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## MANNERING COLLIERY

**Annual Review 2018****1 January 2018 – 31 December 2018**

<b>Author</b>	
	Jessica Bowditch
	Environment Officer
<b>Authorised by:</b>	
	Chris Armit
	Environment & Community Coordinator
<b>Date:</b>	16 May 2019

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## Mannering Colliery – Annual Review (AEMR) 2018

Table 1- Annual Review title block

<b>Name of operation</b>	Mannering Colliery
<b>Name of operator</b>	LakeCoal Pty Ltd
<b>Development consent/ Project Approval #</b>	PA06_0311
<b>Name of holder of development consent/ Project Approval</b>	Centennial Coal Pty Ltd
<b>Mining Leases #</b>	Consolidated Coal Lease No. 719 Consolidated Coal Lease No. 721
<b>Name of holder of mining leases</b>	LakeCoal Pty Ltd and FassiCoal Pty Ltd (via sublease)
<b>Water License #</b>	WAL40461/ref 20AL217059
<b>Name of holder of water licence</b>	Centennial Mandalong Pty Limited
<b>MOP/RMP Start Date</b>	1 <sup>st</sup> April 2015 / 1 <sup>st</sup> October 2018
<b>MOP/ RMP Date</b>	31 <sup>st</sup> March 2018 / 31 <sup>st</sup> December 2020
<b>Annual Review start date</b>	1 January 2018
<b>Annual Review end date</b>	31 December 2018
<p>I, Chris Armit, certify that this audit report is a true and accurate record of the compliance status of Mannering Colliery for the period, 1 January 2018 to 31 December 2018 and that I am authorised to make this statement on behalf of Mannering Colliery.</p> <p>Note.</p> <p>a) The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide for information inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</p> <p>b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement- maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents- maximum penalty 2 years imprisonment or \$22,000, or both).</p>	
<b>Name of authorised reporting officer</b>	Chris Armit
<b>Title of authorised reporting officer</b>	Environment & Community Coordinator
<b>Signature of authorised reporting officer</b>	
<b>Date</b>	31 March 2019

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## Executive Summary

During the 2018 Mannering Colliery did not mine any coal during the reporting period.

394,213 tonnes of product coal was handled through Mannering Colliery from Chain Valley Colliery and transported to VPPS via the overland conveyor during the reporting period.

There were no development consent modifications to Mannering's Project Approval (PA06\_0311) during the reporting period.

An overview of the key environmental performance indicators and statement of compliance for the 2018 reporting period is provided below:

### Key Performance Indicators for the reporting period:

<u>Indicator</u>	<u>Value</u>
Total Full Time Employees (at 31 December 2018)	23
Total ROM Coal produced from site (tonnes)	0
Total ROM Coal transferred to VPPS from site (tonnes)	394,213
Total ROM coal to domestic market (tonnes)	0
General Waste Produced (tonnes)	72
Total Waste Recycled (tonnes)	49
Waste Recycling % achieved	33.84%
Potable Water consumed (ML)	0
Total water discharged from the operation (ML)	330.6
Total number of Community Complaints received	12
Total number of environmental incidents for the period	1
Number of Community Consultative Committee (CCC) Meetings undertaken	4
Total Greenhouse Gas Emissions (Co2 Eq t) (2017/2018 Financial period)	337,257

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# 1 Statement of compliance

**Table 2- Statement of Compliance**

**Statement of Compliance (2018 reporting period):**

Were all conditions of the relevant approval(s) complied with?	
Project Approval No. 06_0311	No
EPL191	Yes
CCL719	Yes
CCL721	Yes
Water Licence WAL40461	Yes

**Table 3- Non-compliances**

**Summary of Non-Compliances (2018 Reporting Period):**

Relevant Approval	Condition #	Condition Description (summary)	Compliance Status	Comment	Where addressed in Annual Review
Development Consent (SSD_5465 MOD 2)	Condition 7 (Noise Impact Assessment Criteria)	Exceedance of night noise criteria (LAeq 15 Min) at RA2 on 29 August 2018.	Non-Compliant	Exceedance	Section 6.10

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**Compliance status key for Table 3**

Risk Level	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	Non-compliance with; <ul style="list-style-type: none"> <li>potential for serious environmental consequences, but is unlikely to occur; or</li> <li>potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-Compliant	Non-compliance with ; <ul style="list-style-type: none"> <li>potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>potential for low environmental consequences, but is likely to occur</li> </ul>
Administrative non-compliance	Non-Compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

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## 2 Introduction

Mannering Colliery (MC) is an underground coal mine located on the southern side of Lake Macquarie approximately 60 km south of Newcastle (**Figure 2.1**). Development of Mannering Colliery began in 1960 in conjunction with the construction of Vales Point Power Station and at that time was named Wyee State Coal Mine.

Production commenced in 1961 with extensive mining (first workings and secondary extraction) in both the Great Northern and Fassifern Seams. While some resources remain within the Great Northern Seam, mining has not been undertaken in this seam since 1999, with all recent mining occurring in the Fassifern Seam.

On the 30th June 2002 mining operations ceased and the mine was placed on care and maintenance, at that time the mine was operated by Powercoal Pty Ltd. On August 7th 2002 Centennial Coal acquired the Colliery from Powercoal. The mine was reopened and renamed Mannering Colliery with production recommencing in January 2005, mining the Fassifern Seam. Due to unfavorable conditions the mine was again placed on care and maintenance, ceasing production on 27 November 2012.

LakeCoal, the operator of the adjacent Chain Valley Colliery, became the operator of Mannering Colliery as a result of a mining cooperation agreement that was reached between the owners of Chain Valley Colliery and Mannering Colliery. As a result, LakeCoal Pty Ltd became the operator of Mannering Colliery effective the 17<sup>th</sup> October 2013.

In December 2015, a business decision was made by LakeCoal to progress the “underground link road project” between Mannering Colliery and Chain Valley Colliery. During the reporting period Mannering Colliery continued underground mining operations as part of the underground link road project approved under PA 06\_0311 Mod 2. In February 2017 difficult mining conditions were encountered underground during the link road drive and an operational decision was made to cease underground mining from the Mannering Colliery of the link road. As a result the remainder of the link road drive was undertaken from Chain Valley Colliery. Mannering Colliery did not produce any coal from its underground mining operations and handled a total of 394,213 tonnes of coal. All coal produced was transported to the adjacent Vales Point Power Station by overland conveyor.

Lake Coal went into receivership in 3 October 2018, however has maintained coal conveyance and processing operations.

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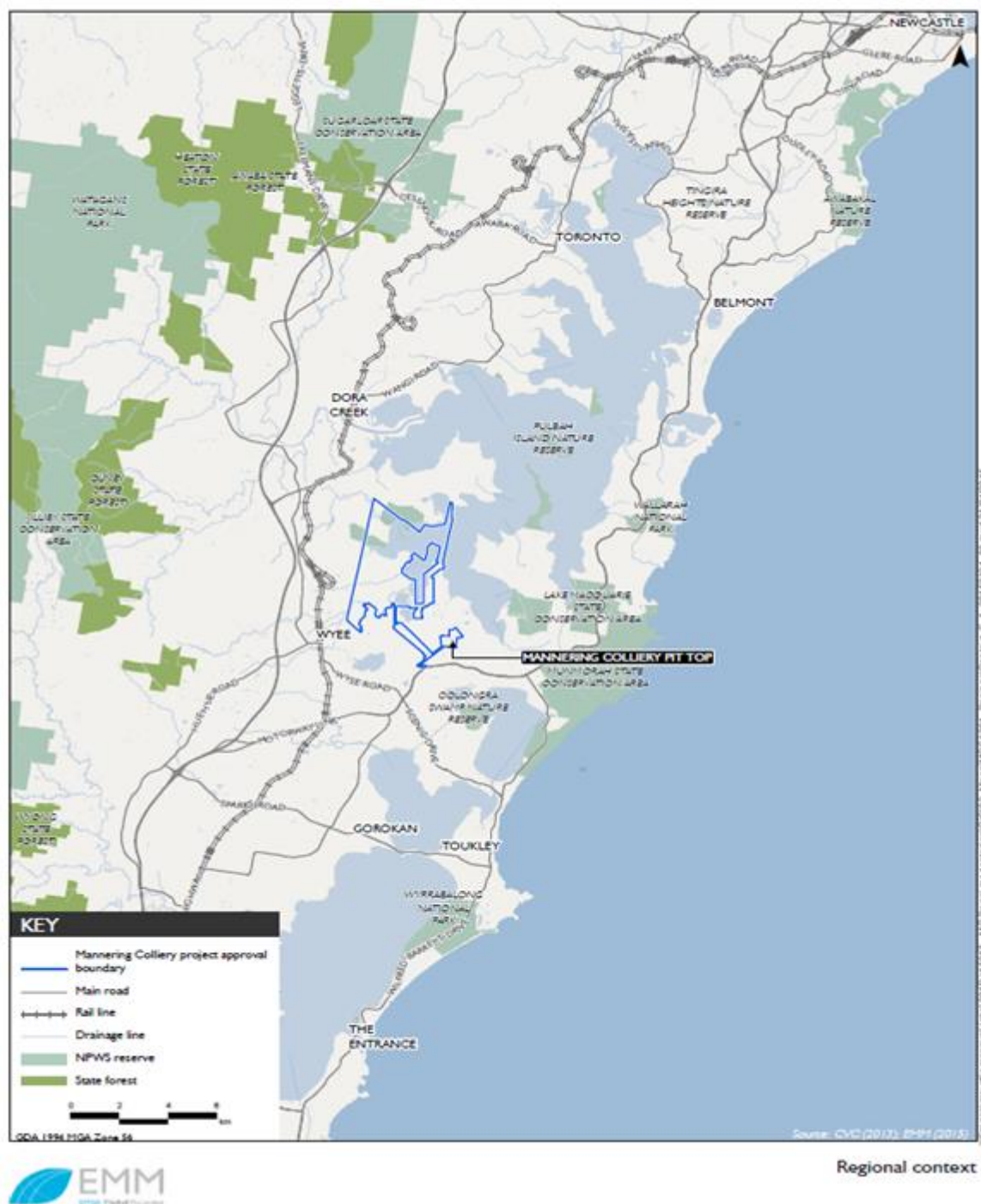


Figure 2.1: Location of Manning Colliery

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## 2.1 Mine Geology

The most recent mining operations at Mannering Colliery have been located within the Fassifern Seam, which is part of the Boolaroo Formation within the Newcastle Coal Measures (see **Figure 2.1.1**). Overlying the Fassifern Seam are the Great Northern, Wallarah and Vales Point Seams (and their associated conglomerates and tuffs), which are part of the Moon Island Beach Formation within the Newcastle Coal Measures. The Wallarah and Fassifern Seams have been mined at Myuna Colliery to the north-east, while the Wallarah, Fassifern and Great Northern seams have been mined at Chain Valley Colliery to the east.

The coal resource within the Fassifern and Great Northern seams has a low sulphur content, which makes it a preferable supply for power generation. Within the Colliery holding, the Fassifern Seam lies at around 150 to 205 metres deep and mining is based on a three metre section of coal (approximate) beneath the B ply, which comprises approximately 1.0 to 1.2 metres of inferior coal left on the roof (Seedsman, 2011). The depth of cover to the Great Northern Seam is between approximately 140 and 155 metres and the typical seam thickness is 2.5 metres (Seedsman, 2011).

Previous workings within both of these seams are extensive. These workings, in conjunction with various geophysical surveys in the area, provide a solid base of data regarding regional and local structural features. The area within the Colliery holding is dissected by a number of north-west striking faults and dyke zones at a regional spacing of up to two kilometres, with drilling and surface magnetometer surveys confirming the locality of these structural features (Hansen Bailey, 2007).

The stratigraphic sequence beneath the mine plan is comprised of three distinct units:

1. the upper Permian Newcastle Coal Measures, a sandstone/coal sequence with lesser siltstone;
2. the overlying Clifton Sub-group, which is the basal unit of the Triassic Narrabeen Group; and
3. quaternary to recent alluvial sediments.

The Great Northern Seam is separated from the Fassifern Seam within the Newcastle Coal Measure by approximately 25 to 30 metres. The strata directly below the Fassifern Seam are high strength sandstone formations, interbedded with thinner strata of other units such as shale, mudstone and coal (Hansen Bailey 2007). This interval between the Fassifern Seam and the Great Northern Seam is generally made up of two strata characterised in the lower section by the Awaba Tuff, which is the stone roof of the Fassifern Seam, and a conglomerate/coarse-grained sandstone unit in the upper section (Hansen Bailey, 2007). The roof of the Great Northern Seam is Teralba Conglomerate (Seedsman, 2011).

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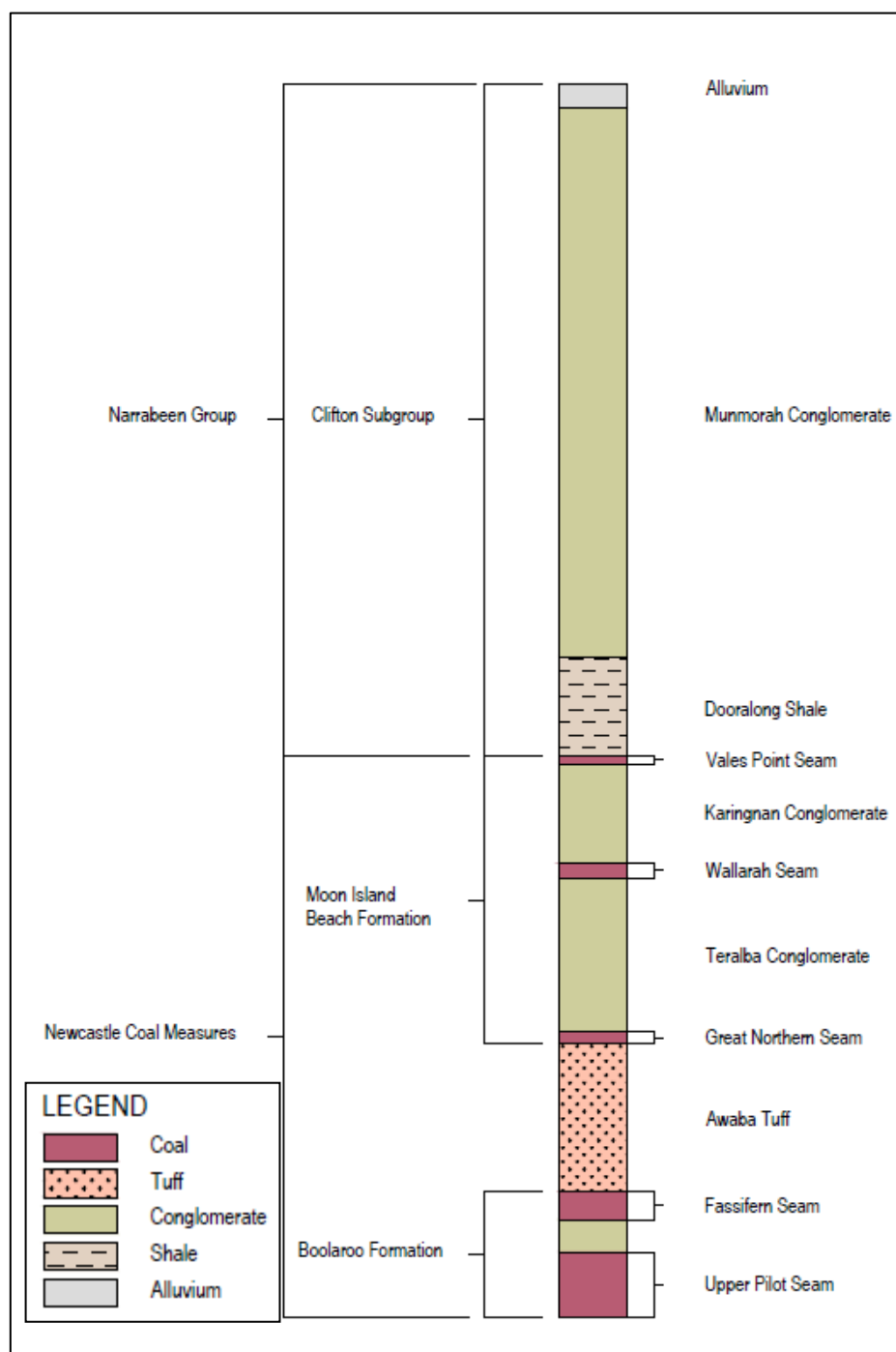


Figure 2.1.1: Typical Stratigraphy at Manning Colliery

### 3 Approvals

Mannerling Colliery was granted Project Approval on the 12 March 2008 under Section 75J of the Environmental Planning and Assessment Act, 1979 (EP&A Act). Four subsequent modifications of this approval have occurred, the first (MP06\_0311 MOD 1) was granted on 25 October 2012, the second (MP06\_0311 MOD 2) was granted on 27 November 2014, the third (MP06\_0311 MOD 3) was granted on 16 December 2015, and the fourth (MP06\_0311 MOD 4) was granted on 18 August 2016.

There were no further modifications to the site's Project Approval during the reporting period. No extraction plan or secondary workings during the reporting period. Therefore, website does not need to be updated.

A copy of the consolidated Project Approval is attached as **Appendix 11**.

Condition 3 within Schedule 5 of the approval requires the submission of an Annual Review to the satisfaction of the Secretary. **Table 3.1.1** identifies the requirements of this condition and where each item has been addressed in this report.

**Table 3.1.1: Annual Review Requirements**

CONDITION REQUIREMENT	SECTION ADDRESSED
3. 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:	This report
a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current financial year;	2, 3, 5, 6 & 8
b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the: <ul style="list-style-type: none"> <li>the relevant statutory requirements, limits or performance measures/criteria;</li> <li>requirements of any plan or program required under this approval;</li> <li>the monitoring results of previous years; and</li> <li>the relevant predictions in the documents listed in condition 2 of Schedule 2;</li> </ul>	2, 3, 4, 6, 7 & 9
c) identify any non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance;	1, 3, 6 & 11
d) identify any trends in the monitoring data over the life of the project;	6 & 7
e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and	6 & 7
f) describe what measures will be implemented over the current financial year to improve the environmental performance of the project.	12

### 3.1.1 Leases

The surface areas occupied by Mannering Colliery lie within the Wyong Shire local government area (LGA), however, the leases which comprise the Mannering Colliery holding straddle both the Wyong Shire and Lake Macquarie LGAs.

Significant changes occurred to the Colliery holding during the 2014 reporting period, which resulted in all active areas of the holding being transferred to the Chain Valley Colliery holding. The Chain Valley Colliery holding is shown on the **Mine Locality Plan (Appendix 2)** however the applicable mining tenements which are contained within the Mannering Project Approval boundary, and include the surface areas of the Mannering pit top are listed in **Table 1.2**.

**Table 3.2: Relevant Leases**

Title	Expiry
Consolidated Coal Lease 719	22/12/2020
Consolidated Coal Lease 721	29/07/2026

### 3.1.2 Surface Land

All Mannering Colliery surface operational areas are owned by Centennial Coal and are operated/occupied under a commercial agreement.

### 3.1.3 Licences

Environment Protection Licence (EPL) No. 191 issued by the Environment Protection Authority under the *Protection of the Environment Operations Act, 1997* covers the Collieries activities and premises.

A copy of EPL191 is posted on the Colliery website, [www.manneringmine.com.au](http://www.manneringmine.com.au) or via the NSW EPA website, <http://www.environment.nsw.gov.au/licensing/> and is also provided as **Appendix 13**.

LakeCoal has held the EPL for Mannering Colliery throughout the reporting period.

Monitoring results obtained in accordance with the licence conditions are now also made available publicly on the Colliery website (updated monthly), under the environmental reporting page: <http://manneringmine.com.au/approvals-plans-reports/environmental-reporting/>

There were no non-compliances with EPL191 during the reporting period.

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### 3.2 Mine Contacts

The Colliery contacts as at the end of the reporting period were:

Mine Manager: Dave Mclean  
 Telephone: 02 4358 0800  
 Email: [dmclean@lakecoal.com.au](mailto:dmclean@lakecoal.com.au)

Environment and Community Coordinator: Chris Armit  
 Telephone: 02 4358 0883  
 Email: [carmit@lakecoal.com.au](mailto:carmit@lakecoal.com.au)

Postal Address: LakeCoal Pty Ltd  
 P.O Box 7115  
 Manning Park, NSW, 2259

### 3.3 Exploration

There was no exploration undertaken at Manning Colliery during the reporting period.

There is no exploration planned for the next reporting period.

### 3.4 Land Preparation

There was no land preparation undertaken during the reporting period and as a result the surface disturbance footprint remains unchanged.

### 3.5 Construction

There were no construction works undertaken during the reporting period. General maintenance of existing infrastructure was however undertaken.

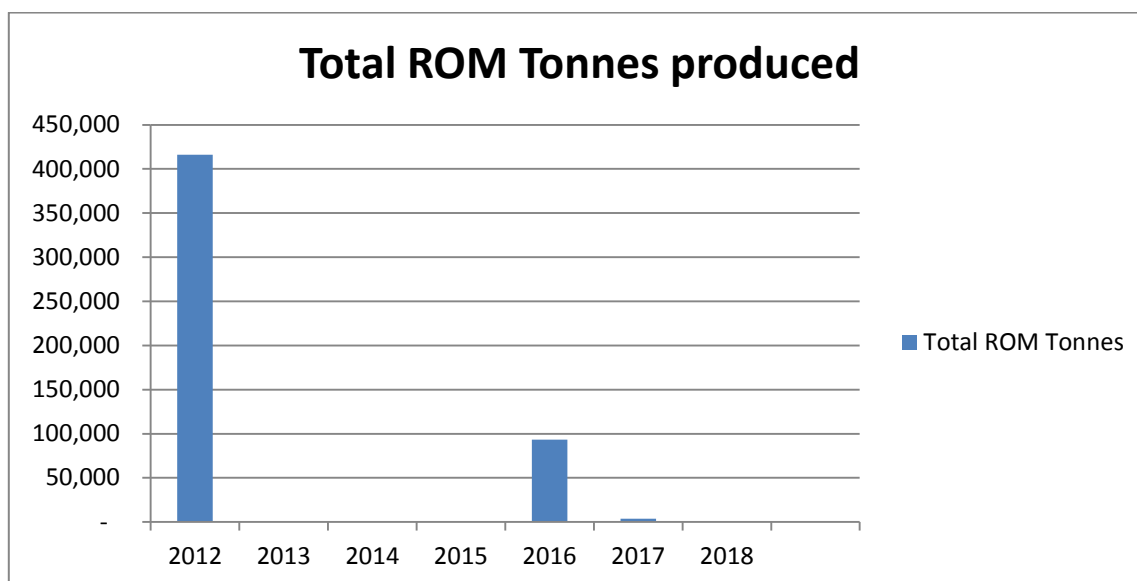
### 3.6 Mining

There were no mining activities undertaken during the reporting period.

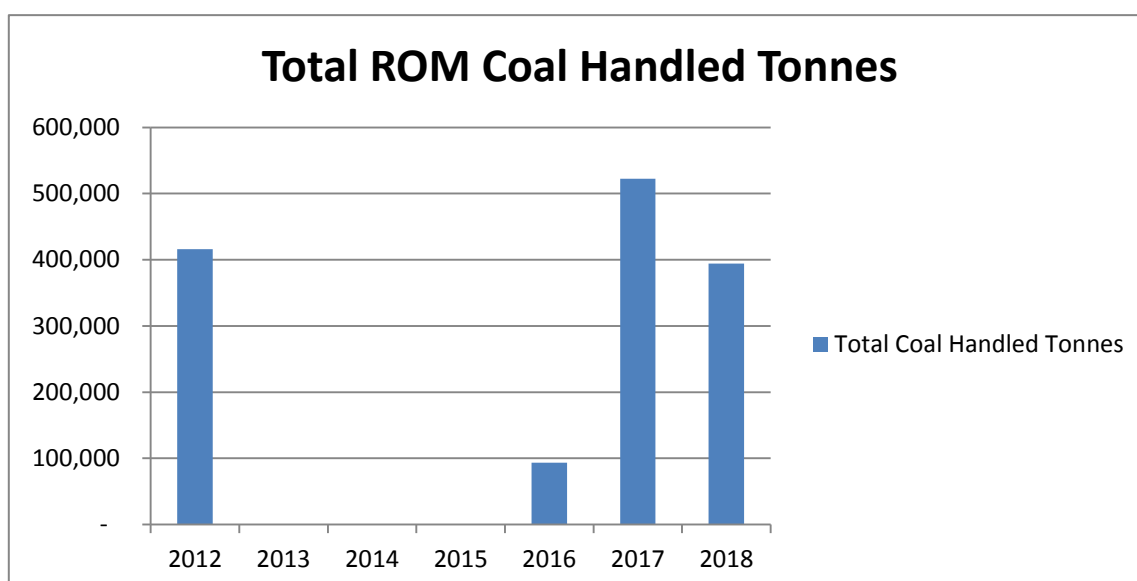
Existing workings in the Great Northern Seam are shown on the Great Northern Seam Workings Plan and existing workings within the Fassifern Seam are shown on Fassifern Seam Workings Plan (**Appendix 12**)

**Figures 3.6.1 and 3.6.2** shows annual ROM production and Coal Handled for the current reporting period. A production summary is provided in **Table 4**.

