Safety Committee<br>❑ Health and Safety Management System<br>❑ Environmental Inspections<br>❑ Mine Inspection System<br>❑ Supervisor Audits/ Inspections<br>❑ Emergency Management System<br>❑ Water Management Plan | 1 | e | 11 | ❑ Put in above: Pumping in pit water section | 1 | e | 11 |

Planning & Environment
Resources Regulator

Chris Knight
Bloomfield Collieries Pty Limited
PO Box 4
East Maitland NSW 2323

Our ref: DOC19/386292

28 May 2019

Dear Chris,

**Coal Lease (CL) 357 (Mining Act 1973), Mining Lease (ML) 1630 (Mining Act 1992), ML1648 (Mining Act 1992), ML1649 (Mining Act 1992), ML1650 (Mining Act 1992), ML1651 (Mining Act 1992), ML1725 (Mining Act 1992, Bloomfield Collieries Pty Limited, Approval of Mining Operations Plan**

**NOTICE OF APPROVAL**

Pursuant to Condition 3 of Coal Lease 357 (*Mining Act 1973*), Condition 3 of Mining Lease 1630 (*Mining Act 1992*), Condition 3 of Mining Lease 1648 (*Mining Act 1992*), Condition 3 of Mining Lease 1649 (*Mining Act 1992*), Condition 3 of Mining Lease 1650 (*Mining Act 1992*), Condition 3 of Mining Lease 1651 (*Mining Act 1992*), Condition 3 of Mining Lease 1725 (*Mining Act 1992*), the Mining Operations Plan (MOP) that was submitted to the Resources Regulator within the Department of Planning and Environment (the Department) on 27 March 2019 (DOC19/264215) is approved for the period from the date of this approval until 31 December 2020.

It is the responsibility of the Authorisation Holder to ensure that all mining and mining related operations described in this MOP are as approved within the relevant Project Approval or Development Consent and all necessary approvals, consents or permits required under the relevant NSW or Commonwealth regulations have been obtained prior to carrying out the operations.

It is the responsibility of the Authorisation Holder to fulfil their obligations and commitments to the rehabilitation outcomes and performance standards as approved by the relevant consent authority to ensure the rehabilitation outcomes identified are achieved.

## ASSESSED DEPOSIT

Approval of this MOP has triggered a review of the assessment of the security deposit required to secure funding for the fulfilment of rehabilitation obligations under CL357 (Mining Act 1973), ML1630 (Mining Act 1992), ML1648 (Mining Act 1992), ML1649 (Mining Act 1992), ML1650 (Mining Act 1992), ML1651 (Mining Act 1992), ML1725 (Mining Act 1992).

Notice of the change in the security deposit condition related to this MOP approval will be provided separately.

## DEFINITIONS

In this letter, words have the meaning given to those terms in the *Mining Act 1992*, unless otherwise specified below.

**Department** means the Resources Regulator within the NSW Department of Planning and Environment.

**Authorisation Holder** means the holder of the relevant authorisation(s).

**Mining Operations Plan** means the project, mining and mining related operations described in the "Rix's Creek North Mining Operation Plan Amendment A" prepared by Bloomfield Collieries Pty Limited and dated 26 March 2019 (CM9 ref DOC19/264215).

If you have any questions about this Notice, please contact Neil McElhinney directly on 4063 6724.

Yours sincerely,

**MONIQUE MEYER**
**Manager Environmental Operations (Eastern)**
**Compliance Operations**
**Resources Regulator**
**NSW Department of Planning and Environment**
*Signed under delegation from the Minister for Resources.*
*Signed under delegation from the Secretary of the NSW Department of Planning and Environment.*