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**Figure 3.6.1: Annual ROM Production Levels**



**Figure 3.6.2: Annual Product Coal Handling Levels**

\*Commenced reporting in 2018 and 2019 as coarse reject rather than waste rock / overburden

As stated in the introduction, effective the 17<sup>th</sup> October 2013, LakeCoal became the operator of Mannering Colliery as a result of a mining cooperation agreement that was reached between the owners of Chain Valley Colliery and Mannering Colliery.

The same agreement also underpins the underground connection, which currently consists of two development headings (one belt road and one travel road); to enable coal from the Chain Valley Colliery to be transported via Mannering Colliery to Vales Point Power Station.

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### 3.7 Mineral Processing

ROM coal is sized and transported directly to Vales Point Power Station via a dedicated existing overland conveyor system. Oversized material which exits the rotary breaker is a mixture of timber, concrete, rock, coal, plastic, steel was stockpiled. This material is either loaded into bins for removal by the total waste contractor, sorted into waste streams and recycled or returned to underground.

### 3.8 Waste Management

LakeCoal continued to implement a total waste management system for the site during the reporting period. The waste streams currently provided for include;

- General waste
- Paper and cardboard
- Oil rags
- Air/Oil filters
- Batteries
- Waste oil
- Timber

Management systems are in place at Manning Colliery for the various non-production waste streams generated by the operation in accordance with the requirements of MP06\_0311 and EPL 191. In summary:

#### **General Waste and Recyclables**

All general wastes and routine maintenance consumables are collected on a regular basis by an appropriately licensed contractor for off-site disposal within a waste facility approved to accept such waste. Recyclable material is also collected by a licensed contractor for recycling at an appropriate facility.

Collections of general waste and recyclables are coordinated by the waste management contractors, who also undertake weekly waste inspections at the site.

As shown in **Figure 2.2**, there was an increase in waste generated at the site during the reporting period which was attributable to the recommencement of underground operations.

#### **Waste Oil and Grease**

The generation of waste oils and grease is currently limited to the routine maintenance of plant and equipment. Waste oils and greases stored at the purpose built service bay area along with parts and packaging (for example, cartridges, filters and waste oil drums), are collected by a licensed waste contractor on an as needs basis for recycling and/or off-site disposal.

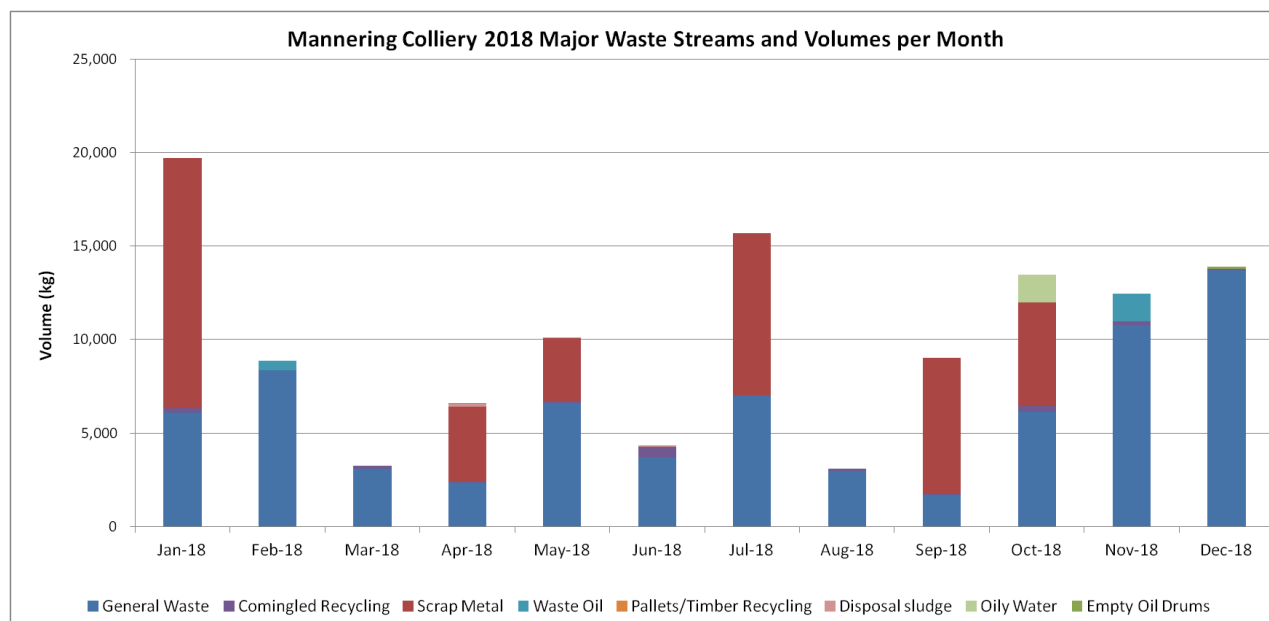
Oily water is contained within drive-in-sumps and treated by oil-water separators located on the mine surface. Licensed contractors regularly service and maintain the separators and remove all waste hydrocarbons from the site for recycling.

#### **Sewage**

Sewage generated by on-site staff amenities is pumped directly from Manning Colliery to Manning Park Waste Water Treatment Works via a dedicated pipeline under a Trade Waste Agreement with Wyong Shire Council.

The total waste management system also involves weekly site inspections by the waste management contractor to facilitate effective waste management and continual improvement along with monthly reporting, with some of the data from key waste streams presented on **Figure 3.8.1**

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**Figure 3.8.1: Major waste streams and volumes**

### 3.9 Stockpiles

When operating, delivery of coal to Vales Point Power Station occurs via dedicated overland conveyor directly to the Power Station. Stockpiling of coal only occurs when Vales Point Power Station is unable to accept coal deliveries from the mine. The stockpile has a nominal capacity of approximately 25,000 tonnes.

There were no changes to the coal stockpile area during the reporting period.

### 3.10 Hazardous Materials Management

A hazardous chemicals and dangerous goods register is maintained onsite to assist in management of risks to health and the environment. This register utilises an online chemicals database 'ChemAlert' which provides for ease of access to detailed information pertaining to hazardous chemicals and dangerous goods used onsite via a web portal.

There have been no significant changes made to the management of hazardous materials during the reporting period.

### 3.11 Other Infrastructure Management

No changes during the reporting period.

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## 4 Operations summary

**Table 4- Production summary**

<u>Material</u>	<u>Approved limit (specify source) (Mt)</u>	<u>Previous reporting period (actual) (2017)</u>	<u>This reporting period (actual) (2018)</u>	<u>Next reporting period (forecast) (2019)</u>
Waste Rock/Overburden	n/a	0.0003	0	0
ROM Coal/Ore	1.1	0.003	0	0
Coarse reject	n/a	n/a	0.0003	0.001
Fine reject (Tailings)	n/a	n/a	n/a	n/a
Saleable product	1.1	0.093	0.394	0.9

LakeCoal is committed to operating Manning Colliery in an environmentally responsible manner through the application of the workplace Environmental Management System (EMS). This commitment is confirmed in the company's *Environment and Community Policy* (D-10103).

An initial site risk assessment *Handover of Manning Colliery on Care & Maintenance* (D-18224) includes the risk management of environmental aspects at Manning Colliery.

A Broad Brush Risk Assessment for Manning Colliery was undertaken during the reporting period in accordance with AS/NZS ISO 31000 and MDG1010, to identify hazards and assess the environmental and community related risk associated with the planned operation of Manning Colliery.

The risk assessment included:

- surface and groundwater;
- ecology;
- heritage;
- visual amenity;
- noise;
- air quality and greenhouse gas;
- traffic;
- hydrocarbon storage;
- deliveries;
- waste;
- asbestos;
- data records and reporting; and
- social aspects.

All aspects with potential environmental impacts, following the implementation of controls, were considered to have a low and manageable risk.

Below is a summary analysis of environmental monitoring data. As stated in the *Post approval requirements for State significant mining developments October 2015*, the summary includes:

- comparison of data in relation to the predictions made in the Environmental Impact Statement;
- identification of trends in the data; and
- identification of any management implications.

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## 5 Actions required from previous Annual Review

LakeCoal received formal acknowledgement from DP&E on 27/11/18 that the site's 2017 Annual Review was satisfactory. There were several actions the Secretary requested in accordance with Schedule 2, Condition 4 of the approval, which have been addressed in this reporting period. See the below table.

**Table 5- Actions required from last Annual Review inspection**

Item	Issue / Observation	Action	Status
1	Approvals and Licences	Annual Review 2018 - Include compliance status with Water Licence WAL40461/Ref 20AL217059 included in the Statement of Compliance	See section 1
2	Environmental Predictions	Annual Review 2018 - Noise predictions  As addressed and requested in email from DPE dated 27/11/2018, environmental predictions has been assessed against the predictions from the Environmental Assessments and trend analysis from monitoring data for the life of the Project provided.  See section 6.10 for noise predictions and trend analysis	See section 6
3	Water Take	Annual Review 2018 - Water Take - Water take during the reporting guide is reported in accordance from Table 7 of the Annual Review Guideline. The water take presented is the daily dewatering volume from Mannering Colliery during the 2018 reporting period	See section 7
4	Independent Environmental Audit	Annual Review 2018 - Independent Environmental Audit - includes details of close-out of non-compliance and recommendations from the most recent audit. Include information on the next proposed audit.  See Appendix 16 for the updated Action Plan for the Response to Audit Recommendations (RAR) from 2016 Independent Environmental Audit	See Section 10
5	Weed Management	Annual Review 2018 - Weed Management - Include Weed Action Plan in the next and future Annual Reviews	See Section 6.8

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Item	Issue / Observation	Action	Status
6	Housekeeping	Annual Review 2018 - Housekeeping - Include action plan in next and future Annual Reviews to address housekeeping	See section 12
7	Website	Website update - Upload post 2014 Extraction Plans and SMPs documents. Upload Multi-seam mining feasibility investigation and its approval.	See section 3
8	Community	Community Complaints - please ensure trend analysis from community complaints for the life of project is provided	See section 9
9	Compliance	Add Compliance Table to Annual Review 2018 to display compliance to 29/11/2018 Dept of Planning Letter	See Section 1

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## 6 Environmental performance

LakeCoal is committed to operating Mannering Colliery in an environmentally responsible manner through the application of the workplace Environmental Management System (EMS). This commitment is confirmed in the company's *Environment and Community Policy* (D-10103).

An initial site risk assessment *Handover of Mannering Colliery on Care & Maintenance* (D-18224) includes the risk management of environmental aspects at Mannering Colliery.

A Broad Brush Risk Assessment for Mannering Colliery was undertaken during the reporting period in accordance with AS/NZS ISO 31000 and MDG1010, to identify hazards and assess the environmental and community related risk associated with the planned operation of Mannering Colliery.

The risk assessment included:

- surface and groundwater;
- ecology;
- heritage;
- visual amenity;
- noise;
- air quality and greenhouse gas;
- traffic;
- hydrocarbon storage;
- deliveries;
- waste;
- asbestos;
- data records and reporting; and
- social aspects.

All aspects with potential environmental impacts, following the implementation of controls, were considered to have a low and manageable risk.

Below is a summary analysis of environmental monitoring data. As stated in the *Post approval requirements for State significant mining developments October 2015*, the summary includes:

- comparison of data in relation to the predictions made in the Environmental Impact Statement;
- identification of trends in the data; and
- identification of any management implications.

### 6.1 Air Quality

During the reporting period monitoring in accordance with the approved Air Quality Management Plan and EPL 191 licence conditions continued. Depositional Dust monitoring results are shown in **Table 6.1.1** and **Figure 6.1**. The rolling annual averages for 2018 and longer term annual average results (from 2006 - 2018) are presented on **Figure 6.2** and **Figure 6.3** respectively.

With respect to the ensuing table and figures, any contaminated results would be shown within **Table 6.1.1**, however, these results would not be included within the annual averages and present as zero values in the monthly graphical results in **Error! Reference source not found. 6.1**. No contamination was noted by the environmental monitoring consultant engaged to complete the sampling and supported by corresponding field and/or laboratory notes.

No complaints of dust or air pollution were received in the reporting period.

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**Table 6.1.1: Depositional dust results (2018)**

Sampling point	DG1 (EPA ID # 3)	DG2 (EPA ID # 4)	DG3 (EPA ID # 5)	DG4 (EPA ID # 6)	DG5 (EPA ID # 7)
Month	Insoluble Solids	Insoluble Solids	Insoluble Solids	Insoluble Solids	Insoluble Solids
Jan-18	1.50	0.90	1.50	1.00	0.90
Feb-18	0.80	0.50	0.60	1.00	0.60
Mar-18	0.30	0.40	0.50	0.70	1.00
Apr-18	1.10	0.80	0.80	1.00	0.90
May-18	0.80	0.60	0.60	0.60	1.10
Jun-18	1.20	0.40	0.30	0.60	0.60
Jul-18	0.30	0.10	0.20	0.20	0.20
Aug-18	2.30	1.30	0.50	1.10	0.70
Sep-18	0.80	1.20	0.90	1.50	0.90
Oct-18	0.40	0.50	0.40	0.90	0.50
Nov-18	2.00	0.70	1.00	2.30	1.50
Dec-18	0.60	1.20	1.20	0.80	1.00
Annual Average	1.01	0.72	0.71	0.98	0.83

Notes: 1) For site locations refer Environmental Management Plan (**Appendix 12**)

The *Mannering Colliery: Continuation of Mining Environmental Assessment* by Hansen Bailey (March 2007), states the following summary of relevant predictions and trends associated with air quality, specifically depositional dust at Mannering Colliery;

- The estimated total emissions from the mine and operation of the overland conveyor from Mannering to Vales Point Power Station will remain small, at less than 2 g/s. This level of emission will not affect the PM<sub>10</sub>, TSP or deposition levels significantly at the closest residential location.
- The 24-hour PM<sub>10</sub> concentrations will exceed the 50 µg/m<sup>3</sup> assessment criterion during periods when bushfires are contributing high concentrations of smoke to the air, or remote dust storms transport significant quantities of particulate matter into the Lake Macquarie air shed.
- Since the mine's ventilation system is already part of the existing operations and the effect of the emissions from the ventilation system will be captured in the historical monitoring data, the only new emissions (i.e TSP) will be 733 kg/y or 0.023 g/s, which is even less than the 1.5 g/s due to all sources.

The following table from the EA (*Hanson Bailey 2007*) reflects the air quality goals for depositional dusts.

**Table 6.2.2: Environmental Assessment: Air Quality Goals for Depositional Dust**

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m <sup>2</sup> month	4 g/m <sup>2</sup> /month

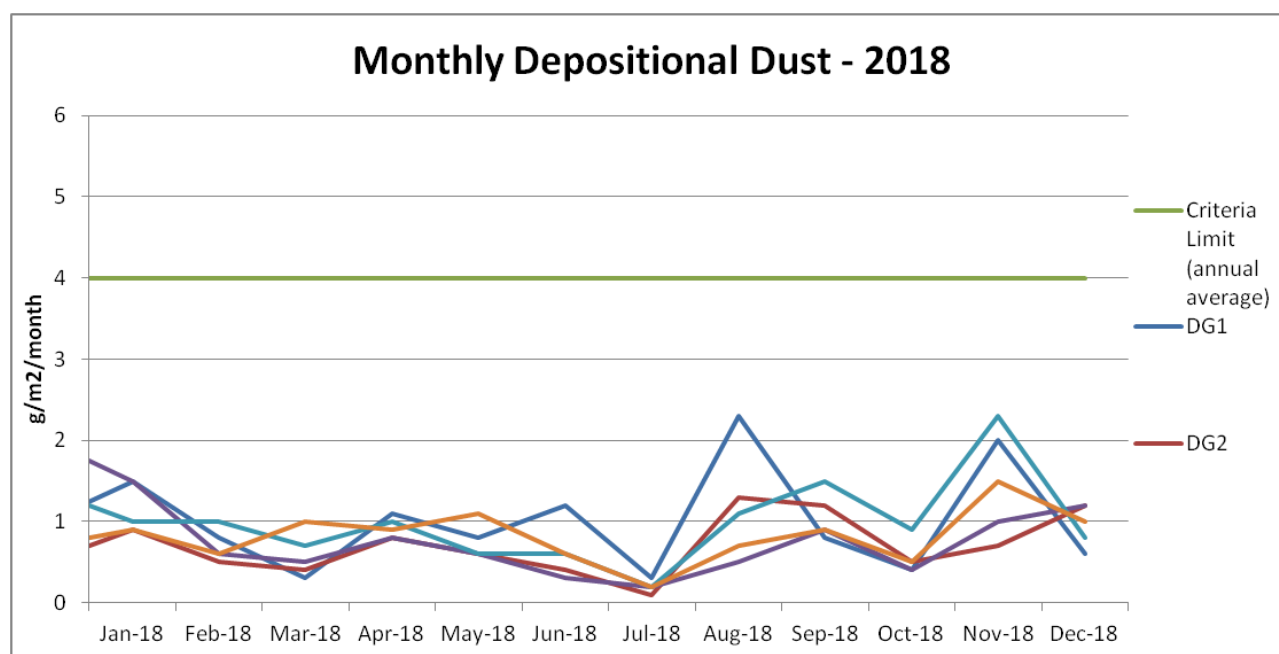
This table predicts that the total dust emissions from Mannering will remain minor, at less than 2 grams per second. The AR depositional dust results reflect in accordance with this trend, remaining a consistently minor result for the reporting period.

The following table from the EA (*Hanson Bailey 2007*) reflects the air quality goals specifically related in TSP & PM<sub>10</sub> levels.

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**Table 6.1.3: Environmental Assessment: Air Quality Goals for TSP & PM<sub>10</sub>**

Pollutant	Goal	Averaging Period	Agency
Total suspended particulate matter (TSP)	90 µg/m <sup>3</sup>	Annual mean	National Health and Medical Research Council (NSW DEC, 2005)
Particulate matter <10 µm (PM <sub>10</sub> )	50 µg/m <sup>3</sup>	24-hour maximum	NSW DEC (2005) (assessment criteria)
	30 µg /m <sup>3</sup>	Annual mean	NSW DEC (2005) (long-term reporting goal)



**Figure 6.1: Monthly Depositional Dust Results in 2018**

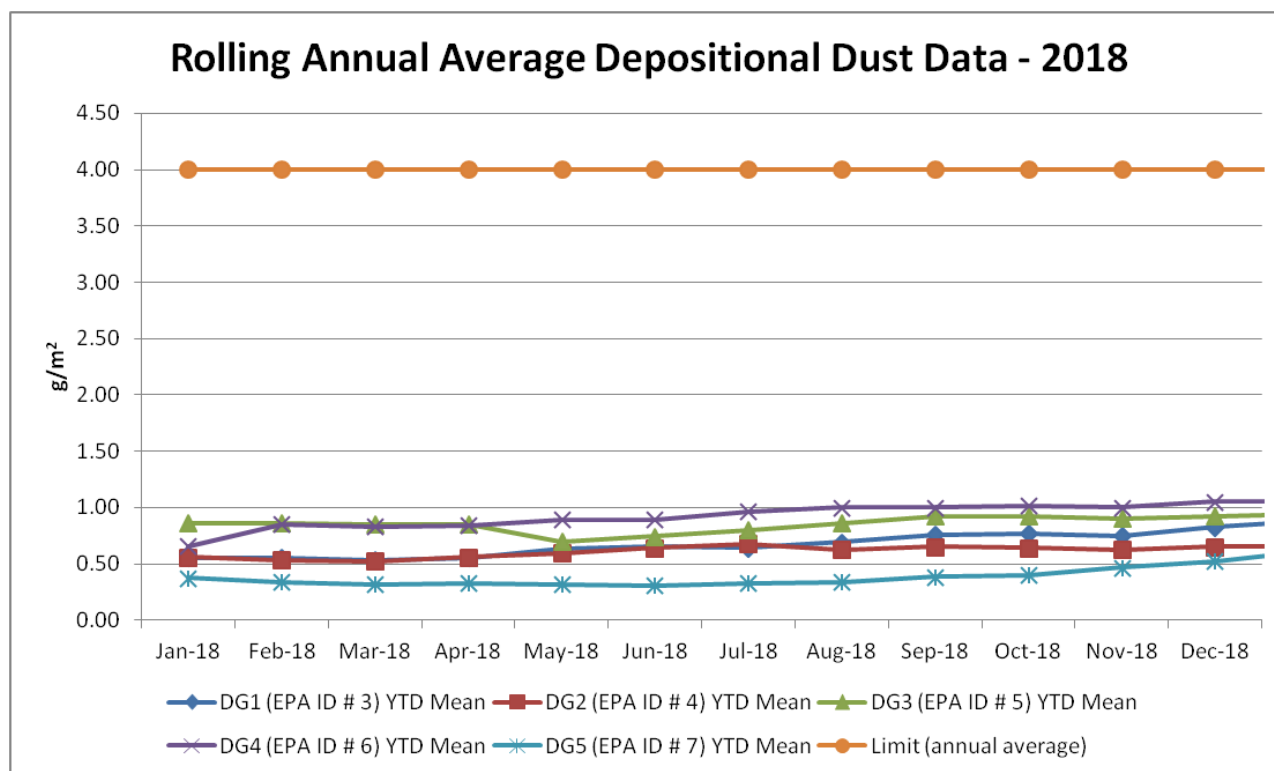


Figure 6.2: Rolling annual average depositional dust results (2018)

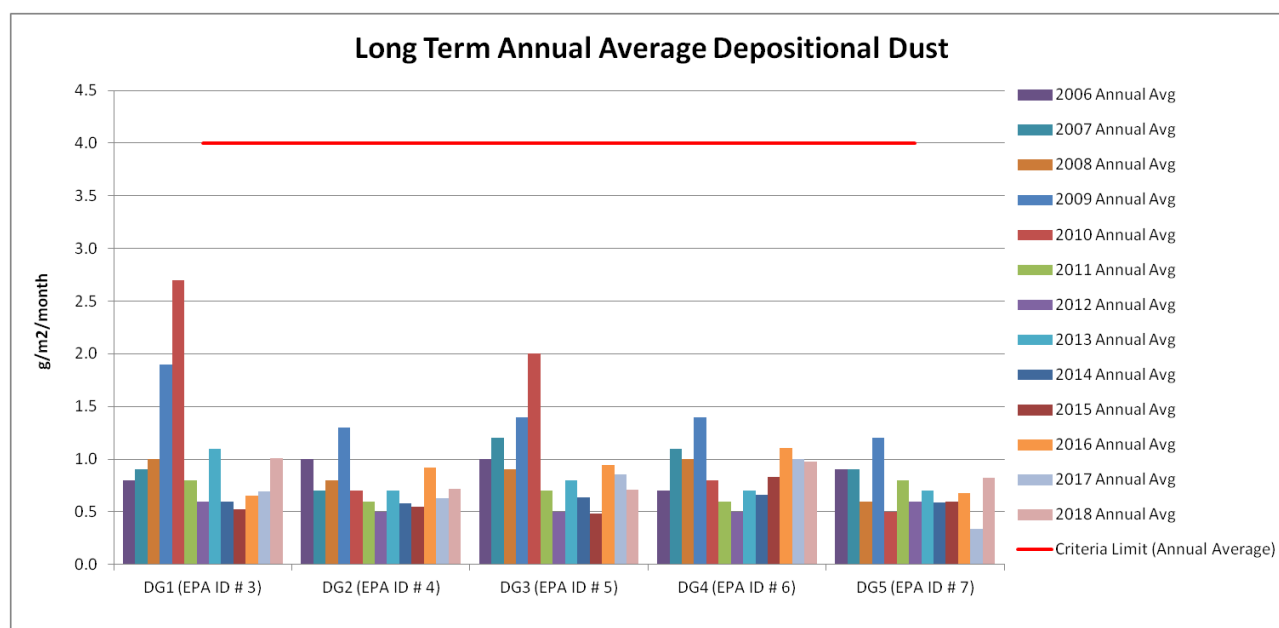


Figure 6.3: Long term annual average depositional dust results (2006 - 2018)

Air quality monitoring results in the 2018 reporting period show that air monitoring criteria has been met and the recorded levels do not exceed the prescribed maximum increase in deposited dust levels of  $2\text{g/m}^2/\text{month}$  or maximum level of  $4\text{mg/m}^2/\text{month}$ , with all average annual results below  $1.2\text{g/m}^2/\text{month}$ .

A comparison of annual average results from 2018 compared with prior years is provided in **Figure 6.3**. Results have remained at low levels consistent with previous results.

In comparison to the predicted trends and EA data, the AR reporting period for air quality is consistent and does not reflect any exceedances within the reporting period. In terms of greenhouse gas emissions,

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according to the EA (2007), Mannering has no material effect on national or global greenhouse gas emissions from the project.

The air quality monitoring program, in accordance with the approved management plan, was ongoing at the end of the reporting period.

## 6.2 Erosion and Sediment

Mining operations and significant rainfall events have the potential to cause erosion and/or generate sediment and impact on the surrounding catchment areas. These were unchanged during the reporting period and consist of:

- The exposed areas of the laydown areas, workshop and internal access tracks
- Coal stockpiles and coal handling equipment areas; and
- Vehicle and equipment movements;

The site includes a series of 8 sedimentation based sumps. These are inspected weekly for functionality and maintenance purposes. Identified actions are provided to the relevant site personnel by the site Environment and Community Coordinator or his delegate for completion as required.

Water not managed by the clean water diversion structures enters the sediment ponds or enters the underground drainage system which feeds into Pond 1.

The water draining from the hardstand catchment area reports to the pollution control Pond 1. Pond 1 will if required overflow into Pond 2, which then flows into Pond 3 and then Pond B prior to being discharged from site via LDP001. Total suspended solids are monitored at this point of the final dam prior to release (refer to **Section 6** for results).

Runoff from the coal handling and stockpile area is contained by a sedimentation-based sump system that helps capture the coal fines prior to entering sediment Pond 1 below the stockpile. Runoff from this area can contain a significant amount of coal fines due to the nature of the activities. This Pond along with Ponds 2 and 3 also function as primary settling ponds before discharging into Pond B.

Improvements to the existing flocculent system at Mannering Colliery were completed in June 2015 following a field trial to determine the most effective flocculent product (based on site water quality conditions). The system implemented during the 2015 reporting period consists of solid flocculent blocks, situated at four locations leading into, or within, the sediment pond system. The flocculent blocks are situated at the following four locations:

- Pipeline entry of hardstand area catchment into Pond 1;
- Concrete drainage channel from the coal stockpile catchment into Pond 2 (**Photo 1**);
- Outlet of the subsurface drainage system leading into Pond 1; and
- At the outlet of the concrete pipe transferring water into the final dam (Pond B).

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**Photo 1.** Flocculent block located adjacent the coal stockpile area.

The flocculent locations are shown on the Environmental Management Plan (**Appendix 12**)

The intent of the revised flocculent system is to enable sediment laden water flows during rainfall events to dose the surface water running into the sediment ponds by dispersing small amounts of flocculent as the runoff flow passes across the solid (hydrophilic) flocculent blocks into the sediment dams immediately downstream. The system therefore only operates when sufficient rainfall has fallen to generate surface runoff, and continues to function while ever surface runoff into the sediment dam system continues. As a result the system is largely automated, when it rains it works, and simply requires the inspection and replacement of flocculent blocks as they are consumed. Inspections and maintenance of the flocculent system is completed weekly by environmental management personnel.

There have been no exceedances of the total suspended solids criteria since the implementation of the revised flocculent system.

Both volumetric flow and water quality results from the licenced discharge point continue to be reported on a monthly basis on the LakeCoal Manning website.

### 6.3 Surface Water Pollution

Monitoring of surface water discharged from LDP001 is undertaken by an external contracting company with sampling occurring monthly and weekly during discharges. **Section 7** contains an overview of the monitoring results and discusses water quality, including the total oil and grease monitoring which occurs weekly during discharges.

### 6.4 Ground Water Pollution

Water in underground workings is generated from ground water which is released from the strata into mine workings along with process water. The collected water is pumped through an extensive goaf system that allows filtration and settlement. The water is then pumped from the mine into the surface settlement pond systems prior to discharge via EPA licensed discharge point 1 (LDP001).

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No evidence of groundwater pollution and no known groundwater pollution have been identified at Mannering Colliery during the reporting period.

## 6.5 Contaminated Polluted Land

The Colliery has a number of primary diesel and oil storages, all of which are bunded. There were no significant spills during the reporting period or reports of polluted land.

A Phase One Environmental Site Assessment (ESA) has been completed which identified areas of potential contamination. Phase 2 investigations and assessment are likely to be carried out over these areas during the decommissioning stage at end of mine life. Potential areas of concern are the land surrounding the diesel storage and the surface workshop. The development of a Remedial Action Plan following the Phase 2 assessment would occur, if required, based on the results from the site assessment.

The NSW EPA requested a PFAS sampling report. This sampling and subsequent report was provided within the reporting period.

## 6.6 Threatened Flora

In accordance with the EA (2007), Mannering's environmental footprint, specifically the surface facilities will remain unchanged and any mining activities undertaken at any point will have no noticeable surface implications. There will be no impact on existing flora or fauna within the Environmental Assessment Boundary. As such, no known impacts to threatened flora during the reporting period as a result of the Colliery's operations.

## 6.7 Threatened Fauna

As discussed above, there were no known impacts to threatened fauna during the reporting period as a result of the Colliery's operations.

As discussed in **Section 3.6** there were no significant changes to the existing infrastructure. The "site footprint" remained unchanged during the reporting year, that is, no clearing works were undertaken that would have impacted threatened fauna species.

## 6.8 Weed Management

Weed management was ongoing throughout the reporting period.

Appropriately trained and qualified contractors were engaged to manage the weeds in the areas of the surface operations, primarily through herbicide application via vehicle mounted "quick spray" units.

During the reporting period LakeCoal engaged a weed contractor to undertake a significant weed control campaign across its operational areas. The main weeds targeted included Lantana, Bitou Bush, Crofton Weed and Pampas Grass.

LakeCoal will continue the weed control program in the 2019 reporting period.

**Figure 6.8.1** shows the areas targeted by LakeCoal's weed management contractor based during the reporting period.

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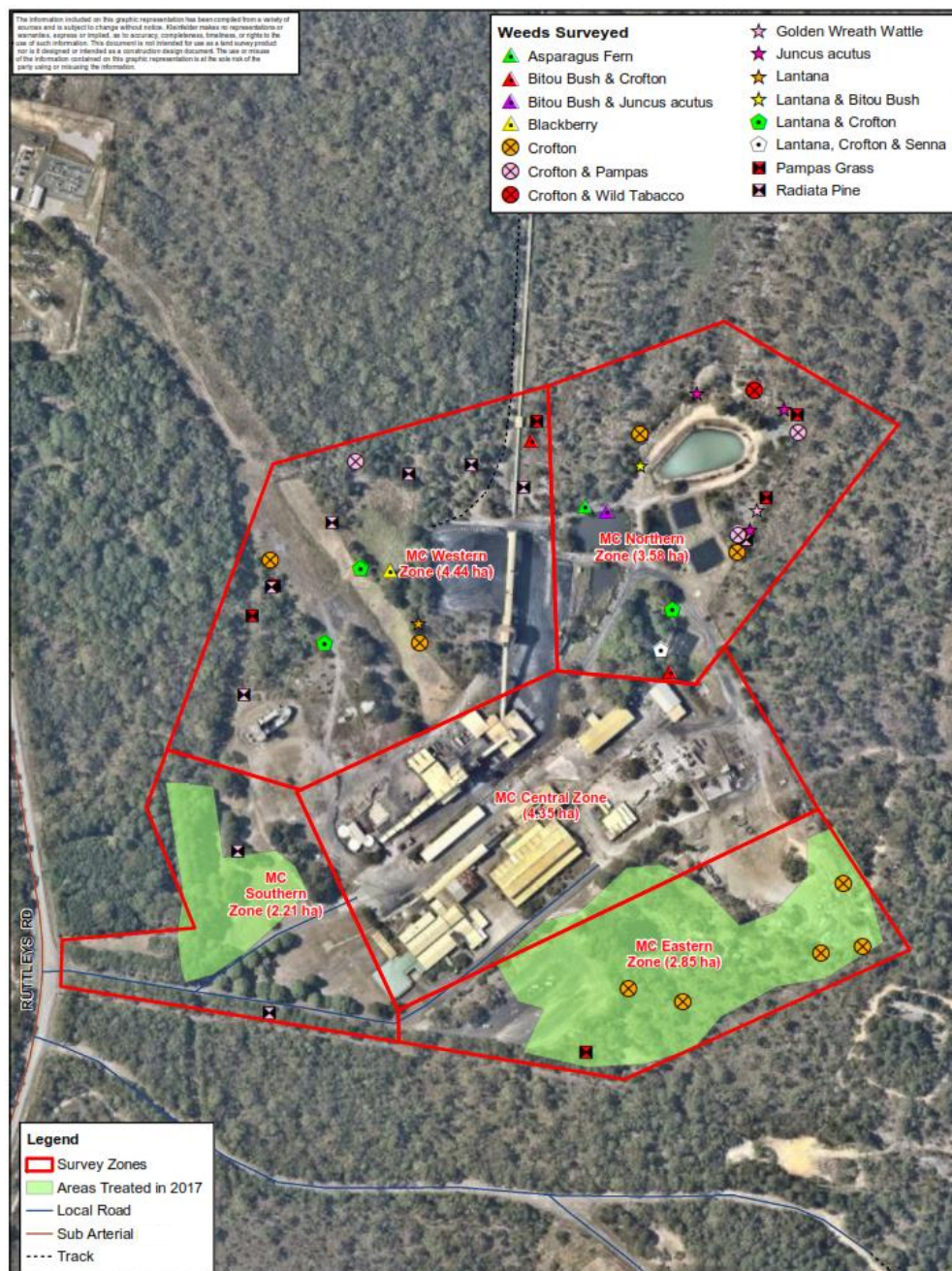


Figure 6.8.1: Weeds targeted at Mannering Colliery during 2018.

## 6.9 Blasting

There was no surface blasting undertaken during the reporting period. Where required minor blasting was undertaken underground as part of the development of the link road project.

As also outlined in the EA (Hanson Bailey 2007), no blasting is required to be undertaken on the surface as part of the operation of the Project (i.e. no ventilation shafts are required to be constructed). As such no impacts to surface features will result from blasting activities associated with Mannering Colliery.

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## 6.10 Operational Noise

Due to the increasing operational status of the Colliery during the reporting period noise monitoring was increased to monthly in accordance with the requirements of PA06\_0311 to assist with further understanding the site noise impact profile and to assist with informing the site's noise mitigation options report.

Noise monitoring locations are shown **Figure 6.10**, and results of the attended noise monitoring at these locations are presented in **Appendix 14, Table 14.2 to Table 14.25**.

There was 1 exceedance of the site's noise criteria during the reporting period.

On 29 August 2018, there was an exceedance recorded at 1dB exceedance of the site's LAeq15 Minute noise criteria at receiver RA2 (Macquarie Shores Retirement Village) during the scheduled night monitoring. During the night time monitoring the Global Acoustics technician noted that the Mannering Colliery rotary breaker continuum was clearly audible and the most dominant site specific noise source evident during the monitoring period.

Following the notification of the exceedance LakeCoal notified the NSW Department of Planning Environment (Compliance Division) and the Environmental Protection Authority of the exceedance via email on 29 August 2018. The following actions were also undertaken by LakeCoal as a result of noise exceedance:

A review of the sites operations and consultation with operational personnel at Mannering Colliery was undertaken on the 29th and 30th August 2018 to assist with determining the potential noise sources occurring at the time. The review concluded that the following activities were occurring around the time the exceedance was recorded:

- full coal production and processing (conveyors, rotary breaker and screening plant operations) through the Mannering coal handling and processing infrastructure
- general pit top activities

Follow up attended noise monitoring was undertaken at receiver RA2 on 30 August 2018. The results from the night time monitoring undertaken at RA2 confirmed elevated noise levels attributable to the site with a site specific LAeq15 min value of 42dB recorded.

In consultation with an acoustic specialist LakeCoal undertook an inspection/audit of Mannering's coal clearance infrastructure on the 29th and 30th August 2018 and noise mitigation works have been undertaken and will be reported in Q2 2019.

**Table 1 MEASURED NOISE LEVELS – RA2**

Date and Time	Wind Speed (m/s)	VTG (deg/C per 100m) 1	L <sub>Aeq</sub> Criterion dB	Criterion Applies? 2,3	CVC L <sub>Aeq</sub> dB 4	Exceedance
29/08/2018 01:29	1.0	0.5	39	Yes	<b>40</b>	<b>1</b>

Notes: 1. Sigma theta data used to calculate Vertical Temperature Gradient (VTG) in accordance with procedures detailed in the NPfI;  
2. Noise emission limits do not apply for winds greater than 3 metres per second (at a height of 10 metres); or temperature inversion conditions greater than 4°C/100m;  
3. These are results for Mannering Colliery (MC) in the absence of all other noise sources; and  
4. Bolded results in red are those greater than the relevant criterion (if applicable).

There were 12 community complaints received relating to noise during the reporting period.

Noises monitoring monthly results are collated in **Appendix 14**.

Noise emissions from Mannering Colliery are currently managed in accordance with the approved Noise Monitoring Program (*LakeCoal 2016*) which has included monthly (up to December 2018), or quarterly (2019 onwards) noise monitoring and operator attended surveys at three monitoring locations (RA1, RA2 and RA3

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figure 6.10). The noise predictions provided for the EA (Hanson Bailey, 2007) were used to set the noise limits. The noise data generally are consistent with those presented in the EA.

In summary, within the AR reporting period, noise from Mannering was generally found to be inaudible at the three noise monitoring locations, during both daytime and evening periods. At location RA2, during the night time period, MC operational noise was found to be audible during three of the seven noise monitoring surveys, with site noise contributions of LAeq 15minute 38 dB, LAeq 15minute 40 dB and LAeq 15minute 33 dB during the July, August and December noise monitoring surveys.

During the August noise monitoring survey, the site operational noise was measured to be LAeq 15 minute 40 dB at RA2, which is 1 dB above the noise limit for this location. The main noises from Mannering are the continuum and rotary breaker noise, however LakeCoal has been implementing noise mitigation projects to significantly reduce the impacts. (see section 6.11). Other noise sources include insects, birds, aircrafts, road and traffic.

The following table 6.10, from the EA (Hanson Bailey, 2007) reflects the indicative mining noise criteria for RA1, RA2 and RA3 for private properties within proximity to Mannering Colliery.

**Table 6.10.1 Environmental Assessment: Mining Noise Criteria at Private Property**

Ref	Receiver Area	Intrusive Criteria (LAeq 15min)			Amenity Criteria (LAeq, period)		
		Day	Evening	Night	Day	Evening	Night
RA1	Pacific Highway Residences	52	48	39	60	50	45
RA2	Macquarie Shores Home Village	43	44	40	60	50	45
RA3	Tall Timbers Road Residences	42	43	42	60	50	45

**Table 6.10.2 Environmental Assessment: Adopted Sleep Disturbance Criteria at Residences**

Ref	Receiver Area	Sleep Disturbance Criteria (LA1, 1 min)
RA1	Pacific Highway Residences	49
RA2	Macquarie Shores Home Village	50
RA3	Tall Timbers Road Residences	52

Based on the EA (Hanson Bailey, 2007), these results indicate Mannering is expected to affect 69 dwellings up to 3dBA, 50 dwellings up to 5 dBA and 33 dwellings up to 6 dBA, above the intrusive criteria. As stated in the EA (section 7), Mannering only affects approximately 33 relocatable dwellings within Macquarie Shores Home Village by up to 1 dBA above the night time amenity criterion, with operational noise to all other relocatable dwellings, within criteria.

Noise monitoring results based on monitoring during the AR reporting period and the EA, generally reflect that Mannering Colliery is not the dominant source of environmental noise within the vicinity. Vales Point Power Station is audible to receivers to the north and the Pacific Highway is also audible from the south.

Hanson Bailey (2007) report within the EA, based on environmental assessment and historical noise levels that Mannering Colliery is operating within acceptable noise emissions.

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Figure 6.10: Noise Monitoring Locations

## 6.11 Noise Mitigation Projects

During the reporting period Manning Colliery commenced the development of a noise mitigation options report in consultation with qualified noise specialist. The report highlighted a series of mitigation options that could be undertaken by Manning to assist with reducing the site's operational noise profile. During the reporting period LakeCoal completed the following noise mitigation projects at Manning Colliery:

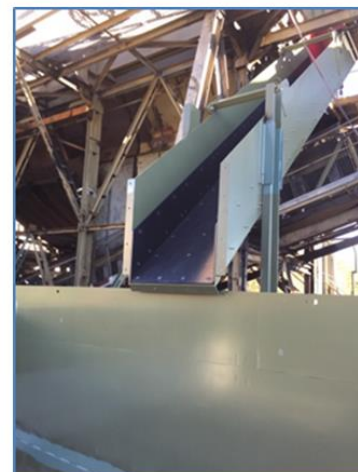
- Upgraded and completed repairs to the existing noise attenuation curtain around the transfer tower
- Installed a noise attenuated reject chute from the site's rotary breaker
- Tried the use of a loader on the Manning Coal stockpiled area.
- Decommissioned the former side reject chute from the transfer tower.
- Implemented measures to keep a coal plug in the bottom of the Manning surface bin.
- Undertook an audit and replaced noise conveyor rollers.
- Installation of noise blankets around the site's rotary breaker.

Current Noise Mitigation Works: Summary:

- During the reporting period there has been a significant reduction of noise emissions;
- Independent measurements at the receiver indicate an overall reduction of 5dBA in the noise from Manning Mine;

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- Operation of the coal breaker and the front end loader were readily audible at the nearest receiver (Macquarie Shores Retirement Village) prior to the noise mitigation commencing;
- The front end loader noise emissions has been reduced to less than 1/8<sup>th</sup> of the original sound;
- A noise camera was used to identify the primary sources of the noise within the coal breaker, with a reduction of 6 dBA;
- Maintenance on the 3 screens and major repairs to the foundations of the Screen House concluded in a 3 dBA in overall noise



**Photo 2** – Completed repairs to transfer house noise curtain, sound barriers around rotary breaker and the new noise attenuated reject chute of the site's rotary breaker.

## 6.12 Visual, Stray Light

Manning Colliery undertook an external lighting audit during the 2016 reporting period following a recommendation from the previous independent environmental compliance audit. The lighting audit concluded that all lighting at Manning Colliery complies with the Australian Standard 4282 – Control of Obtrusive Lighting Effects of outdoor lighting.

In accordance with the standard no lights are directed offsite or installed to shine above the horizontal. In addition the nearest residents to the site are approximately 800m from the site. No lighting or visual amenity complaints were received during the reporting period and no additional lighting was installed during the report period.

## 6.13 Aboriginal Heritage

As there have been changes to the operational areas on site during the reporting period and there are no identified Aboriginal sites within the pit top areas, there has been no potential for activities at Manning Colliery to negatively impact on Aboriginal sites during the reporting period.

## 6.14 Natural Heritage

The Non-Indigenous Cultural Heritage Management Plan identifies that there are no items of cultural significance within the pit top area. However, according to the environmental assessment within the EA (Hanson Bailey 2007), the following items have been identified of heritage significance within the Project Approval area;

- Morisset Hospital Precinct (listed under the NSW Heritage Act and Lake Macquarie City Council LEP); and
- Eaton's Bulk Store (listed under the Wyong Shire Council LEP)

There were no activities undertaken on site that had the potential for impact to either of these heritage features.

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## 6.15 Spontaneous Combustion

Current stockpiling of coal is minimal, therefore reducing the risk of spontaneous combustion occurring within the pit top area.

Underground controls to mitigate risk of spontaneous combustion include:

- The mine has no known recorded spontaneous combustion events in its 50+ year history.
- Spontaneous combustion is considered at the mine design phase.
- The mine has developed Trigger Action Response Plans to identify and manage any deviation from normal operating conditions with respect to indicators of spontaneous combustion.
- The mine monitors gases using a multipoint tube bundle gas analysis system.
- The mine conducts regular underground inspections by Mining Officials.

Following a request from the Department of Resources and Energy from the 2014 AEMR inspection Manning Colliery undertook a spontaneous combustion review of the small coal stockpiles located on the site ROM stockpile pad.

The review concluded that the risk potential for spontaneous combustion associated with the coal stockpiles was assessed to be low. This determination was based on the following:

- The coal on the stockpile is assumed to be Fassifern Seam coal, since this is the only coal mined at the colliery since the early 1980's. The Fassifern Seam has a medium intrinsic spontaneous combustion reactivity based on R70 self-heating rate testing from the neighbouring Chain Valley Mine (around 3km distance - UniQuest Project No: 00293 Report – August 2012, attached)
- The stockpiles have been insitu for at least 3 years with no known reports or signs of spontaneous combustion.
- The stockpile is and will continue to be regularly inspected.
- Temperature probing of the stockpile undertaken during the reporting period indicated a maximum temperature of less than 25 deg C. The stockpiled coal has very high moisture content since most stockpiles are water saturated under the surface. These two factors, when combined, significantly reduce the likelihood of the coal self-heating to the point of thermal runaway.

There were no instances of spontaneous combustion during the reporting period.

## 6.16 Bushfire

There were no instances of bushfire in the vicinity of the site recorded in the reporting period.

LakeCoal has, and will continue to, implement appropriate controls to assist in the management of bushfires that threaten the Operation.

## 6.17 Mine Subsidence

Previous subsidence calculations by Centennial Coal using Bord and Pillar mining methods give a subsidence figure of <20mm of cumulative subsidence on the surface.

As a result of the commencement of mining operations associated with the Link Road Project (LRP) LakeCoal implemented a subsidence monitoring program during the reporting period. Monitoring points were

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installed around the Vales Point Power Station (VPPS) switchyard in early 2016 prior to the commencement of the Link Road Project. Due to the sensitive nature of the infrastructure being undermined, subsidence monitoring was undertaken weekly within a 250m radius of the mining activity, with monthly surveys carried out on the remaining survey marks.

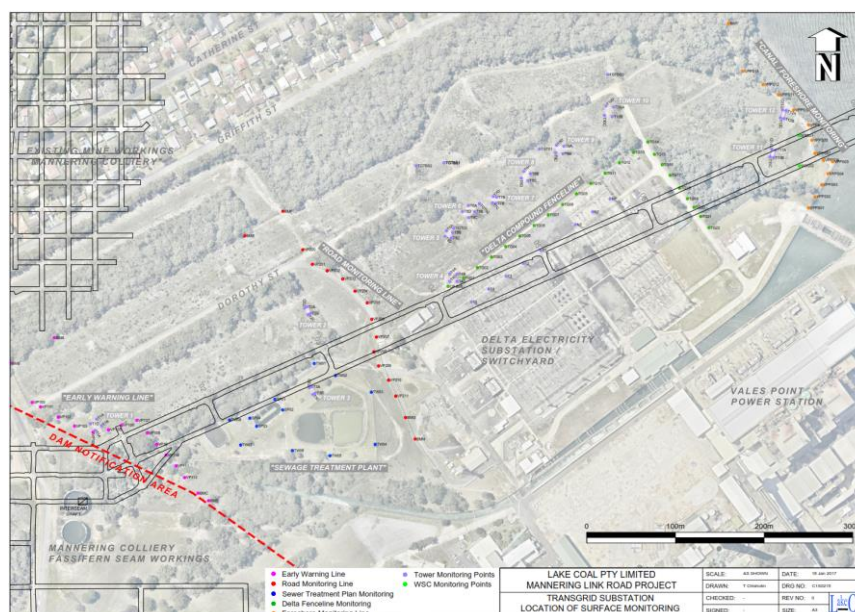
The subsidence monitoring frequency was reduced after completion of mining, with the frequency of monitoring to be dropped back to an annual survey. A single annual survey was completed on 9/01/2019, with another survey due in the 2019 reporting period. No discernible subsidence impact from the LRP workings was observed during the reporting period.

Furthermore, outlined in the EA (2007), the predicted subsidence for the any mining operations at Mannering is less than 20 mm, with tilts typically less than 1mm/m and strains less than 0.3 mm/m. These predictions for any subsidence that may occur are within the impact limits at this site and no effect is likely to occur.

"Early Warning Line 1"	09/01/2018	"Early Warning Line 2"	09/01/2018	Transgrid Fence Line	09/01/2018
	Subsidence		Subsidence		Subsidence
BM - A	0.000	BM - 'E'	0.000	TG-01	0.002
BM - B	-0.002	BM - 'F'	-0.005	TG-02	0.005
VP100	0.002	VP200	0.001	TG-03	0.001
VP101	-0.002	VP201	0.000	TG-04	-0.001
VP102	-0.027	VP202	-0.002	TG-05	-0.004
VP103	0.000	VP203	-0.006	TG-07	0.004
VP104	0.001	VP204	-0.011	TG-08	0.004
VP105	0.001	VP205	-0.003	TG-09	0.001
VP106	0.001	VP206	-0.001	TG-10	0.002
VP107	0.000	VP207	0.001	TG-11	-0.001
VP108	0.001	VP208	0.001	TG-13	-0.002
VP109	0.001	VP209	0.000	TG-14	0.001
VP110	0.000	VP210	0.001	TG-15	0.008
VP111	0.001	VP211	0.001	TG-16	0.004
VP112	0.000	BM - 'G'	0.002	TG-17	0.005
BM - C	-0.005	BM - 'H'	0.001	TG-18	0.000
BM - D	0.000	BM - 'H1'	0.000	TG-19	0.004
VPPS Foreshore Line	09/01/2018	"Waste Treatment Plant"	09/01/2018	TG-20	0.004
	Subsidence		Subsidence	TG-21	0.006
TG-22	0.000	VP209	0.000	TG-22	0.000
VPPS-1	-0.003	TW01	0.001		
VPPS-2	0.000	TW02	0.001		
VPPS-3	-0.001	TW03	0.001		
VPPS-4	-0.001	TW04	0.003		
VPPS-5	0.000	TW05	0.002		
VPPS-6	-0.003	TW06	0.004		
VPPS-7	-0.001	TW07	0.003		
VPPS-8	0.007	TW08	0.005		
VPPS-9	0.000	SP01	0.001		
VPPS-10	0.002	SP02	0.001		
VPPS-11	0.004	SP03	0.001		
VPPS-12	0.007	SP04	0.003		
VPPS-13	0.007				
BM 'I'	0.007				

An overview of the subsidence monitoring locations is provided in **Figure 6.17** below:

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**Figure 6.17 – Subsidence monitoring locations associated with the Manning Colliery link road project.**

## 6.18 Hydrocarbon Contamination

All hydrocarbon materials are stored within a dedicated bunded store building, with emergency spill stations located adjacent to the area. Spill stations are checked weekly to ensure they remain adequately stocked and serviced as required by an external contractor.

Training for spill response is provided within the site induction program, which is a prerequisite before undertaking work at Manning Colliery. The Colliery also has a Pollution Incident Response Management Plan in place (through its Existing Emergency and Duty Card system) to respond to pollution incidents. The Pollution Incident Response Management Plan was tested during the reporting period.

There were no incidents of hydrocarbon contamination, or any significant spills which occurred during the reporting period.

## 6.19 Methane Drainage

Methane levels in the Fassifern seam are a relatively low level content such that no pre or post methane drainage is required to maintain safe levels underground. All methane liberated in the mine enters the main ventilation air and is ventilated via the main fans.

The main fans continued to run during the reporting period, albeit at a lower flow than would usually be the case if production was occurring.

Monthly ventilation surveys, which document methane concentrations and mine ventilation flow also continued throughout the reporting period.

Methane emissions, and other greenhouse gas emissions, from the Colliery are reported annually to the Clean Energy Regulator in accordance with the *National Greenhouse and Energy Reporting Act 2007* (NGER Act). The emissions from the most recent reporting under the NGER Act are presented in **Table 6.19.1**. Note that the data from **Table 6.19.1** is presented in a financial year format as per NGER Act reporting requirements.

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Table 6.19.1: Greenhouse Gas Emissions 2017-2018 Reporting Year Period

Mannering GHG Emissions	
Total	90,502

In summary of environmental performance during the reporting period for Mannering Colliery:

Table 6- Environmental Performance

Aspect	Approved criteria/ EIS prediction	Performance during the reporting period	Trend/ key management implications	Implemented/ proposed management actions
Noise	Section 7.5 Acoustics (EA, Hanson Bailey 2007)	1 exceedance during the reporting period.	<p>Main trend: 2018</p> <p>Noise monitoring results based on monitoring during the AR reporting period and the EA, generally reflect that Mannering Colliery is not the dominant source of environmental noise within the vicinity. Vales Point Power Station is audible to receivers to the north and the Pacific Highway is also audible from the south.</p> <p>Hanson Bailey (2007) report within the EA, based on environmental assessment and historical noise levels that Mannering Colliery is operating within acceptable noise emissions</p>	<p>Noise mitigation projects commenced (see section 6.11)</p> <p>During the reporting period, there was one exceedance (see section 6.10). During the night time monitoring the Global Acoustics technician noted that the Mannering Colliery rotary breaker continuum was clearly audible and the most dominant site specific noise source evident during the monitoring period.</p> <p>Following the notification of the exceedance LakeCoal notified the NSW Department of Planning Environment (Compliance Division) and the Environmental Protection Authority of the exceedance via email on 29 August 2018. The following actions were also undertaken by LakeCoal as a result of noise exceedance:</p> <p>A review of the sites operations and consultation with operational personnel at Mannering Colliery was undertaken on the 29th and 30th August 2018 to assist with</p>

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				<p>determining the potential noise sources occurring at the time.</p> <p>This will be continued to be implemented to avoid any future exceedances.</p>
<b>Blasting</b>	<p>Section 7.6</p> <p>Blasting and Vibration (EA, Hanson Bailey 2007)</p>	<p>In accordance with approved criteria and EIS.</p> <p>No blasting has occurred within the reporting period</p>	n/a	n/a
<b>Air Quality</b>	<p>Section 7.7 Air Quality (EA, Hanson Bailey 2007)</p>	<p>In accordance with approved criteria and EIS predictions</p>	<p>Main trend (depositional dust results 2018):</p> <p>Total dust emissions from Mannering will remain minor, at less than 2 grams per second. The AR depositional dust results reflect in accordance with this trend, remaining a consistently minor result for the reporting period.</p>	<p>The air quality monitoring program, in accordance with the approved management plan, was ongoing at the end of the reporting period.</p> <p>Air Quality management will continued to be monitored effectively.</p>
<b>Biodiversity</b>	<p>Section 7.12 Flora &amp; Fauna (EA, Hanson Bailey 2007)</p>	<p>In accordance with approved criteria and EIS predictions/surveys.</p> <p>No impact of biodiversity items within environmental assessment within the reporting period.</p>	n/a	n/a
<b>Heritage</b>	<p>Section 7.13 and 7.14 (EA, Hanson Bailey 2007)</p>	<p>In accordance with approved criteria and EIS predictions/surveys.</p> <p>No impact of aboriginal or non-aboriginal heritage items within environmental assessment within the reporting period.</p>	n/a	n/a

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## 6.20 Public Safety

Mannering Colliery pit top area is fenced with chain mesh and barbed wire security fencing, the Colliery gates are closed and locked where and when appropriate and the site is patrolled by security staff on a regular basis.

No issues concerning public safety arose during the reporting period.

No surface impacts from mining that could pose a risk to public safety occurred during the reporting period.

During 2018 a security presence and patrols were maintained while Mannering Colliery was operating.

## 6.21 Other Issues and Risks

There were no other environmental issues or risks encountered during the reporting period.

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## 7 Water management

### 7.1 Water Management

Each week during the reporting period an average of approximately 6.3 megalitres (ML) of mine water was discharged into an unnamed creek via the licenced discharge point (LDP001) which is monitored in accordance with Environmental Protection Licence No.191. The water discharged from site at LDP001 comes primarily from the underground mine dewatering and surface runoff from rainfall events. The average discharge rate over the reporting period was approximately kilolitres 906 (kL) per day while discharging.

**Table 7- Water Take**

Water Licence #	Water sharing plan, source and management zone (as applicable)	Entitlement	Passive Take / inflows	Active pumping	TOTAL
WAL40461 / Ref 20AL217059	Sydney Basin North Coast Groundwater Source	450ML	0	311 ML	311 ML

**Figure 7.1 presents the daily dewatering volume from Mannering Colliery during the 2018 reporting period**

The maximum daily discharge during the reporting period peaked at 2,516 kL. **Figure 7.2** presents the daily discharge data during the reporting period, daily discharge volumes are also reported in the monthly reports on the Colliery website.

The *Mannering Colliery: Continuation of Mining Environmental Assessment* by Hansen Bailey (March 2007), states the following summary of relevant predictions and trends associated with water management at Mannering Colliery;

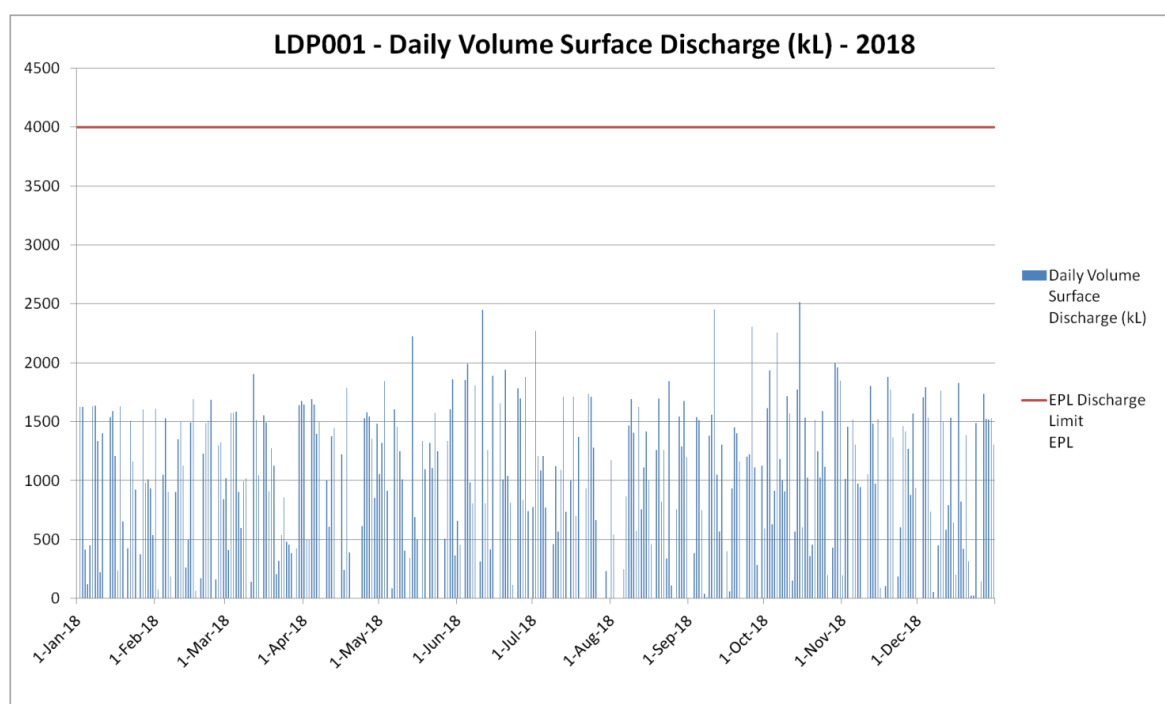
- *The critical issue for the water management system will be its ability to continue to control and discharge excess water which may be generated during mining. The water balance for the Project has been assessed for the maximum coal production of 1.1 Mtpa which will correspond to the maximum surplus water inflow;*
- *The mine water surplus predicted to occur is approximately 660 ML/annum, in a year of high rainfall which corresponds to an average daily discharge volume of approximately 1.7 ML.*
- *Mannering's EPL 191 licenses discharge up to 4 ML per day and will be required to be maintained due to the variability of daily discharge volumes from site.*
- *The estimated maximum inflow from the Fassifern Seam will increase from the current 0.76 ML/day to about 1.03 ML/day. The total volume of water inflow from both the Great Northern and Fassifern Seams will increase from the current 1.14 ML/day to 1.41 ML/day which equates to approximately 515 ML/annum.*
- *Mannering's EPL 191 permits a discharge of 4 ML/day and based on the above analysis it is concluded that the Project will not result in this licensed discharge volume being exceeded, under normal climatic conditions.*

Based on these predictions and trend analysis data, Mannering Colliery has been operating within the licenses levels and conditions.

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**Figure 7.1.1** (Environmental Assessment, Hansen Bailey, 2007) **Predicted Water Generation**

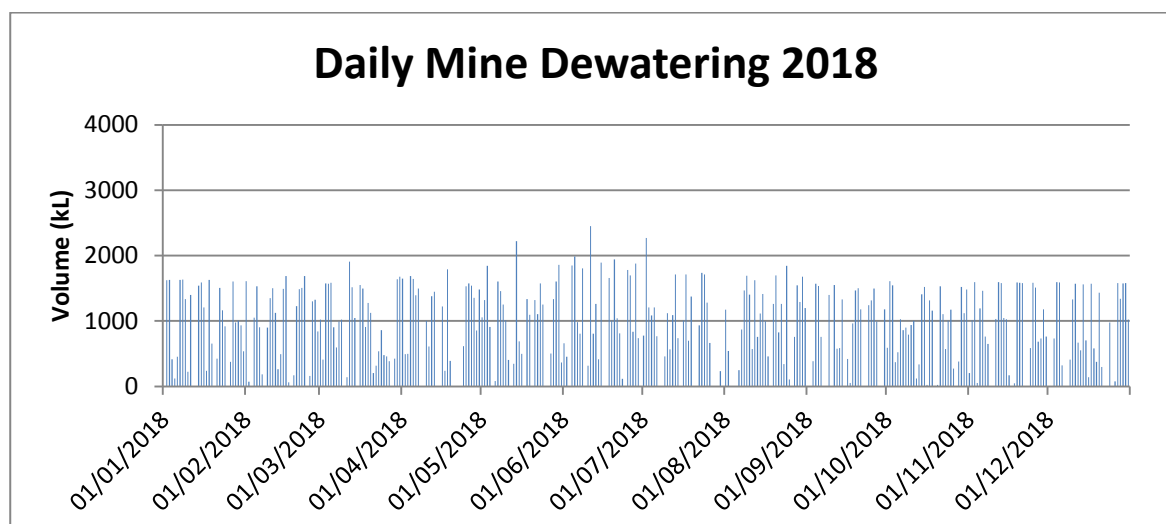
Water Supply Sources	Annual Water Volume (ML)		
	Dry Year (10 <sup>th</sup> Percentile rainfall)	Average Year (Average rainfall)	Wet Year (90 <sup>th</sup> percentile rainfall)
Surface Water Run-off	55	80	105
Process Mine Water	40	40	40
Groundwater Inflow	515	515	515
Total Surplus	610	635	660



**Figure 7.1: Surface discharge volumes during the reporting period**

As evident in **Figure 7.1**, there were no exceedances of the site's discharge limits during the reporting period

During the reporting period a total of 311 ML of groundwater was extracted in accordance with WAL40461/Ref 20AL217059, or approximately 69% of the 450 ML limit. An average of 1046kL was dewatered on a daily basis when pumping during the reporting period, with an average of pumped volume of 6.0 ML per week over the reporting period. The maximum daily mine dewatering rate during the reporting period reached 2450kL. Daily dewatering rates shown in **Figure 7.2**.



**Figure 7.2: Underground discharge volumes during the reporting period**

Extensive mining has occurred over time at Manning Colliery. For about 50 to 60 years, mining operations have occurred, which has led to current depressurisation of both seams with the potentiometric surface declining to the base of the seams, where coal has been extracted. According to the EA (*Hanson Bailey, 2007*), current on-going mining in the area suggests that at a regional level the piezometric surface/groundwater level will remain depressed into the future.

### 7.1.1 Water Quality

Weekly water quality monitoring results for pH, total suspended solids (TSS) and oil and grease along with associated limits at the licenced discharge point 1 (LDP001) are shown in **Figures 7.1.1, Figure 7.1.2 and Figure 7.1.3** Refer to Environmental Management Plan (**Manning Colliery** was not subject to an independent environmental compliance audit during the reporting period. There is an Independent Environmental Compliance Audit planned for Q2 2019. An updated table of compliance to the previous 2016 Independent Environmental Audit will be completed as part of that audit.

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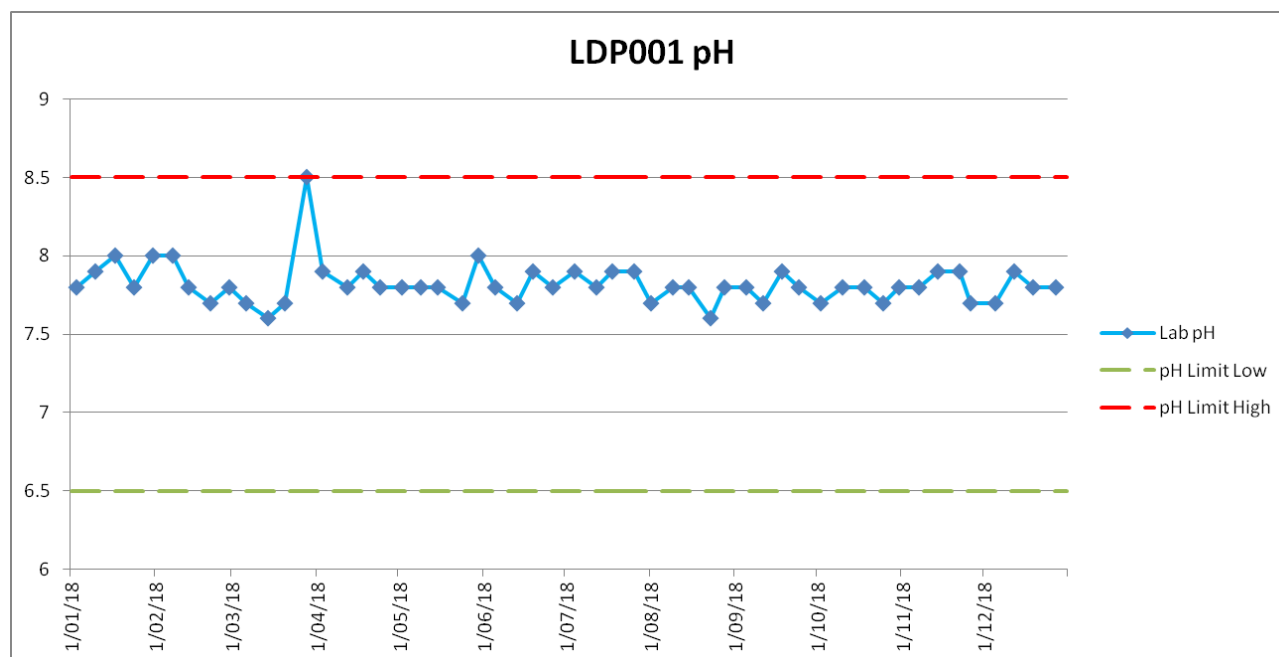


Figure 7.1.1: pH monitoring results at LDP001

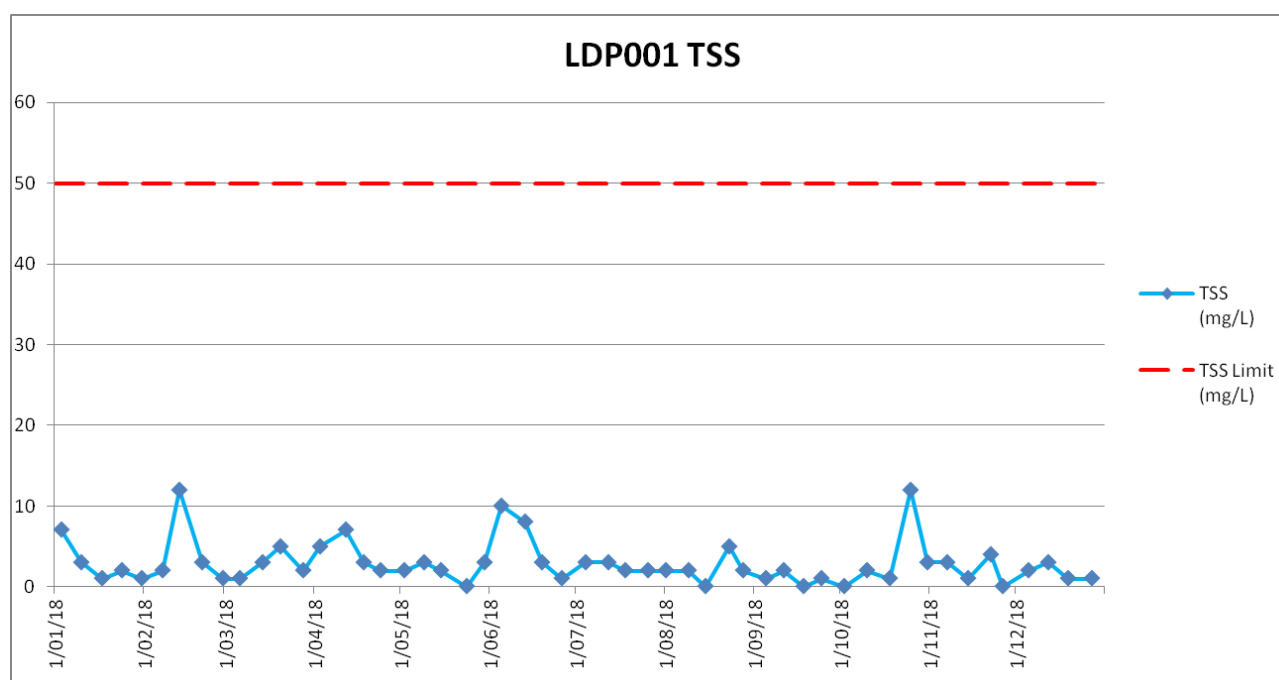
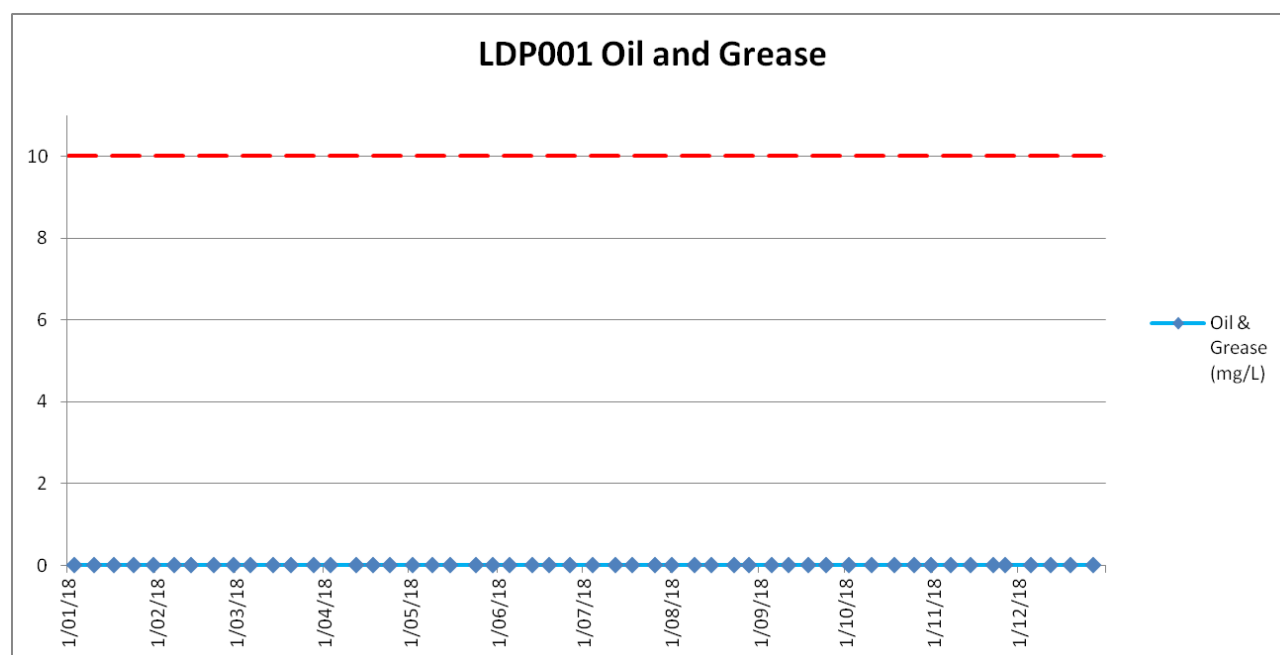


Figure 7.1.2: Total suspended solids monitoring results at LDP001



**Figure 7.1.3: Oil and grease monitoring results at LDP001**

Note that all oil and grease results less than the laboratory reporting limit (<5mg/L) is recorded as a zero result in **Figure 7.1.3**. There were no oil and grease results above the trigger value recorded during the reporting period.

During the reporting period there were no exceedances of the water quality criteria at the licenced discharge point for pH, Total Suspended Solids or Oil and Grease.

Details on additional measures taken to manage total suspended solids levels are detailed in **Section 6**.

In accordance with EPL191, water quality monitoring was conducted at a weekly interval.

The EA (*Hanson Bailey 2007*), does not detail any exact monitoring data to compare, however it outlines that random sampling of surface water quality was undertaken in November 2006 at LDP 001 and relevant sites in Lake Macquarie. The EC level in Lake Macquarie recorded at the time indicated that it is more saline than the mine water discharged upstream at LDP 001, with a recording of 24,900 uS/cm at the discharge point in comparison to 39,000 uS/cm at Lake Macquarie.

From this result, it is predicted that water from Manning is of higher quality, has lower salinity levels than downstream waters and generally has no predicted significant adverse impacts on either downstream or natural environments. In accordance with the EPL 191, Manning will continue to discharge off-site regularly and monitor results.

### 7.1.2 Potable Water Use

Potable water use during the reporting period 92.8ML was an increase than the prior reporting period (70 ML). There was no mining and less coal handled during the reporting period. (Refer to **Figure 2.9**).

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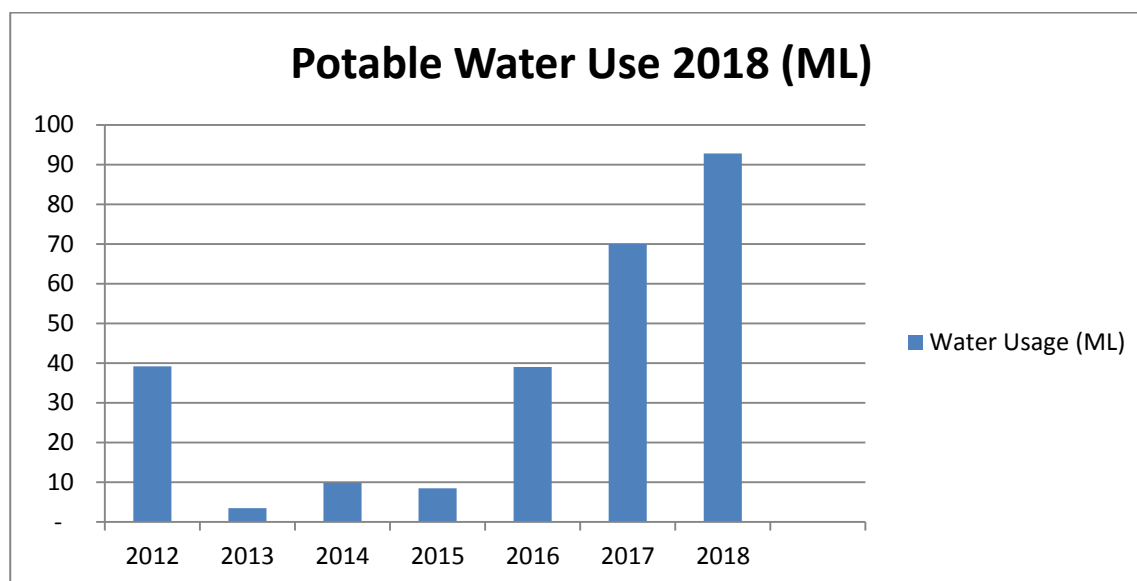


Figure 7.1.4: Potable water use

### 7.1.3 Surface Water Management

The site surface water management system comprises both clean and dirty water catchments. A number of water management diversions direct clean water around the site to avoid increased hydraulic load on the sedimentation dams that treat the site dirty water prior to discharge.

Clean water from areas unaffected by the operational activities and water that runs onto the site area due to the contours of the surrounding land, i.e. primarily areas to the south and east, are diverted through clean water management structures (such as diversion drains and culverts under roads), enabling the water to ultimately report to Pond 1. The clean water flow paths are shown on **Figure 7.1.5**.

The dirty water management system comprises a number of both surface and subsurface management structures to control the flow of water and ultimately direct the dirty water into the site sediment dams. **Figure 7.1.6** shows the dirty water flow paths.

The sediment dam system comprises a total of four main dams, labelled Pond 1, Pond 2, Pond 3 and Pond B, as shown on **Figure 7.1.5**. References to "Pond" and "Dam" are used interchangeably and refer to the same water management structures.

As shown on **Figure 7.1.6**, water from the dirty water catchments enters into Pond 1 or Pond 2, when both these dams are full water overflows into Pond 3. Once Pond 3 reaches capacity it subsequently over flows into Pond B. Finally, when Pond B reaches capacity it overflows out LDP001.

A series of interconnecting pipes and valves also allows Pond 2 to be drained into Pond 3, Pond 3 to be drained into Pond B and Pond B to be discharged via LDP001. These valves are generally kept shut to maximise storage capacity of the dams, but are opened after rainfall events, once water quality is suitable for discharge, to minimise water the volume of water stored and again increase storage capacity of the dams for the next rainfall event.

Water underground is derived from two sources: excess process water which is generated from mining operations and ground water which is released from the strata into underground mine workings. The collected water is pumped through an extensive goaf system that allows filtration and settlement.

The mine water discharge line consists of the main pump, flow meter, turbidity meter, valves and outlets. The mine water can be directed to pond 1, 3, B or LDP001. Under normal operation the mine water will be directed to LDP 1 to maintain capacity in the sediment dams for rainfall events.

Management of the 4 interconnected ponds is undertaken via weekly inspections and management as required following rainfall events. The intent of this active management is to maintain dams at their lowest possible levels whilst adhering to water quality criteria at the discharge point (LDP001).

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Manning Colliery was not subject to an independent environmental compliance audit during the reporting period. There is an Independent Environmental Compliance Audit planned for Q2 2019. An updated table of compliance to the previous 2016 Independent Environmental Audit will be completed as part of that audit.

There was 1 non-compliance which was a reportable noise exceedance which relates to the sites approval during the reporting period.



Figure 7.1.5 : Clean Water Management Diagram

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Figure 7.1.6: Dirty Water Management

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## 8 Rehabilitation

### 8.1 Buildings

Mannering Colliery surface infrastructure comprises:

- Mine entry / exit for personnel and materials (1:3.5 Decline) including a winch house
- Coal conveyor drift
- Limited coal-handling facilities for breaking, crushing, sizing and storing product
- Coal stockpile and reclaiming system
- Overland conveyor systems
- Administration and bathroom facilities
- Workshop facilities
- Pollution control apparatus and structures
- Enclosed and bulk open material and equipment stores facilities
- Mine ventilation
- Air compressors
- Internal roads and car parking facilities.

The total area of effect of the colliery surface infrastructure is approximately 13.2 hectares.

### 8.2 Rehabilitation of Disturbed Land

There was no significant rehabilitation works on disturbed lands during the reporting period (**Tables 8.1 and 8.2**), which relates to the fixed nature of the surface infrastructure and that upon recommencement of mining activities all existing infrastructure and lay down areas will again be required for use.

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Table 8.1 – Summary of Rehabilitation at Mannering Colliery

Item	Area Treated (Ha)	
	This period (2018)	Next period (2019)
<b>A. Total Mine Footprint</b> (managed by LakeCoal)	Approximately 13.2	Approximately 13.2
<b>B Total Active Disturbance</b>	13.2	13.2
<b>C. Land being prepared for rehabilitation</b>	Nil	Nil
<b>D Land Under Active Rehabilitation</b>	Nil	Nil
<b>E Completed Rehabilitation</b>	Nil	Nil

Table 8.2 Maintenance Activities on Rehabilitated Land at Mannering Colliery

NATURE OF TREATMENT	Area Treated (Ha)		Comment/Control Strategies/Treatment Detail
	This period (2018)	Next period (2019)	
<b>Additional Erosion Control Works</b> (drains re-contouring, rock protection)	0	0	n/a
<b>Re-covering</b> (further topsoil, subsoil sealing etc.)	0	0	n/a
<b>Soil Treatment</b> (fertiliser, lime, gypsum etc.)	0	0	n/a
<b>Treatment/Management</b> (grazing, cropping, slashing etc.)	0	0	n/a

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	Area Treated (Ha)		
NATURE OF TREATMENT	This period (2018)	Next period (2019)	Comment/Control Strategies/Treatment Detail
<b>Re-seeding/Replanting</b> (species density, season etc.)	0	0	n/a
<b>Adversely Affected by Weeds</b> (type and treatment)	13.2	13.2	Weed Management undertaken during the reporting period.
<b>Feral Animal Control</b> (additional fencing, trapping, baiting etc.)	0	0	No feral animal control undertaken during the reporting period or proposed to be undertaken during the next reporting period.

### 8.3 Other Infrastructure

There was no other rehabilitation works completed during the reporting period.

### 8.4 Rehabilitation Trials and Research

No rehabilitation trials or research was undertaken during the reporting period.

### 8.5 Further Development of the Final Rehabilitation Plan

Further development of the rehabilitation and closure criteria occurred during the development of a new MOP, consistent with the September 2013 MOP guidelines, which was approved by the Department on 26 September 2018. These criteria will be refined over time as the MOP is varied or updated. A rehabilitation monitoring program is due to be submitted to DRE and conducted during Q2 2019.

A summary of the activities (and their current status) that were proposed to be undertaken during the 2019 reporting period is provided in **Table 8.3**.

**Table 8.3 – Update on activities planned to be undertaken in the 2019 reporting period.**

Activity Proposed			Status Update	
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Activity Proposed	Status Update
Completion and implementation of the Noise Mitigation Options Assessment/Recommendations required under PA 06_0311	Noise mitigation monitoring and reporting.
Trial of chemical dust suppressant around unsealed access roads to reduce windblown dust	To be commissioned and completed in 2019.
Implementation of the 2019 Weed Action Plan	To be commissioned and completed in 2019.
Development of the site rehabilitation monitoring program and baseline monitoring.	Consultant engaged to conduct in Q2 2019.
A modification to the development consent will be submitted to allow for an increase in the amount of coal handled at Mannering Colliery and transferred via existing infrastructure to Vales Point Power Station. The modification also includes a minor change in mining method (namely the description of bord and pillar mining)	The environmental assessment (EA) and supporting air quality and noise mitigation assessments are being finalised for submission to DPE in Q2, 2019.
Independent Environmental Audit	To be commissioned and completed.
Transfer of Environmental Licences (EPL, Water and Radiation) and Titles	To be completed in Q1/Q2 2019 due receivership and change in ownership.
Housekeeping Activities	Ongoing in 2019

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## 9 Community

### 9.1 Community Complaints

There were 12 consolidated community complaints received during the reporting period which was all relating to noise. A summary of the complaints are provided in **Appendix 15**. As the 2018 complaints are based all on noise a trend graph was considered unnecessary.

### 9.2 Community Liaison

The Community Consultative Committee continued to operate during the reporting period in accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects, 2016* (NSW Department of Planning).

**Table 9** lists the current Community Consultative Committee members as at the end of the reporting period.

There were four combined CCC meetings for Manning and Chain Valley Colliery held during the reporting period on the 21 February 2018, 16 May 2018, 15 August 2018 and 20 November 2018.

Minutes for each of the committee meetings are available on LakeCoal's Manning website (<http://manningmine.com.au/community/consultative-committee-information/>).

**Table 9: Community Consultative Committee Members**

Stakeholder	Name
Chairperson	Margaret MacDonald-Hill
Community	Andrew Whitbourne
Community	John Oakes
Community	Neil Wynn
Community	Paul Maky
Community	Ian Carr
LakeCoal	Wade Covey
Lake Macquarie City Council	John Gilbert
Wyong Shire Council	Julie Vaughn

In addition to the above the LakeCoal Manning website is updated on a monthly basis with monitoring data, management plans, reports, audits and complaint details among other items.

LakeCoal's community hotline number (1800 687 557) is displayed prominently and permanently on the Colliery website.

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### 9.3 Community Support / Engagement

LakeCoal is committed to supporting and engaging with the local communities which surround its operations. While LakeCoal provides a monetary offsets associated with its Voluntary Planning Agreement under its operating approvals LakeCoal also supports the local community through a variety of additional avenues. This support is provided through in kind support, cash donations, staff time, and charitable donations.

## 10 Independent Audit

Mannering Colliery was not subject to an independent environmental compliance audit during the reporting period. There is an Independent Environmental Compliance Audit planned for Q2 2019. An updated table of compliance to the previous 2016 Independent Environmental Audit will be completed as part of that audit.

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## 11 Incidents and non-compliances during the reporting period

There was 1 non-compliance which was a reportable noise exceedance which relates to the sites approval during the reporting period.

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## 12 Activities to be completed in the next reporting period

A summary of the activities (and their current status) that were proposed to be undertaken during the 2019 reporting period is provided in **Table 12**.

**Table 12– Update on activities planned to be undertaken in the 2019 reporting period.**

Activity Proposed	Status Update
Completion and implementation of the Noise Mitigation Options Assessment/Recommendations required under PA 06_0311	Noise mitigation monitoring and reporting.
Trial of chemical dust suppressant around unsealed access roads to reduce windblown dust	To be commissioned and completed in 2019.
Implementation of the 2019 Weed Action Plan	To be commissioned and completed in 2019.
Development of the site rehabilitation monitoring program and baseline monitoring.	Consultant engaged to conduct in Q2 2019.
A modification to the development consent will be submitted to allow for an increase in the amount of coal handled at Mannering Colliery and transferred via existing infrastructure to Vales Point Power Station. The modification also includes a minor change in mining method (namely the description of bord and pillar mining)	The environmental assessment (EA) and supporting air quality and noise mitigation assessments are being finalised for submission to DPE in Q2, 2019.
Independent Environmental Audit	To be commissioned and completed.
Transfer of Environmental Licences (EPL, Water and Radiation) and Titles	To be completed in Q1/Q2 2019 due receivership and change in ownership.
Housekeeping Activities	Ongoing in 2019

## Definitions

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**AEMR**

Annual Environmental Management Report, now known as the Annual Review.

**Annual Review**

The annual environmental report compiled for Mannering Colliery, the Annual Review also fulfills the requirement for an Annual Environmental Report or an Annual Environmental Management Report (AEMR) generally required by mining leases.

**CCC**

Community Consultative Committee

**DRE**

Division of Resources and Energy within the Department of Trade, Investment, Regional Infrastructure and Services.

**EPA**

Environment Protection Authority

**EP&A Act**

Environmental Planning and Assessment Act, 1979

**EPL**

Environment Protection Licence

**EMS**

Environmental Management System

**KL**

Kilolitre

**LDP 1**

Licensed Discharge Point 1 (per EPL191)

**OEH**

NSW Office of Environment and Heritage

**T CO<sub>2</sub>-e**

tonnes of carbon dioxide equivalence

**The website**

The website of LakeCoal - Mannering Colliery, which is, [www.manneringmine.com.au](http://www.manneringmine.com.au)

**MP 06\_0311**

Project approval MP 06\_0311, as modified, issued under Section 75J of the Environmental Planning and Assessment Act 1979 for the Mannering Colliery Extension of Mine Project.

**VPPS**

Vales Point Power Station

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## References

Hanson Bailey 2007, *Centennial Coal Company Limited: Mannering Colliery Continuation of Mining: Environmental Assessment*, James Bailey, March 2007.

## Appendices

**Appendix 11: Project Approval**

**Appendix 12: Plans**

**Appendix 13: Environment Protection Licence 191**

**Appendix 14: Noise Monitoring**

**Appendix 15: Weed Action Plan**

**Appendix 16: Community Complaints Register**

**Appendix 17: Response to Audit Recommendations IEA 2016**

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## **11 Appendix Project Approval**

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# Project Approval

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

I approve the project application referred to in Schedule 1, subject to 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 project.

Project Approval signed by Frank Sartor on 12 March 2008

Frank Sartor MP  
**Minister for Planning**

Sydney

2008

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### SCHEDULE 1

**Application No:**

06\_0311

**Proponent:**

Centennial Coal Company Limited

**Approval Authority:**

Minister for Planning

**Land:**

See Appendix 1

**Project:**

Mannering Colliery – Continuation of Mining Project

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Red text represents Modification 1 of October 2012 (06\_0311 MOD 1)

Blue text represents Modification 2 of November 2014 (06\_0311 MOD 2)

Green text represents Modification 3 of December 2015 (06\_0311 MOD 3)

Orange text represents Modification 4 of August 2016 (06\_0311 MOD 4)

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## DEFINITIONS

Annual review	The review required by Condition 3 of Schedule 5
Affected councils	Central Coast Council and Lake Macquarie City Council
APZs	The asset protection zones shown in Figure 4 in Appendix 2
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; and any pipeline, water, sewer, telephone, gas or other service main
BCA	Building Code of Australia
CCC	Community Consultative Committee
Conditions of this approval	Conditions contained in Schedules 2 to 5 inclusive
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning & Environment
DPI Water	Department of Primary Industries-Water
DRE	Division of Resources and Energy of the Department of Industry
EA	Environmental Assessment titled <i>Mannering Colliery Environmental Assessment</i> , dated March 2007, including the response to submissions, dated 27 July 2007
EA (Mod 1)	Environmental Assessment titled <i>Mannering Colliery – Extension of Mine Project Section 75W Modification to Project Approval 06_0311</i> , as modified by the associated response to submissions dated 4 September 2012
EA (Mod 2)	Environmental Assessment titled <i>'Mannering Colliery – Modification 2, Environmental Assessment, Section 75W Modification to MP 06_0311'</i> dated April 2014, as modified by the associated response to submissions dated 15 September 2014
EA (Mod 3)	Environmental Assessment titled <i>'Mannering Colliery – Modification 3 Environmental Assessment, Section 75W Modification to MP 06_0311'</i> dated June 2015, including the associated Response to Submissions dated September 2015
EA (Mod 4)	Environmental Assessment titled <i>'Administrative modification to MP06_0311 – Environmental Assessment'</i> dated 25 July 2016
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the <i>Protection of the Environment Operations Act 1997</i>
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
First workings	Extraction of coal by bord and pillar workings and the like
Incident	A set of circumstances that: <ul style="list-style-type: none"> <li>causes or threatens to cause material harm to the environment; and/or</li> <li>breaches or exceeds the limits or performance measures/criteria in this approval</li> </ul>
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this approval where it is defined to mean 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
Mining operations	Includes all extraction, processing, handling, storage and transportation of coal carried out on the site
Minister	Minister for Planning, or delegate
Minor	Not very large, important or serious
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
OEH	Office of Environment and Heritage
Privately-owned land	Land that is not owned by a public agency, Vales Point Power Station or a mining company (or its subsidiary)
Proponent	Centennial Coal Company Limited or any other person or company (including LakeCoal Pty Limited) who rely on this approval to carry out the project that is subject to this approval

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
ROM	Run-of-mine
RMS	Roads and Maritime Services
Second workings	Extraction of coal by pillar extraction methods
Secretary	Secretary of the Department, or nominee
Site	Land referred to in Appendix 1
SMP	Subsidence Management Plan
Statement of Commitments	The Statement of Commitments in Appendix 3
Subsidence	Subsidence of the land surface caused by underground coal mining



## SCHEDULE 2 ADMINISTRATIVE CONDITIONS

### Obligation to Minimise Harm to the Environment

1. The Proponent **must** implement all practicable measures to prevent and/or minimise any 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) EA;
  - (b) EA (Mod 1);
  - (c) EA (Mod 2);
  - (d) EA (Mod 3);
  - (e) EA (Mod 4); and
  - (f) Project Layout Plans.

*Note:*

- The Project Layout Plans are shown in Appendix 2.

- 2A. The Proponent **must** carry out the development in accordance with the
  - (a) Statement of Commitments; and
  - (b) conditions of this approval.
3. If there is any inconsistency between the documents in condition 2, the most recent document shall prevail to the extent of the inconsistency. The conditions of this approval shall prevail over the documents in conditions 2 and 2A(a) to the extent of any inconsistency.
4. The Proponent **must** comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
  - (a) any reports, plans, programs or correspondence that are submitted in accordance with the conditions of this approval; and
  - (b) the implementation of any actions or measures contained in these reports, plans, programs or correspondence.

### Limits on Approval

5. Mining operations may take place until 30 June 2022.

*Note: Under this approval, the Proponent is required to rehabilitate the site to the satisfaction of the Secretary and DRE. Consequently this approval will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.*

6. The Proponent **must** not extract more than 1.1 million tonnes of ROM coal a year from the site.
- 6A. The Proponent **must** not transport more than 1.3 million tonnes of ROM coal a year from the site.
7. The Proponent **must** ensure all coal produced and/or received on the site is transported by overland conveyor to Vales Point Power Station.

### Updating and Staging Strategies, Plans or Programs

8. 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 development 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.

With the agreement of the Secretary, the Proponent may prepare a revision or stage of any strategy, plan or program required under this approval without undertaking consultation with all parties nominated under the applicable condition in this approval.

*Notes:*

- *While any strategy, plan or program may be submitted on a staged basis, the Proponent must ensure that the existing operations on site 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 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.*

### **Structural Adequacy**

9. 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.*

### **Demolition**

10. 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.

### **Operation of Plant and Equipment**

11. The Proponent **must** ensure that all plant and equipment used on site is:
- (a) maintained in a proper and efficient condition; and
  - (b) operated in a proper and efficient manner.

### **Community Enhancement Program**

12. The Proponent **must** pay the affected councils \$0.02 for each tonne of ROM coal produced by the project for the purpose of improving water quality in the Lake Macquarie catchment. This payment **must** be:
- (a) shared equally by the affected councils;
  - (b) made by the end of March 2009, and at yearly intervals thereafter;
  - (c) calculated on the ROM coal produced in the previous calendar year; and
  - (d) subject to indexation by the Implicit Price Deflator, as published by the Australian Bureau of Statistics.

### SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS

#### NOISE

##### Noise Impact Criteria

1. The Proponent **must** ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1 at any residence on privately owned land.

Table 1: Noise limits dB(A)

Day <i>L<sub>Aeq</sub>(15 min)</i>	Evening <i>L<sub>Aeq</sub>(15 min)</i>	Night		Location (as listed in Appendix 4)
		<i>L<sub>Aeq</sub>(15 min)</i>	<i>L<sub>A1</sub>(1 min)</i>	
49	49	35	49	4 – di Rocco
47	47	35	49	5 – Keighran
44	44	35	49	6 – Swan
43	43	43	50	7 – Druitt
46	46	46	50	8 – May
45	45	45	52	9 – Jeans
40	40	40	52	11 – Jeans
43	43	43	52	18 – Jeans
44	44	44	52	20 – Knight and all other Chain Valley Bay residences

*Note: The location of the land referred to in Table 1 is shown on the figure in Appendix 4.*

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

This condition only has effect prior to recommencement of underground coal extraction at Mannering Colliery. At all other times, conditions 1 to 4 of Appendix 4B have effect in its place.

##### Noise Mitigation

2. The Proponent **must** prepare a report on potential noise mitigation measures for noisy equipment and activities undertaken on the site to the satisfaction of the **Secretary**. This report must be:
  - (a) prepared by a suitably qualified acoustic expert;
  - (b) submitted to the **Secretary** by the end of September 2008; and
  - (c) accompanied by an action plan for the implementation of any reasonable and feasible recommendations of the report.

##### Noise Monitoring

3. The Proponent **must** prepare a Noise Monitoring Program for the project to the satisfaction of the **Secretary**. This program must:
  - (a) be submitted to the **Secretary** by the end of September 2008;
  - (a1) be revised in consultation with the EPA and be submitted to the Secretary by the end of April 2016; and
  - (b) include the use of **continuous and** attended noise monitoring measures to monitor the performance of the project.

The Proponent **must** implement the approved Noise Monitoring Program as approved from time to time by the Secretary.

#### SUBSIDENCE

4. The Proponent **must** limit its coal extraction methods on the site to first workings only, and **must not** undertake second workings.

5. Deleted.

## SOIL AND WATER

### Discharge

6. The Proponent **must** only discharge water from the site as expressly provided for by its EPL.
7. The Proponent **must** investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
  - (a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Secretary;
  - (b) be submitted to the Secretary by the end of March 2009; and
  - (c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

### Water Management Plan

8. 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 DPI Water by suitably qualified expert/s whose appointment/s have been approved by the Secretary;
  - (b) be submitted to the Secretary by the end of March 2009; and
  - (c) include a:
    - Site Water Balance;
    - Erosion and Sediment Control Plan;
    - Surface Water Monitoring Plan; and
    - Groundwater Monitoring Program.

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

### Site Water Balance

9. The Site Water Balance must:
  - (a) include details of:
    - sources and security of water supply;
    - water use on site;
    - water management on site; and
  - (b) investigate, assess and report on measures to minimise water use by the project, particularly potable water from the Wyong Shire town water supply.

### Erosion and Sediment Control

10. The Erosion and Sediment Control Plan must:
  - (a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom 2004, or its latest version);
  - (b) identify activities that could cause soil erosion and generate sediment;
  - (c) describe measures to minimise soil erosion and the potential for transport of sediment from the site;
  - (d) describe the location, function, and capacity of erosion and sediment control structures; and
  - (e) describe what measures would be implemented to monitor and maintain the structures over time.

### Surface Water Monitoring Program

11. The Surface Water Monitoring Plan must include:
  - (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the project;
  - (b) surface water impact assessment criteria;
  - (c) a program to monitor the impact of the project on surface water flows and quality; and
  - (d) procedures for reporting the results of this monitoring.

## Groundwater Monitoring Program

12. The Groundwater Monitoring Program must include:
- detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality;
  - groundwater impact assessment criteria;
  - a program to monitor the impact of the project on groundwater levels, yield and quality; and
  - procedures for reporting the results of this monitoring.

## REHABILITATION

13. The Proponent **must** rehabilitate the site to the satisfaction of the Secretary and DRE. Rehabilitation must be substantially consistent with the Rehabilitation Objectives described in the EA, the Statement of Commitments and the following objectives in Table 2 below.

*Table 2: Rehabilitation Objectives*

Feature	Objective
Mine site (as a whole of the disturbed land and water)	Safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s).
Rehabilitation materials	<ul style="list-style-type: none"> <li>Materials (including topsoils, substrates and seeds of the disturbed area) are recovered, appropriately managed and used effectively as resources in the rehabilitation.</li> </ul>
Surface Infrastructure	To be decommissioned and removed, unless the DRE agrees otherwise.
Portals and ventilation shafts	To be decommissioned and made safe and stable.
Other land affected by the development	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: <ul style="list-style-type: none"> <li>local native plant species (unless the DRE agrees otherwise); and</li> <li>a landform consistent with the surrounding environment.</li> </ul>
Built features damaged by mining operations	Repair to pre-mining condition or equivalent unless: <ul style="list-style-type: none"> <li>the owner agrees otherwise; or</li> <li>the damage is fully restored, repaired or compensated under the <i>Mine Subsidence Compensation Act 1961</i>.</li> </ul>
Community	Ensure public safety.

- 13A. The Proponent **must** carry out all surface disturbing activities in a manner that, as far as practicable, minimises potential for dust emissions and **must** carry out rehabilitation of disturbed areas progressively, as soon as reasonably practicable, to the satisfaction of the Secretary and DRE.

## Land Management Plan

14. The Proponent **must** prepare a detailed Land Management Plan for the site to the satisfaction of the Secretary and DRE. This plan must:
- be submitted to the Secretary by the end of September 2008;
  - be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Secretary;
  - be prepared in consultation with DRE, OEH and affected councils; and
  - include measures to:
    - minimise visual impacts;
    - control weeds, feral pests and access; and
    - manage bushfires; and
  - provide details of who is responsible for monitoring, reviewing and implementing the plan.

Prior to the end of April 2016, the Proponent **must** revise the Land Management Plan to incorporate the measures required to implement its commitments described in new row 2 of the Terrestrial Ecology section of its Statement of Commitments, and submit it to the Secretary for approval.

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

- 14A. The Proponent **must** implement its preferred option of the three options set out in new row 2 of the Terrestrial Ecology section of its Statement of Commitments by 1 December 2016, following consultation with OEH and to the satisfaction of the Secretary.

## Rehabilitation Plan

15. The Proponent **must** prepare a Rehabilitation Plan for the site to the satisfaction of the DRE. This plan must:
- be submitted within 3 months of approval of Mod 2 for approval by DRE prior to carrying out any disturbing activities of the development, unless otherwise agreed by the Secretary;
  - be prepared in accordance with DRE guidelines and in consultation with the Department, OEH, EPA, DPI Water, affected councils and the mine's CCC;
  - incorporate and be consistent with the rehabilitation objectives in the EA, Statement of Commitments and Table 2 above;
  - integrate and build on, to the maximum extent practicable, the other management plans required under this approval; and
  - address all aspects of mine closure and rehabilitation, including post-mining land use domains, rehabilitation objectives, completion criteria and rehabilitation monitoring and management.

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

*Note: The approved Mining Operations Plan (which will become the REMP once the Mining Act Amendments have commenced) required as a condition of the Mining Lease(s) issued in relation to this project, will satisfy the requirements of this condition for a Rehabilitation Plan.*

## AIR QUALITY

### Impact Assessment Criteria

16. The Proponent **must** ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Table 3 at any residence on privately-owned land.

*Table 3: Long term impact assessment criteria for deposited dust*

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month

*Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.*

### Monitoring

17. The Proponent **must** prepare an Air Quality Monitoring Program for the project to the satisfaction of the Secretary. This program must:
- be submitted to the Secretary by the end of September 2008; and
  - use dust deposition gauges to monitor the performance of the project.

The Proponent **must** implement the approved monitoring program as approved from time to time by the Secretary.

## HERITAGE

### Heritage Management Plan

18. The Proponent **must** prepare a Heritage Management Plan for the project to the satisfaction of the Secretary. This Plan must:
- be prepared in consultation with any relevant Aboriginal stakeholders;
  - be submitted, prior to 31 March 2013, for approval to the Secretary;
  - include consideration of the Aboriginal and non-Aboriginal cultural context and significance of the site;
  - detail the responsibilities of all stakeholders; and

- (e) include programs/procedures and management measures for:
- dealing with previously unidentified Aboriginal objects (excluding human remains), including any need to halt works in the vicinity, assessment of significance, determination of appropriate mitigation measures (by a qualified archaeologist in consultation with Aboriginal stakeholders), re-commencement of works, notifying OEH, and registering the new site(s) in the OEH AHIMS register;
  - dealing with any human remains which may be discovered, including halting of works in the vicinity; notifying NSW Police, OEH, the Department and Aboriginal stakeholders; and not re-commencing any works in the vicinity unless authorised;
  - heritage induction for construction personnel (including procedures for keeping records of inductions);
  - ongoing Aboriginal consultation and involvement (including procedures for keeping records of this);
  - appropriate identification, management, conservation and protection of both Aboriginal and non-Aboriginal heritage items identified on the site; and
  - dealing with previously unidentified non-Aboriginal heritage items which may be discovered during the project.

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

## VISUAL

19. The Proponent **must**:
- ensure no outdoor lights shine above the horizontal;
  - ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*;
  - take all practicable measures to mitigate off-site lighting impacts from the project; and
  - minimise the visual impacts of the project, to the satisfaction of the Secretary.

## TRANSPORT

### Monitoring of Coal Transport

20. The Proponent **must** keep records of the amount of coal transported from the site each year, and include these records in the **Annual Review**.

### Ruttleys Road Intersection

21. The Proponent **must**:
- complete a road safety audit of the intersection of Ruttleys Road and Mannering Colliery Access Road by the end of March 2009;
  - provide copies of this audit to RMS, Central Coast Council and the Secretary within one month of its completion; and
  - within 3 months of approval of Mod 2, install additional sections of guardrail (safety barrier) on the eastern side of Ruttleys Road between the Mannering Colliery access road and existing sections of guardrail further to the north;
  - be responsible for the maintenance and upkeep of the pavement of the Ruttleys Road/Mannering Colliery access road intersection whilst the site is used for mining purposes or until the intersection is upgraded to a Type CHR intersection treatment; and
  - prior to the number of workers (direct employees and contractors) at Mannering Colliery exceeding 70, the Proponent **must** upgrade the Ruttleys Road/Mannering Colliery access road intersection to a Type CHR treatment in accordance with Construction Certificate SCC/69/2011 issued by Central Coast Council, or later updated versions of this Construction Certificate; to the satisfaction of the Secretary.

## GREENHOUSE AND ENERGY EFFICIENCY

22. The Proponent **must** prepare a Greenhouse and Energy Efficiency Plan for the project to the satisfaction of the Secretary. This plan must:
- be prepared in consultation with EPA and generally in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS 2005, or its latest version);



- (b) be submitted to the [Secretary](#) for approval by the end of September 2008;
- (c) include a program to monitor greenhouse gas emissions and energy use generated by the project;
- (d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the site; and
- (e) describe how the performance of these measures would be monitored over time.

The Proponent **must** implement the approved management plan as approved from time to time by the [Secretary](#).

## WASTE

23. The Proponent **must**:

- (a) monitor the amount of waste generated by the project;
- (b) investigate ways to minimise waste generated by the project;
- (c) implement reasonable and feasible measures to minimise waste generated by the project; and
- (d) report on waste management and minimisation in the [Annual Review](#),  
to the satisfaction of the [Secretary](#).

## SCHEDULE 4 ADDITIONAL PROCEDURES

### INDEPENDENT REVIEW

1. If a landowner considers the project to be exceeding the impact assessment criteria in schedule 3, then he/she may ask the [Secretary](#) in writing for an independent review of the impacts of the project on his/her land.

If the [Secretary](#) is satisfied that an independent review is warranted, the Proponent **must** within 2 months of the [Secretary's](#) decision:

- (a) consult with the landowner to determine his/her concerns;
- (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the [Secretary](#), to conduct monitoring on the land, to:
  - determine whether the project is complying with the relevant impact assessment criteria in schedule 3; and
  - identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and
  - give the [Secretary](#) and landowner a copy of the independent review.

2. If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the [Secretary](#).
3. If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent **must**:
  - (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and
  - (b) conduct further monitoring to determine whether these measures ensure compliance.

If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in schedule 3, or the Proponent and landowner enter into a negotiated agreement to allow these exceedances, then the Proponent may discontinue the independent review with the approval of the [Secretary](#).

4. If the independent review determines that the relevant criteria in schedule 3 are being exceeded, but that more than one project is responsible for this non-compliance, then the Proponent **must**, together with the relevant project/s:
  - (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and
  - (b) conduct further monitoring to determine whether these measures ensure compliance; or
  - (c) secure a written agreement with the landowner and other relevant projects to allow exceedances of the criteria in schedule 3,to the satisfaction of the [Secretary](#).

If the additional monitoring referred to above subsequently determines that the projects are complying with the relevant criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the [Secretary](#).

5. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the [Secretary](#) for resolution.

If the matter cannot be resolved within 21 days, the [Secretary](#) shall refer the matter to an Independent Dispute Resolution Process.

## SCHEDULE 5

### ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

#### ENVIRONMENTAL MANAGEMENT

##### Environmental Management Strategy

1. The Proponent **must** revise an Environmental Management Strategy for the project. This strategy must:
  - (a) be submitted for approval to the **Secretary** prior to 30 June 2013;
  - (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 management strategy as approved from time to time by the **Secretary**.

##### 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;
    - 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;
    - effectiveness of any management measures (see (c) above);
  - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
  - (f) a protocol for managing and reporting any:
    - incidents;
    - complaints;
    - non-compliances with statutory requirements; and
    - exceedances of the impact assessment criteria and/or performance criteria; and
  - (g) a protocol for periodic review of the plan.

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

##### Annual Review

3. 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 development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current financial year;
- (b) include a comprehensive review of the monitoring results and complaints records of the project over the past calendar year, which includes a comparison of these results against the:
  - the relevant statutory requirements, limits or performance measures/criteria;
  - requirements of any plan or program required under this approval;
  - the monitoring results of previous years; and
  - the relevant predictions in the documents listed in condition 2 of Schedule 2;
- (c) identify any non-compliance over the past 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 measures will be implemented over the current financial year to improve the environmental performance of the project.

#### Revision of Strategies, Plans and Programs

- 4. Within 3 months of:
  - (a) the submission of an annual review under Condition 3 above;
  - (b) the submission of an incident report under Condition 6 below;
  - (c) the submission of an audit under Condition 8 below; or
  - (d) any modification to 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**.

*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.*

#### Community Consultative Committee

- 5. The Proponent **must** continue to operate a Community Consultative Committee (CCC) for the project in accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007, or its latest version), and to the satisfaction of the **Secretary**.

##### Notes:

- The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval; and
- In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Proponent, Councils and the local community.

#### REPORTING

##### Incident Reporting

- 6. The Proponent **must** notify, at the earliest opportunity, the **Secretary** and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incidents associated with the project, the Proponent **must** notify the **Secretary** and any other relevant agencies as soon as practicable after the Proponent becomes aware of the incident. 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.

##### Regular Reporting

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

#### INDEPENDENT ENVIRONMENTAL AUDIT

- 8. By the end of March 2013 and every three 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 a 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 assess whether it is complying with the 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 strategy/plan/program required under this approval: and, if necessary;
- (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, strategy/plan/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 field specified by the [Secretary](#).*

- 9. 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.

## ACCESS TO INFORMATION

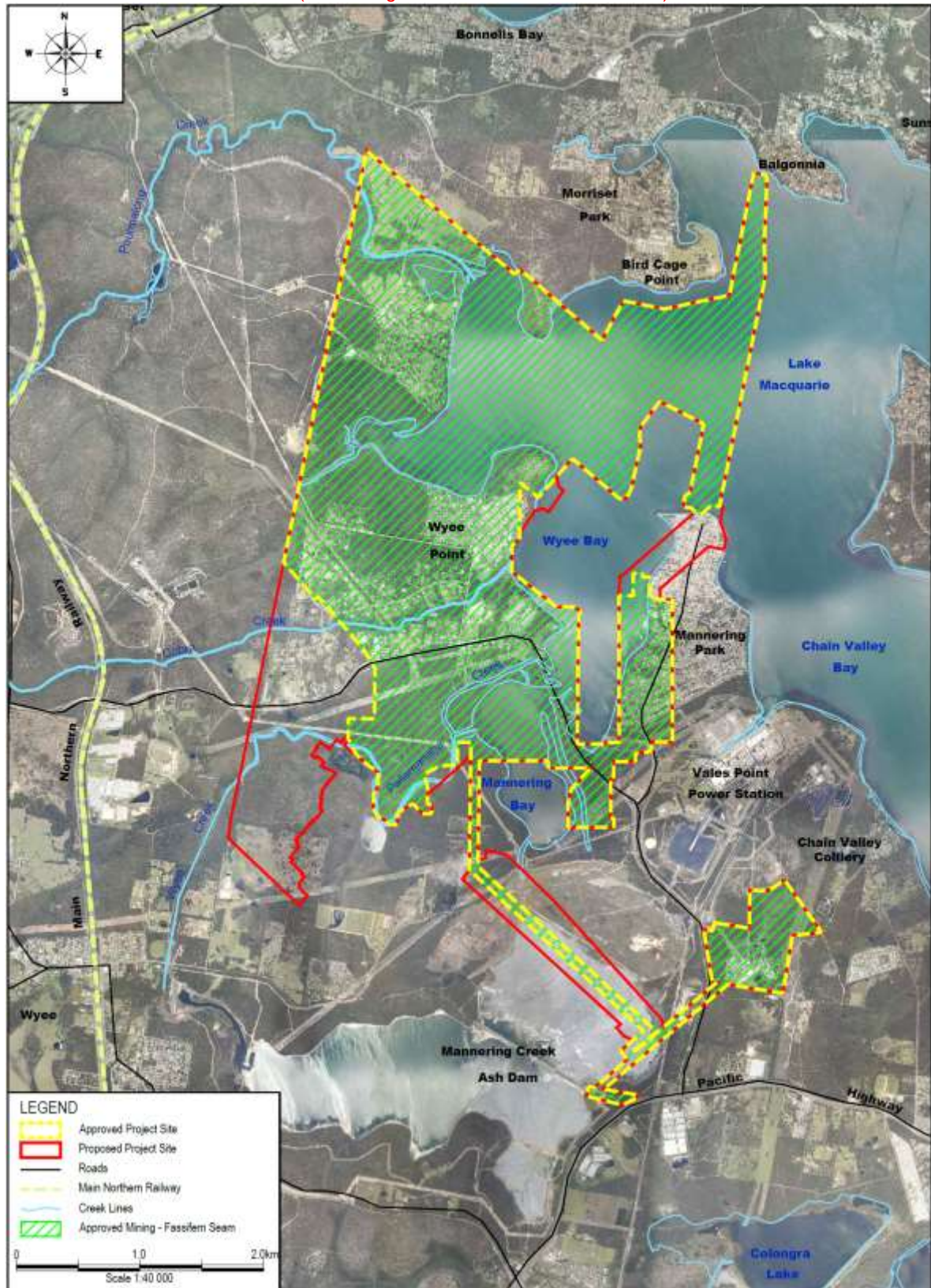
- 10. The Proponent must:

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



## APPENDIX 1: PROJECT LAND

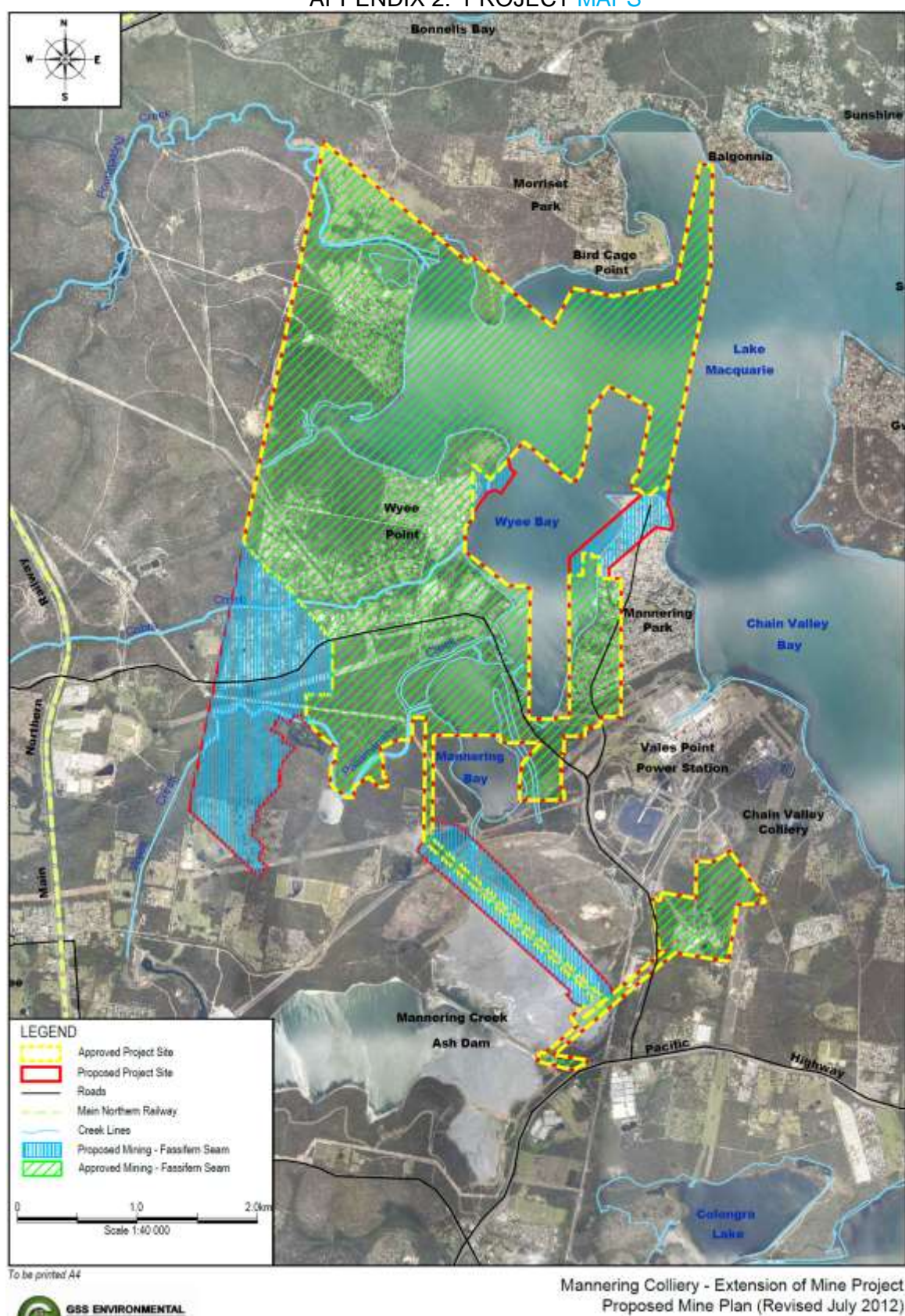
Manning Colliery – Land to which the Project Approval applies  
(shown edged in solid and dashed red lines)





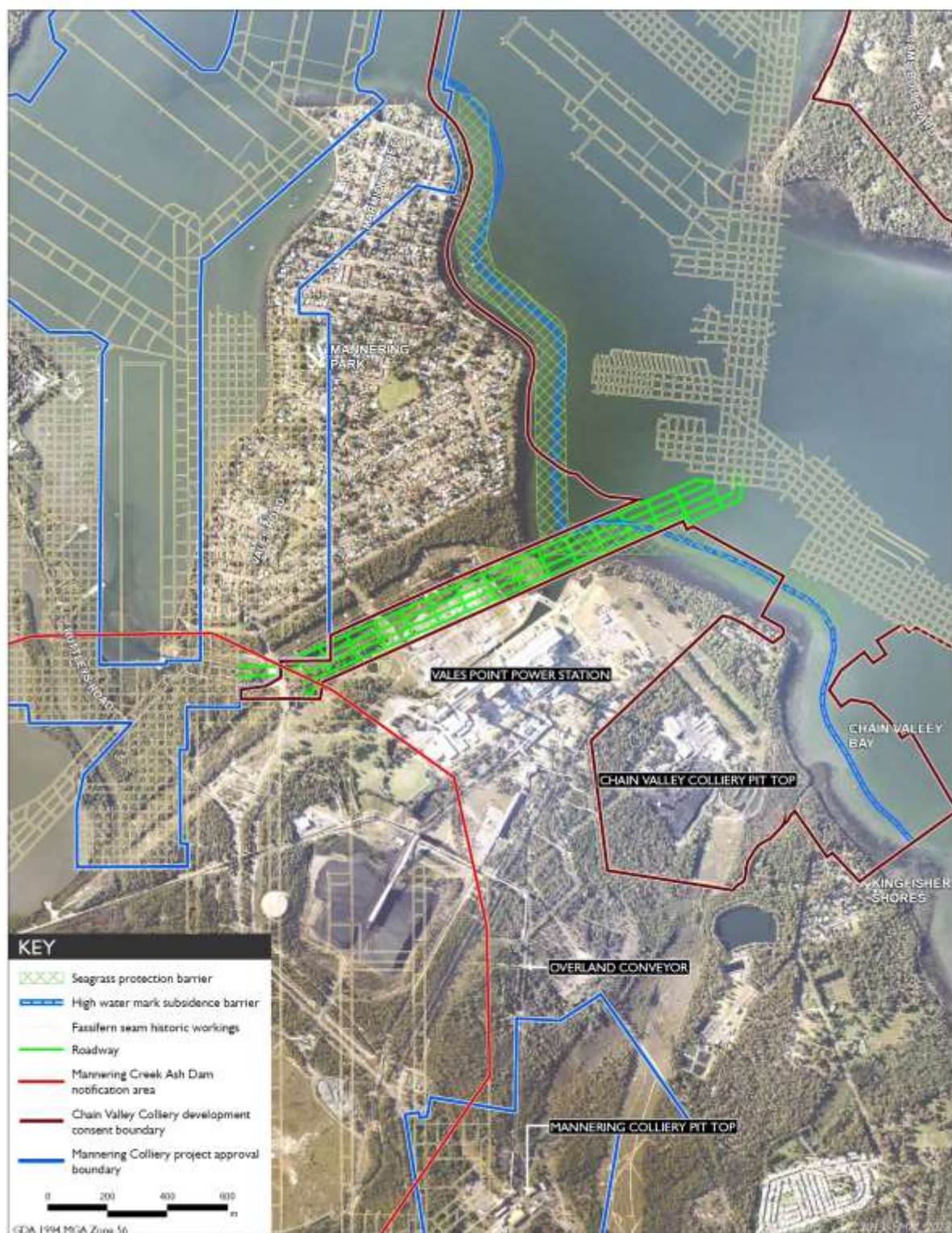


## APPENDIX 2: PROJECT MAPS



**Figure 1: Revised Mine Plan for Fassifern Seam**





**Figure 2:** Location of the underground linkage to Chain Valley Colliery

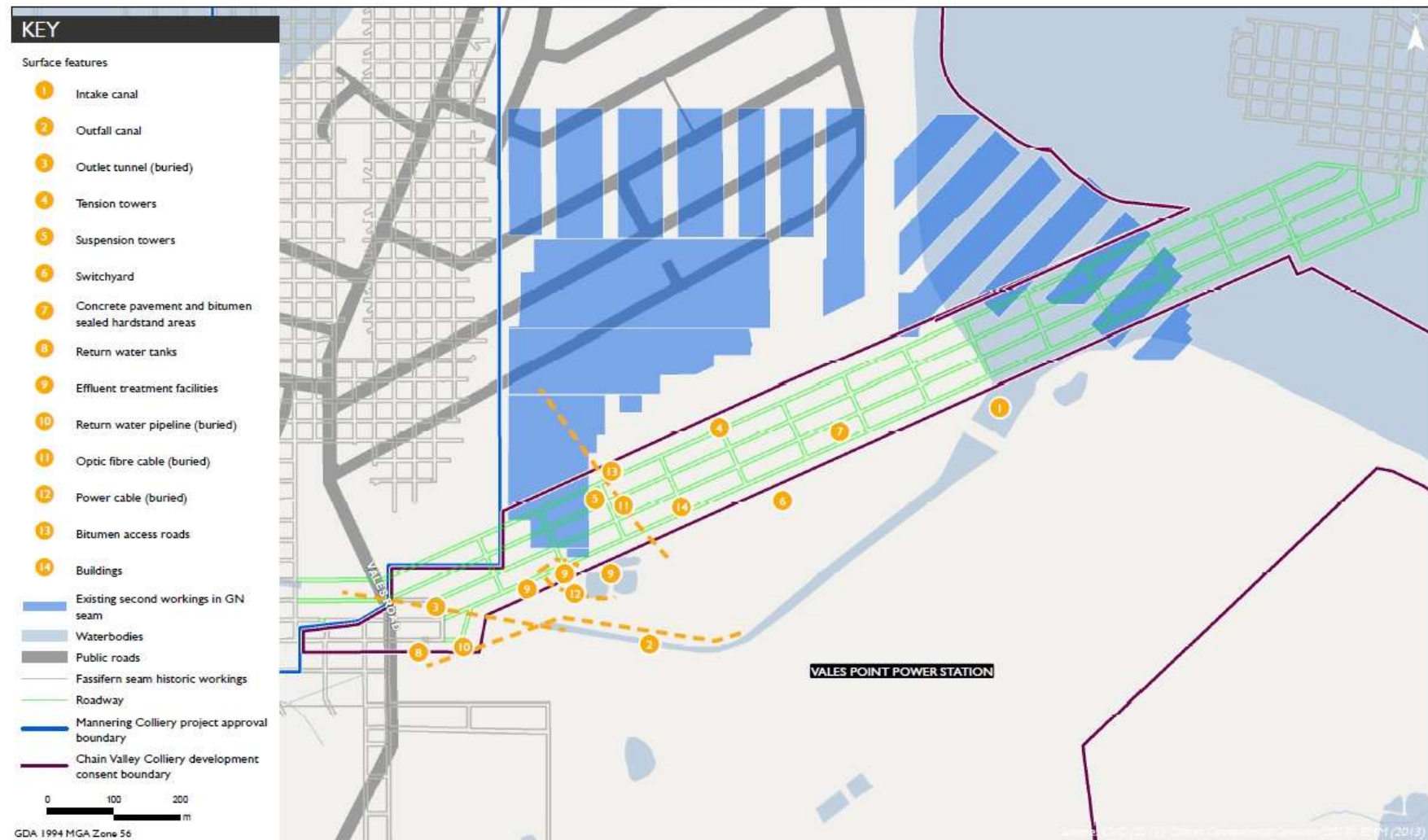


Figure 3: Location of the underground link and surface infrastructure





**Figure 4.** Location of asset protection zones

## APPENDIX 3: STATEMENT OF COMMITMENTS

### Revised Statement of Commitments (December 2015)

#### *Revised Statement of Commitments*

<b>Subsidence</b>
Mining to be limited to the approved bord-and-pillar method where coal recovery is limited to first workings only.
Monitoring of the existing subsidence monitoring marks will continue and additional subsidence monitoring marks will be installed above the proposed mining areas to measure the subsidence and verify that subsidence is within the predicted levels.
If it is identified that subsidence levels are greater than the predicted maximum of 20 millimetres, the DTIRIS Minerals Division will be consulted to determine appropriate management and mitigation actions.
<b>Water Management</b>
LakeCoal will undertake a review of the existing site water management system in consultation with the EPA.
The water level within the sediment pond system will be monitored and kept at a relatively low operating level, such that the ponds can provide a detention function in a significant rainfall event.
A visual assessment of the unnamed creek will be undertaken every 6 months to monitor stability and erosion.
Where practicable, underground water levels will be recorded to monitor changes in the level of water stored in underground depressions and to verify that the rate of extraction is sufficient.
The extraction of underground water from the mine workings will be undertaken in accordance with the Bore License (20BL172016) issued under the Water Act 1912.
To enable on-going assessment of the quality of water discharged, the existing monitoring program will be maintained for the life of the Project with the following enhancements: <ul style="list-style-type: none"> <li>• An assessment of the surrounding catchments summarising land uses and other background information to characterise an appropriate water quality; and</li> <li>• Annual monitoring of heavy metals at the monitoring location identified as 'Downstream'.</li> </ul>
<b>Terrestrial Ecology</b>
The following measures to manage the impacts of vegetation clearing/disturbance associated with the APZ requirements will be ongoing: <ul style="list-style-type: none"> <li>• weed management;</li> <li>• large trees will be retained as a priority where possible;</li> <li>• felled trees will be relocated adjacent to the APZs to create additional fauna habitat;</li> <li>• any injured fauna will be taken to the nearest veterinary hospital for treatment before release; and</li> <li>• an ecologist will complete a pre-disturbance survey to determine important components of the Swamp Oak Floodplain Forest EEC for retention in the APZs.</li> </ul>



<p>LakeCoal will investigate the following options for biodiversity offsets:</p> <ul style="list-style-type: none"> <li>provide \$10,000 of funding, which is equivalent to the biodiversity being lost (ie 5 credits x \$2,000 per credit) to existing environmental programs at the site which benefits the Swamp Oak Floodplain Forest EEC; or</li> <li>consult with OEH to identify a suitable conservation program and provide \$10,000 of funding; or</li> <li>purchase and retire 5 credits on the Biobanking register.</li> </ul> <p>These options will be considered by the proponent in consultation with OEH and will reflect OEH's 'Approved BioBanking Assessment Methodology 2014'. The option that achieves the greatest benefit to the biodiversity impacted by the proposed modification will be selected.</p>
<p>If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to terrestrial ecology.</p>
<p><b>Aquatic Ecology</b></p>
<p>If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to aquatic ecology.</p>
<p><b>Aboriginal Heritage</b></p>
<p>Activities will continue to be managed in accordance with the Colliery's Aboriginal Cultural Heritage Management plan (ACHMP). Given the Colliery's current ACHMP is integrated with other Centennial sites, a separate ACHMP will be developed.</p>
<p>If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to cultural heritage in consultation with OEH.</p>
<p>All relevant Centennial Mannerling staff and contractors will be made aware of their statutory obligations for Aboriginal cultural heritage under the NP&amp;W Act as part of the existing mine induction process.</p>
<p>An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed and implemented for the identified Aboriginal heritage items within the Project Site in consultation with the relevant Aboriginal stakeholders. If additional sites are identified they will be assessed for cultural significance and be incorporated into the ACHMP.</p>
<p>In the unlikely event that skeletal remains are identified, the NSW Police Coroner will be contacted to determine if the material is of Aboriginal origin. If determined to be Aboriginal, contact will be made with the OEH, a suitably qualified archaeologist and representatives of the relevant Aboriginal stakeholder groups to determine an action plan for the management of the skeletal remains and formulate management recommendations if required.</p>
<p><b>European Heritage</b></p>
<p>If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to non-indigenous heritage.</p>
<p>All relevant Centennial Mannerling staff and contractors will be made aware of their statutory obligations for European cultural heritage under the Heritage Act 1977 as part of the existing mine induction process.</p>
<p>If, during the course of development works, significant non-indigenous cultural heritage material is uncovered within the Project Site, the Heritage Branch of OEH will be notified and any required monitoring or management strategies instigated.</p>



<b>Air Quality</b>
A review of dust management strategies and mitigation measures will be undertaken against the best practice dust mitigation measures identified in the NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (Katestone Environmental Pty Ltd 2011), which was prepared for OEH. The review will identify any additional dust management practices that are reasonable and feasible for implementation at Mannering Colliery and will be undertaken generally in accordance with any requirements of a pollution reduction program that may be imposed by the OEH on the Mannering Colliery EPL in the future.
<b>Traffic</b>
Centennial Mannering will upgrade the Rutleys Road - Mannering Colliery Access Road intersection to improve safety and operational efficiency.
<b>Socio-Economic</b>
Centennial Mannering is committed to on-going community consultation and will continue to engage the community for the purposes of providing information relating to on-going operations and the Extension of Mine Project.
<b>Rehabilitation</b>
Rehabilitation will be undertaken in accordance with the Colliery's mining operations plan, which will be updated to include any changes as a result of the proposed modification.
The Mining Operations Plan will be amended to reflect the proposed modification and will include integrated rehabilitation and environmental management.
<b>Monitoring</b>
The Environmental Monitoring Program will be reviewed and updated, as required, to incorporate the commitments made in the Environmental Assessment and any additional consent conditions.

## APPENDIX 4: NOISE ASSESSMENT LOCATIONS

**Private Property Surrounding Mannering**  
(Location of ID numbers are shown on following figure)

ID	Owner	ID	Owner	ID	Owner
1	Energy Australia	27	H Gleeson	53	H & J Beukers
2	Alcevski Investments	28	C Stead & M Garner	54	A Taylor-Stewart
3	Eaton & Sons Pty Ltd	29	A O'Keefe	55	G Kettles
4	O & J di Rocco	30	P Groen	56	R & E Brokenshire
5	A & M Keighran	31	M Parkin	57	B & S Fowler
6	Swan HydroPonics Pty Ltd	32	I Maclaren	58	B Sneddon
7	R Druitt	33	P Kranz	59	J & P Hanson
8	D & M May	34	T & V Wilding	60	L Crook & L Kelly
9	L F Jeans	35	G Williams	61	P & G Becker
10	L & J Jeans	36	P & C Byrnes	62	B Clover & R Alaban
11	L & J Jeans	37	G Holmes	63	T & O Becker
12	L & J Jeans	38	R & B Croucher	64	R Harris & D Kingsford
13	L & J Jeans	39	R & C Calvert	65	N Singleton
14	L & J Jeans	40	T & D Stolz	66	M Smith
15	L & J Jeans	41	A & S Whitbread	67	D & B Johnston
16	L & J Jeans	42	B Kelly	68	R & B Amos
17	L & J Jeans	43	L Preston	69	H & C Strand
18	L & J Jeans	44	G Bain	70	PhystonPty Ltd
19	L & J Jeans	45	C Clarke	71	R Howland
20	E & K Knight	46	W Carpenter	72	R & D Shannon
21	Jonita Homes Pty Ltd	47	S Mackay	73	P & B Williams
22	W & D Buchmasser	48	R Allen	74	P Batten
23	P McKee	49	S Jopp	75	G & A Dyer
24	J Farrell	50	P & M Davie	76	S Harrison & N Robertson
25	P Kretchmer & E Castle	51	D Olsen		
26	A Mearns	52	D Poulson & K Toope		

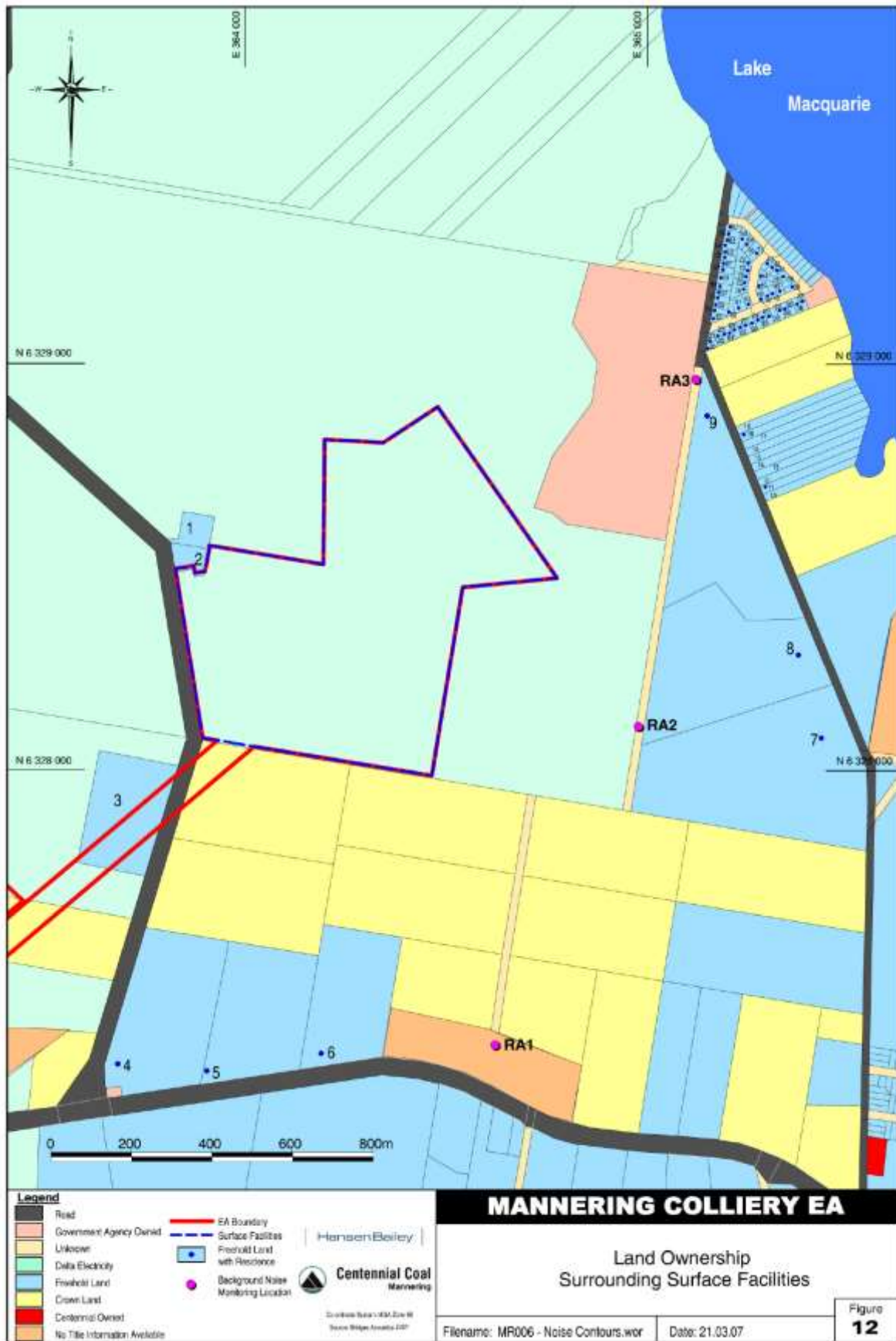


Figure 3: Land Ownership (noise assessment locations)

## APPENDIX 4A: NOISE COMPLIANCE ASSESSMENT

### Applicable Meteorological Conditions

1. The noise criteria in Tables 1 and 2 in Appendix 4B are to apply under all meteorological conditions except the following:
  - (a) wind speeds greater than 3m/s at 10 metres above ground level;
  - (b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
  - (c) stability category G temperature inversion conditions.

### Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions **must** be that recorded by the meteorological station located on the site.

### Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. This monitoring must be carried out at least once a month (at least two weeks apart) for the first 12 months following recommencement of underground coal extraction, and then quarterly thereafter, unless the Secretary directs otherwise.

*Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the project.*

5. Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements 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) meteorological conditions during which collection of noise data is not appropriate;
  - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
  - (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

## APPENDIX 4B: ALTERNATE NOISE CONDITIONS

- From the recommencement of underground coal extraction at Mannering Colliery until 18 months thereafter, the Proponent **must** ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1 at any residence on privately-owned land.

Table 1: Noise limits dB(A)

Day <i>L<sub>Aeq</sub>(15 min)</i>	Evening <i>L<sub>Aeq</sub>(15 min)</i>	Night		Location
		<i>L<sub>Aeq</sub>(15 min)</i>	<i>L<sub>A1</sub>(1 min)</i>	
40	40	40	49	4 – di Rocco
43	43	41	49	5 – Keighran
42	42	41	49	6 – Swan
39	39	39	47	7 – Druitt
46	46	46	47	8 – May
41	41	41	51	9 – Jeans
39	39	39	49	11 – Jeans
39	39	39	51	18 – Jeans
40	40	40	51	20 – Knight and all other Chain Valley Bay residences

Note: The location of the land referred to in Table 1 is shown on the figure in Appendix 4.

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

- Following the expiry of the 18 month period referred to in condition 1 above, the Proponent **must** ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise limits dB(A)

Day <i>L<sub>Aeq</sub>(15 min)</i>	Evening <i>L<sub>Aeq</sub>(15 min)</i>	Night		Location
		<i>L<sub>Aeq</sub>(15 min)</i>	<i>L<sub>A1</sub>(1 min)</i>	
40	40	40	49	4 – di Rocco
41	41	41	49	5 – Keighran
41	41	41	49	6 – Swan
39	39	39	47	7 – Druitt
45	45	43	47	8 – May
41	41	41	51	9 – Jeans
39	39	39	49	11 – Jeans
39	39	39	51	18 – Jeans
40	40	40	51	20 – Knight and all other Chain Valley Bay residences

Note: The location of the land referred to in Table 2 is shown on the figure in Appendix 4.

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A sets out

the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

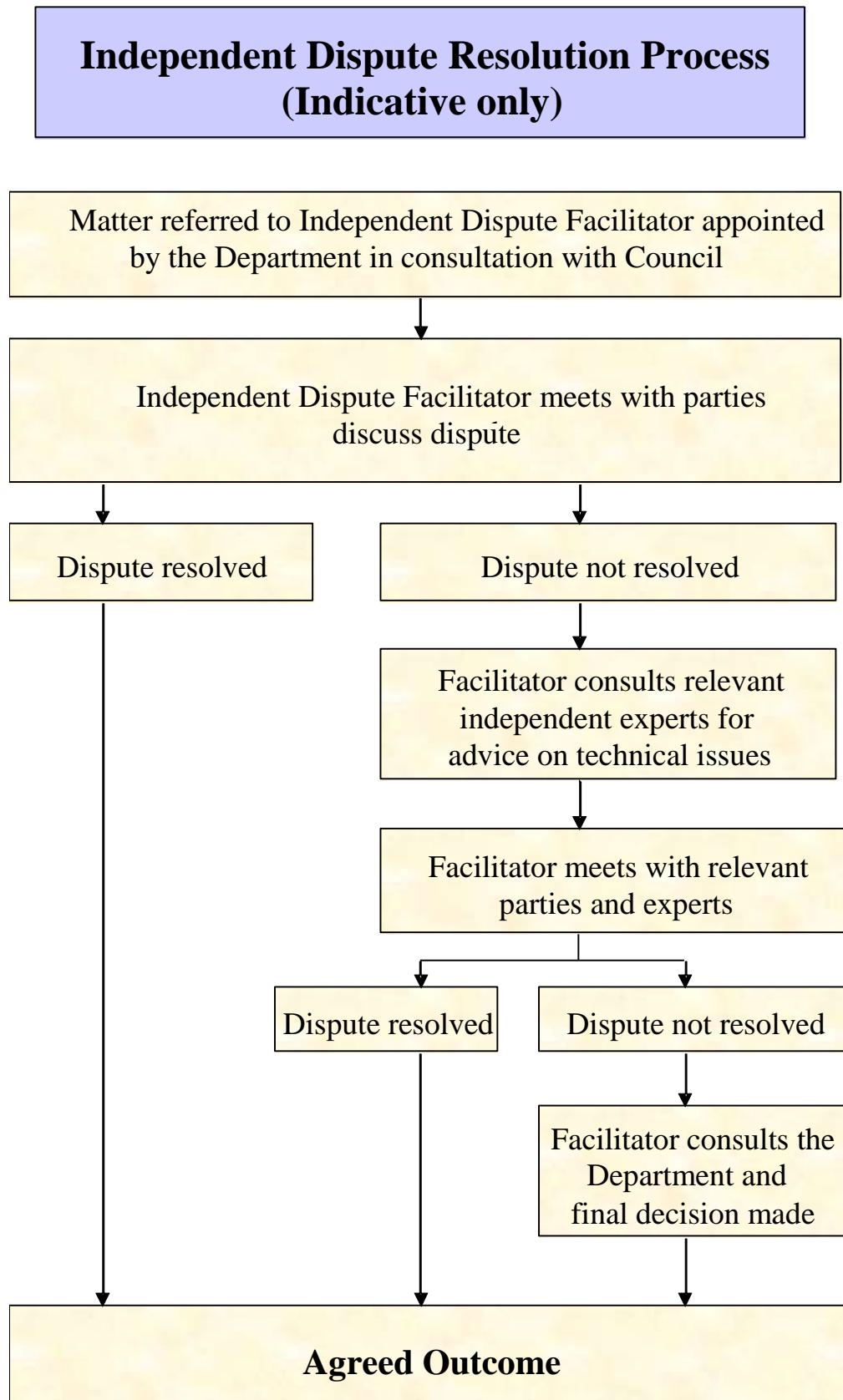
3. The Proponent **must** prepare a report on all noise mitigation measures required to achieve the noise limits in Table 2 to the satisfaction of the Secretary. This report must:
  - (a) be prepared by a suitably qualified and experienced acoustic consultant whose appointment has been approved by the Secretary;
  - (b) be prepared in consultation with EPA, and submitted to the Department for approval within 6 months after recommencement of underground coal extraction; and
  - (c) include an action plan for the implementation of any reasonable and feasible recommendations of the report.

The Proponent **must** implement the noise mitigation measures prior to the expiry of the 18 month period referred to in condition 1 above.

4. The Proponent **must** prepare a Noise Compliance Report for the project to the satisfaction of the Secretary. The report must:
  - (a) be prepared by a suitably qualified acoustic consultant, whose appointment has been approved by the Secretary;
  - (b) be prepared in consultation with EPA, and be submitted for approval within 6 months of the expiry of the 18 month period referred to in condition 1 above; and
  - (c) investigate and evaluate the effectiveness of the noise mitigation measures required under condition 3 and compliance with the noise limits in Table 2.

## APPENDIX 5:

### INDEPENDENT DISPUTE RESOLUTION



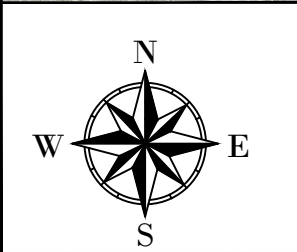
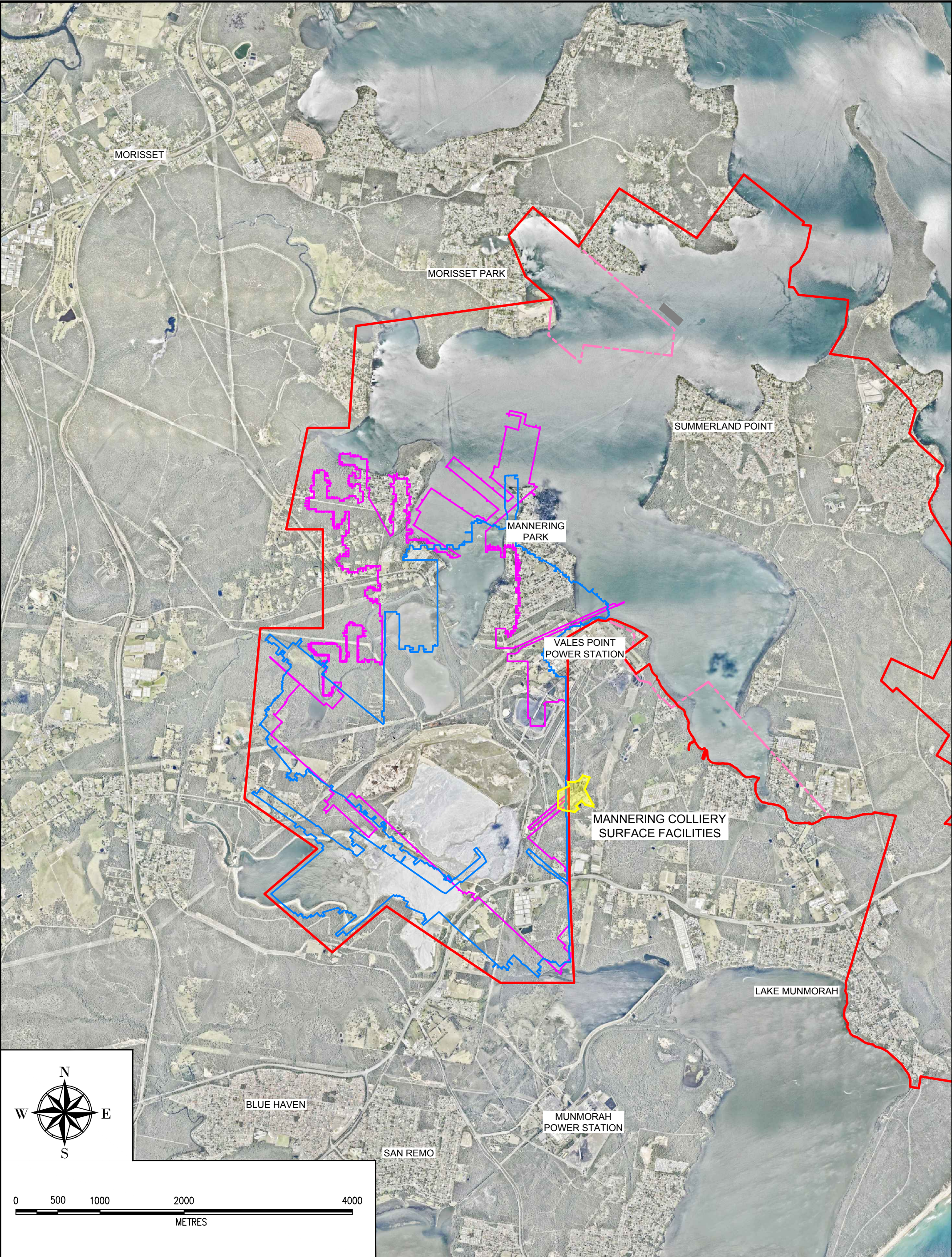


## 12 Appendix Plans

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Review Date	Next Review Date	Revision No	Document Owner	Page
N/A	N/A	1	Environment and Community Coordinator	Page 58 of 76
<b>DOCUMENT UNCONTROLLED WHEN PRINTED</b>				





0 500 1000 2000 4000  
METRES

- Fassifern Seam - Existing Workings
- Great Northern Seam - Existing Workings
- Colliery Holding Boundary (Fassifern Seam)
- Colliery Holding Boundary (Great Northern Seam)

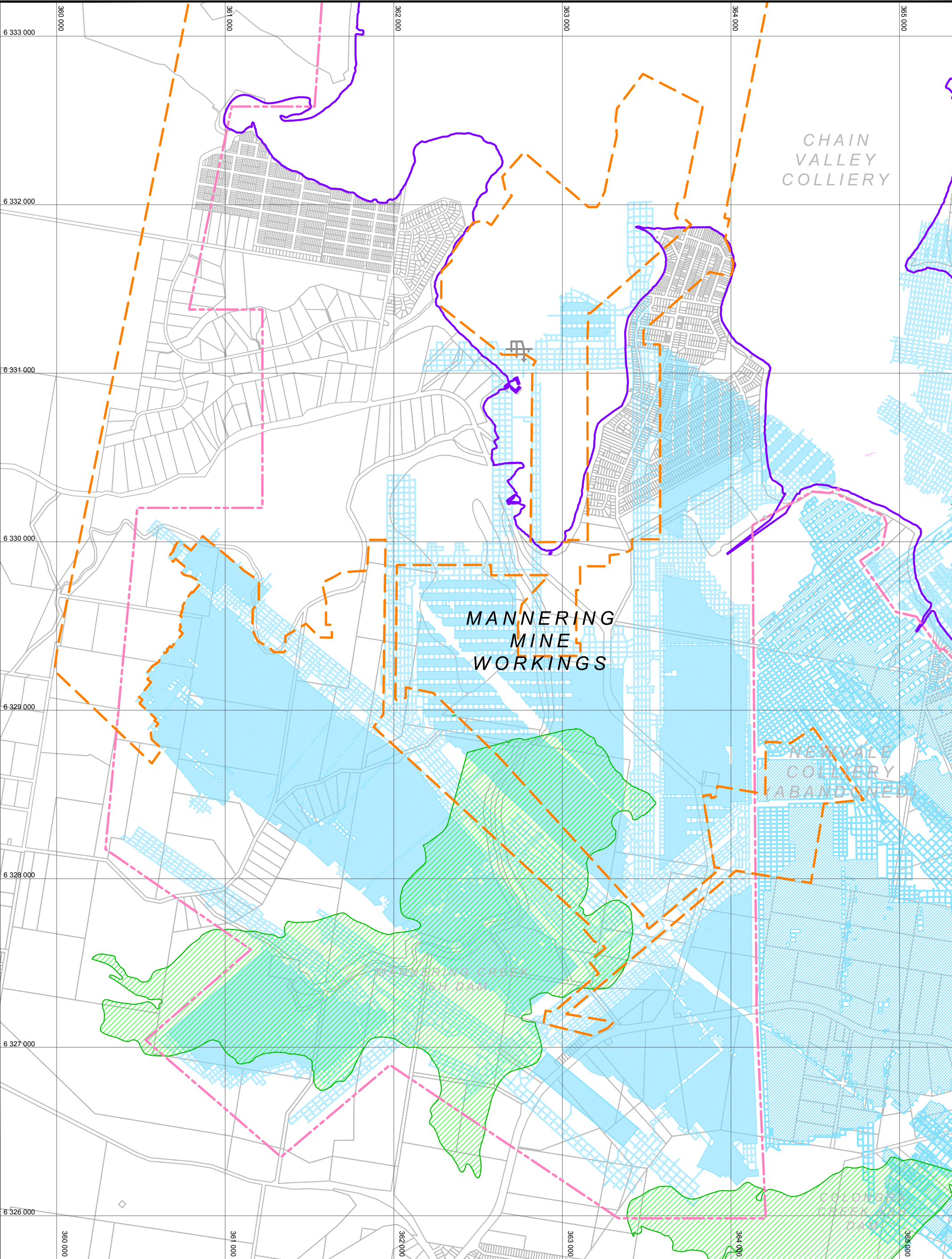
LAKE COAL PTY LIMITED  
MANNERING MINE

MINE LOCALITY PLAN  
ANNUAL REVIEW - 2018

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CHECKED:	-	REV NO:	2018
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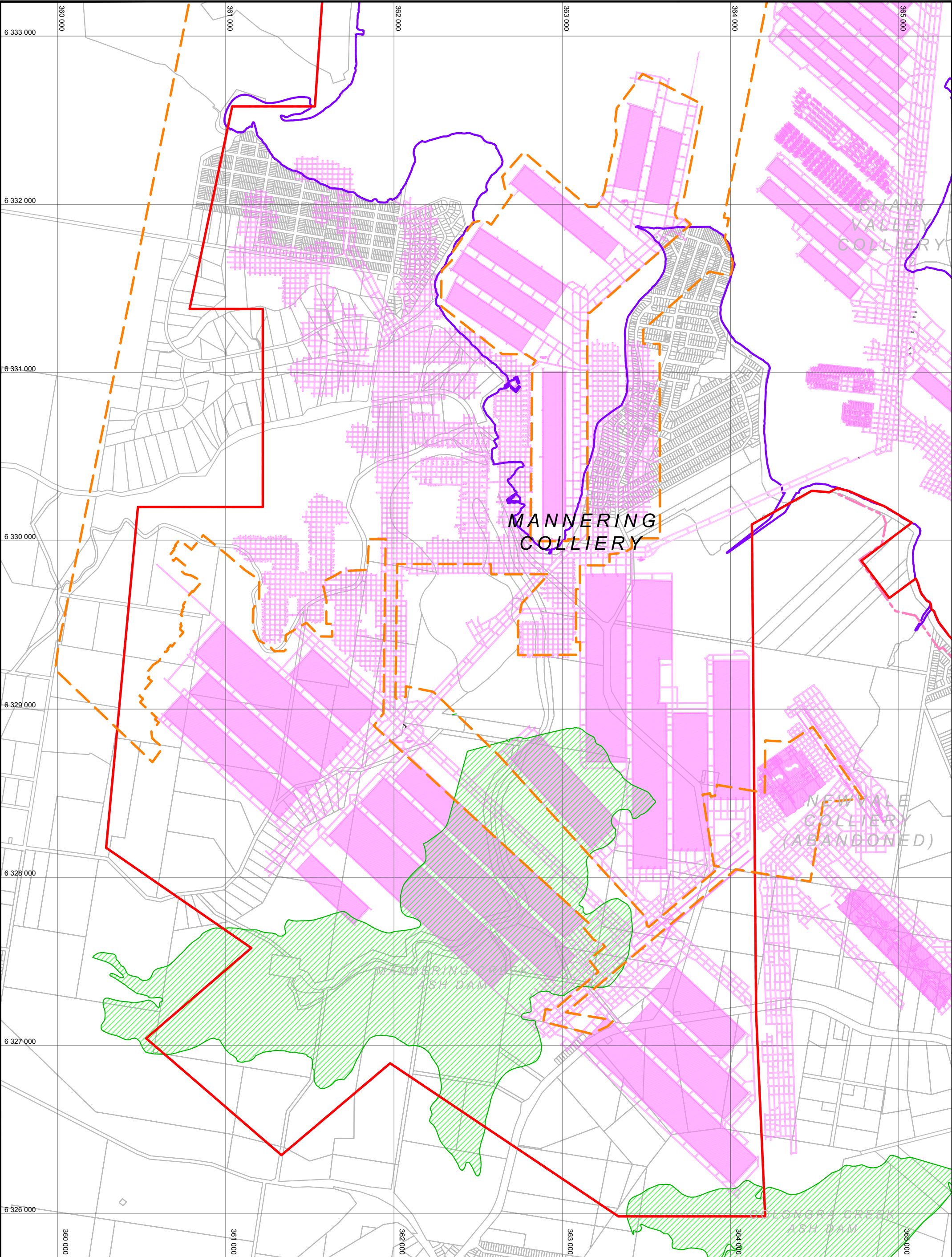




<div><div></div>Great Northern Seam - Existing Workings</div> <div><div></div>Lake Macquarie</div> <div><div></div>Colliery Holding Boundary</div> <div><div></div>MP 06_311 Approval Boundary</div> <div><div></div>Ash Dam(s)</div>	LAKE COAL PTY LIMITED		SCALE: 1:20 000	DATE: 28 March 2019
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Lake Coal

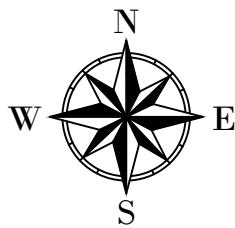




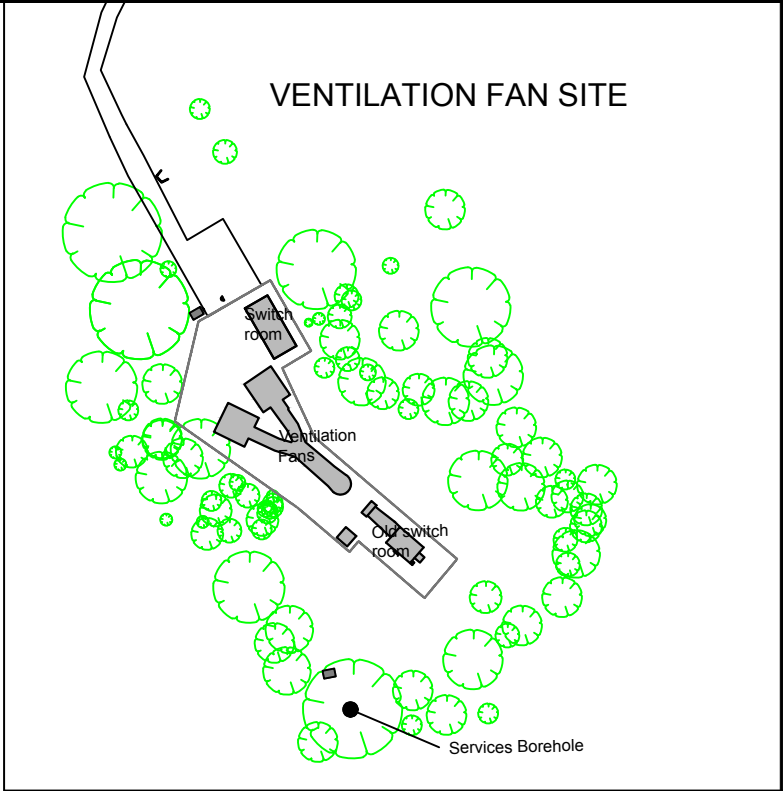
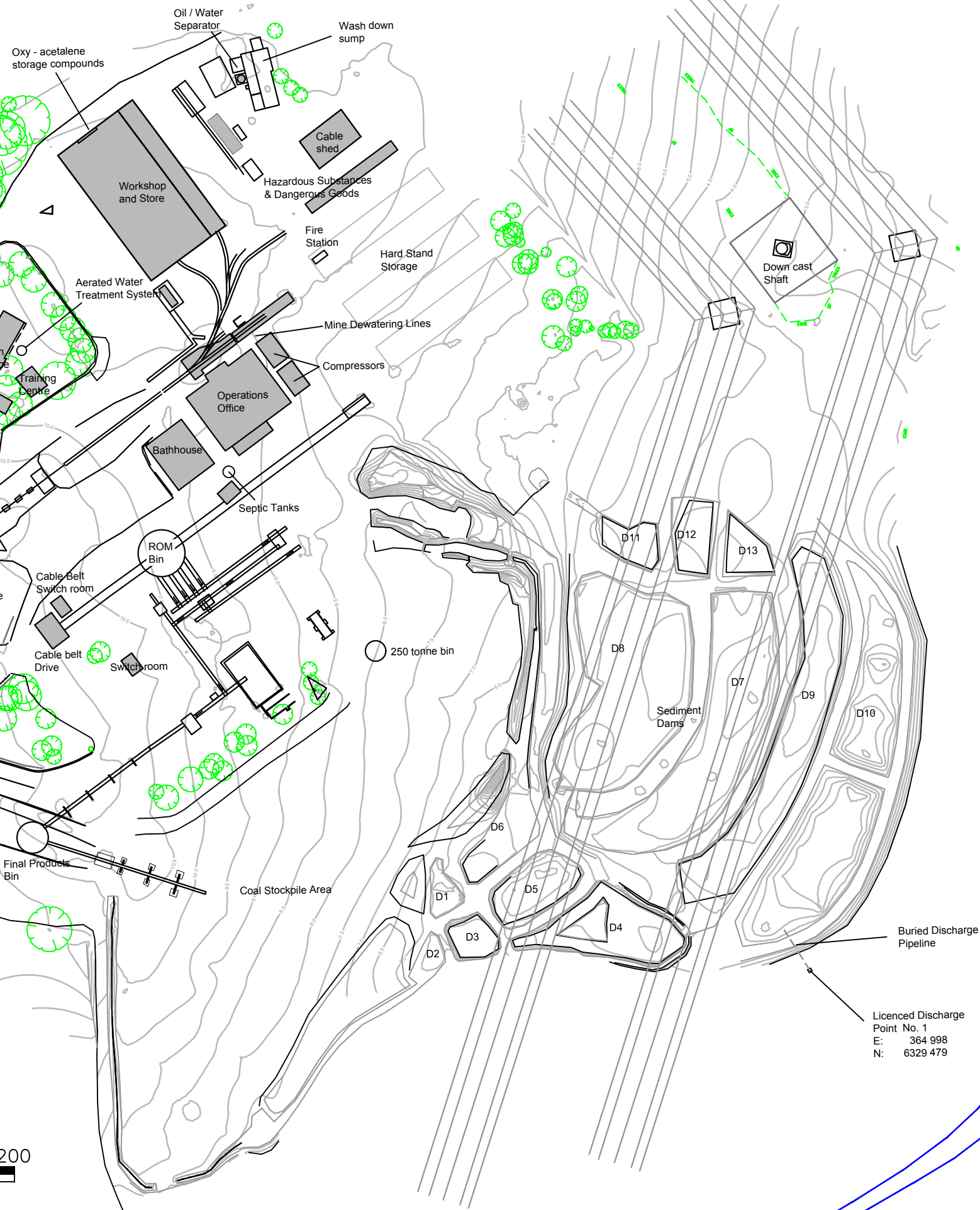
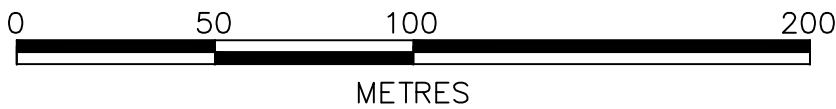
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	MANNERLING COLLIERY		DRAWN: T Chisholm	DRG NO: A1S0005_3
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Lake Coal

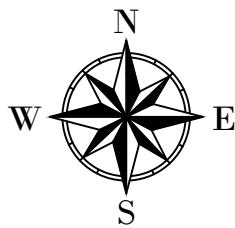




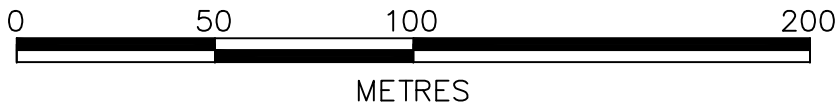
PIT TOP FACILITIES  
CHAIN VALLEY COLLIERY





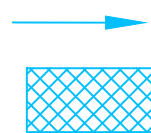


PIT TOP FACILITIES  
CHAIN VALLEY COLLIERY



Rehabilitation - Bushland

Rehabilitation - Grassland



Rehabilitation - Surface Water Flow

Rehabilitation - Proposed Dams

LAKE COAL PTY LIMITED  
CHAIN VALLEY COLLIERY

ANNUAL REVIEW (AEMR) 2018  
Plan 4 - Proposed Rehabilitation

SCALE: 1:2000

DRAWN: T Chisholm

CHECKED: C Armit

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DATE: 14 March 2019

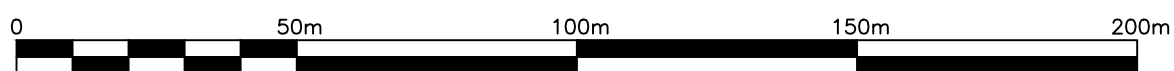
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REV NO: 2018

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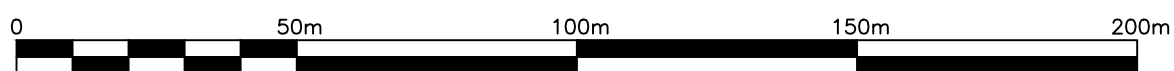
Clean Water  
flow path

LAKE COAL PTY LIMITED  
MANNERING COLLIERY  
SURFACE WATER MANAGEMENT PLAN  
CLEAN WATER

SCALE:	AS SHOWN	DATE:	28 March 2019
DRAWN:	T Chisholm	DRG NO:	A1S0015_1
CHECKED:	W Covey	REV NO:	2018
SIGNED:	-	SIZE:	A3







 Dirty Water  
flow path

LAKE COAL PTY LIMITED  
MANNERING COLLIERY  
SURFACE WATER MANAGEMENT PLAN  
DIRTY WATER

SCALE:	AS SHOWN	DATE:	28 March 2019
DRAWN:	T Chisholm	DRG NO:	A1S0015_2
CHECKED:	C Armit	REV NO:	2018
SIGNED:	-	SIZE:	A3

Lake Coal



## 13 Appendix Environmental Protection Licence

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<b>DOCUMENT UNCONTROLLED WHEN PRINTED</b>				



# Environment Protection Licence

Licence - 191

Licence Details	
Number:	191
Anniversary Date:	01-January

Licensee
LAKECOAL PTY LTD
PO BOX 7115
MANNERING PARK NSW 2259

Premises
MANNERING COLLIERY
RUTLEYS ROAD
DOYALSON NSW 2262

Scheduled Activity
Coal works
Mining for coal

Fee Based Activity	Scale
Coal works	0-2000000 T annual handing capacity
Mining for coal	> 500000-2000000 T annual production capacity

Region
North - Hunter
Ground Floor, NSW Govt Offices, 117 Bull Street
NEWCASTLE WEST NSW 2302
Phone: (02) 4908 6800
Fax: (02) 4908 6810
PO Box 488G NEWCASTLE
NSW 2300

# Environment Protection Licence

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# Environment Protection Licence

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## Information about this licence

### Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

### Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

### Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

### Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

### Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

### Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

### Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

### Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

### This licence is issued to:

LAKECOAL PTY LTD
PO BOX 7115
MANNERING PARK NSW 2259

subject to the conditions which follow.

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## 1 Administrative Conditions

### A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Coal works	Coal works	0 - 2000000 T annual handing capacity
Mining for coal	Mining for coal	> 500000 - 2000000 T annual production capacity

A1.2 The licensee must not:

- (a) Produce by mining activities more than 1.1 million tonnes of coal within any 12 month period.
- (b) Undertake coal works handling more than 1.3 million tonnes within any 12 month period, where ROM coal handled on the premises may be made up of coal produced by mining activities from both the Mannering premises as defined in this licence or Chain Valley premises as defined in Environment Protection Licence number 1770.

Note: These limits on the scale of the fee based activities are based on project Approval 06\_0311 granted under the *Environmental Planning and Assessment Act 1979* which limits extraction to 1.1 million tonnes of run of mine (ROM) coal per year and its modifications, the most recent of which is dated 27 November 2014.

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
MANNERING COLLIERY
RUTLEYS ROAD
DOYALSON
NSW 2262

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SURFACE PREMISES DESCRIBED BY PLAN OF PREMISES TITLED "MANNERING COLLIERY EPL PREMISES PLAN FIGURE 2 SURFACE EXTENTS, COMPLIANCE AND MONITORING LOCATIONS" DATED 24 JANUARY 2014 DOC15/31114 AND MINING FOR COAL IN THE FASSIFERN AND GREAT NORTHERN COAL SEAMS DESCRIBED BY THE PLAN OF THE PREMISES TITLED "MANNERING COLLIERY EPL PREMISES PLAN FIGURE 1 PROJECT EXTENTS" DATED 24 JANUARY 2014 DOC15/31114. THIS PLAN IS HELD ON FILE LIC08/38-03 DUE TO SIZE OF PLAN.

## A3 Information supplied to the EPA

- A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
- b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

## 2 Discharges to Air and Water and Applications to Land

### P1 Location of monitoring/discharge points and areas

- P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

<i>Air</i>			
EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
3	Dust monitoring		Dust deposition gauge identified as point 3 on plan titled "Manning Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03 due to size of plan.
4	Dust monitoring		Dust deposition gauge identified as point 4 on plan titled "Manning Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03 due to size of plan.
5	Dust monitoring		Dust deposition gauge identified as point 5 on plan titled "Manning Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03 due to size of plan.

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6	Dust monitoring	Dust deposition gauge identified as point 6 on plan titled "Mannering Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03 due to size of plan.
7	Dust monitoring	Dust deposition gauge identified as point 3 on plan titled "Mannering Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03 due to size of plan.

P1.2 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

P1.3 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

## *Water and land*

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge from Final Treatment Pond (surface and groundwater) identified as point 1 on plan titled "Mannering Colliery EPL Premises Plan - Figure 2 Surface Extents, Compliance and Monitoring Locations" dated 24 January 2014 DOC15/31114. Held on LIC08/38-03

## 3 Limit Conditions

### L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

### L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

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L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\.

L2.4 Water and/or Land Concentration Limits

## POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

## L3 Volume and mass limits

L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:

- liquids discharged to water; or;
- solids or liquids applied to the area;

must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of Measure	Volume/Mass Limit
1	kilolitres per day	4000

L3.2 Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10mm during the 24 hours immediately prior to the commencement of discharge

## L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled "Waste" and meeting the definition, if any, in the column titled "Description" in the table below.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled "Other Limits" in the table below.

This condition does not limit any other conditions in this licence.



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Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

- L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.
- L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

## L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06\_0311 granted under the *Environmental Planning and Assessment Act 1979*. Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

## 4 Operating Conditions

### O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

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## O2 Maintenance of plant and equipment

- O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
  - b) must be operated in a proper and efficient manner.

## O3 Dust

- O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.
- O3.2 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.
- O3.3 All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.
- O3.4 Trucks transporting coal from the premises must be covered immediately after loading to prevent wind blown emissions and spillage. The covering must be maintained until immediately before unloading the trucks.
- O3.5 The tailgates of all haulage trucks leaving the premises must be securely fixed prior to loading or immediately after unloading to prevent loss of materials.
- O3.6 Coal stockpiles must be maintained in a condition that will minimise the generation and emission of dust on the premises.

## O4 Emergency response

- O4.1 The licensee must maintain, and implement as necessary, a current emergency response plan for the premises. The licensee must keep the emergency response plan on the premises at all times. The emergency response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. If a current emergency response plan does not exist at the date on which this condition is attached to the licence, the licensee must develop an emergency response plan within three months of that date.

## O5 Other operating conditions

- O5.1 All above-ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.
- O5.2 The licensee must ensure that activities are conducted in an environmentally satisfactory manner. So as to minimise and prevent the pollution of air and water the licensee must:

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(a) Ensure that vehicles or containers prior to leaving the premises are clean and sealed in a manner that will not cause materials or wastes used in conducting the activities at the premises to be tracked, thrown from, blown, fall, or cast from any vehicle or container onto a public road.

(b) The licensee must have in place and implement procedures to ensure that vehicles and containers exiting the premises are in a condition to ensure that materials are not tracked, thrown, blown, fall or cast onto a public road.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:

- a) in a legible form, or in a form that can readily be reduced to a legible form;
- b) kept for at least 4 years after the monitoring or event to which they relate took place; and
- c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:

- a) the date(s) on which the sample was taken;
- b) the time(s) at which the sample was collected;
- c) the point at which the sample was taken; and
- d) the name of the person who collected the sample.

### M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

**POINT 3,4,5,6,7**

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

M2.3 Water and/ or Land Monitoring Requirements



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## POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Aluminium (total)	micrograms per litre	Monthly during discharge	Grab sample
Antimony	micrograms per litre	Monthly during discharge	Grab sample
Arsenic (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Arsenic (total)	micrograms per litre	Monthly during discharge	Grab sample
Barium	micrograms per litre	Monthly during discharge	Grab sample
Beryllium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Beryllium (total)	micrograms per litre	Monthly during discharge	Grab sample
Boron	micrograms per litre	Monthly during discharge	Grab sample
Cadmium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Cadmium (total)	micrograms per litre	Monthly during discharge	Grab sample
Calcium	micrograms per litre	Monthly during discharge	Grab sample
Chromium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Chromium (total)	micrograms per litre	Monthly during discharge	Grab sample
Cobalt (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Cobalt (total)	micrograms per litre	Monthly during discharge	Grab sample
Conductivity	microsiemens per centimetre	Weekly during any discharge	Grab sample
Copper (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Copper (total)	micrograms per litre	Monthly during discharge	Grab sample
Iron	micrograms per litre	Monthly during discharge	Grab sample
Lead (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Lead (total)	micrograms per litre	Monthly during discharge	Grab sample
Lithium	micrograms per litre	Monthly during discharge	Grab sample
Magnesium	micrograms per litre	Monthly during discharge	Grab sample

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Manganese (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Mercury (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Mercury (total)	micrograms per litre	Monthly during discharge	Grab sample
Molybdenum (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Molybdenum (total)	micrograms per litre	Monthly during discharge	Grab sample
Nickel (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Nickel (total)	micrograms per litre	Monthly during discharge	Grab sample
Nitrogen (ammonia)	micrograms per litre	Monthly during discharge	Grab sample
Oil and Grease	milligrams per litre	Weekly during any discharge	Grab sample
pH	pH	Weekly during any discharge	Grab sample
Phosphorus	micrograms per litre	Monthly during discharge	Grab sample
Potassium	micrograms per litre	Monthly during discharge	Grab sample
Selenium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Selenium (total)	micrograms per litre	Monthly during discharge	Grab sample
Silica	micrograms per litre	Monthly during discharge	Grab sample
Silver (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Silver (total)	micrograms per litre	Monthly during discharge	Grab sample
Sulfur	micrograms per litre	Monthly during discharge	Grab sample
Tin	micrograms per litre	Monthly during discharge	Grab sample
Titanium	micrograms per litre	Monthly during discharge	Grab sample
Total suspended solids	milligrams per litre	Weekly during any discharge	Grab sample
Vanadium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Vanadium (total)	micrograms per litre	Monthly during discharge	Grab sample
Zinc (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Zinc (total)	micrograms per litre	Monthly during discharge	Grab sample

# Environment Protection Licence

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## M3 Testing methods - concentration limits

- M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
- any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
  - if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
  - if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

- M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

## M4 Weather monitoring

- M4.1 For each monitoring point specified in the table below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns. **Point W1**

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Rainfall	mm	Continuous	24 hour	AM-4
Wind direction	degrees	Continuous	1 hour	AM-2 and AM-4

- M4.2 For the purpose of condition M4.1, Point W1 refers to a meteorological station established on the premises.
- M4.3 The licensee may use the meteorological station established at Eraring Power Station provided the licensee has authority from Eraring Energy to access data from the Eraring Power Station at all times. However, if this station is not available at any time then condition M4.2 applies.
- M4.4 The licensee must fully comply with condition M4 by 30 April 2011.

## M5 Recording of pollution complaints

- M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent



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of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:

- a) the date and time of the complaint;
- b) the method by which the complaint was made;
- c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d) the nature of the complaint;
- e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M6.4 The licensee must nominate a representative of the company that is available all all times and is capable of providing immediate assistance or response during emergencies or any other incidents at the premises. The name of the nominated representative and their contact details, including a telephone number, must be current at all times.

Note: This condition does not apply until two (2) weeks after the date of issue of this licence.

## M7 Requirement to monitor volume or mass

M7.1 For each discharge point or utilisation area specified below, the licensee must monitor:

- a) the volume of liquids discharged to water or applied to the area;
  - b) the mass of solids applied to the area;
  - c) the mass of pollutants emitted to the air;
- at the frequency and using the method and units of measure, specified below.

### POINT 1

Frequency	Unit of Measure	Sampling Method
Continuous during discharge	kilolitres per day	In line instrumentation

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## 6 Reporting Conditions

### R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
1. a Statement of Compliance,
  2. a Monitoring and Complaints Summary,
  3. a Statement of Compliance - Licence Conditions,
  4. a Statement of Compliance - Load based Fee,
  5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
  6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
  7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

- R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

- R1.3 Where this licence is transferred from the licensee to a new licensee:
- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
  - b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

- R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
  - b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

- R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

- R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

- R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
- a) the licence holder; or

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b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

## R2 Notification of environmental harm

**Note:** The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

## R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:

- a) where this licence applies to premises, an event has occurred at the premises; or
- b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:

- a) the cause, time and duration of the event;
- b) the type, volume and concentration of every pollutant discharged as a result of the event;
- c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
- d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

## R4 Other reporting conditions

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## Receival of ROM Coal

- R4.1 The licensee must notify the Manager Hunter Region [hunter.region@epa.nsw.gov.au](mailto:hunter.region@epa.nsw.gov.au) within 24 hours of the receival of ROM Coal at the Coal Handling and Preparation Plant that the plant has been re-commissioned.

## 7 General Conditions

### G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

### G2 Other general conditions

#### G2.1 Completed Programs

Program	Description	Completed Date
PRP 1 - Assessment of Potential Impacts of Metals	The licensee must conduct an assessment of metals detected in wastewater discharges from the mine in accordance with the ANZECC water quality guidelines.. To obtain a greater understanding of the type and concentration of metals discharged in mine water and entering the receiving waters. To limit the concentration of metals discharged in mine water within ANZECC guidelines.(@)	26-June-2013
Coal Mine Particulate Matter Control Best Practice	Requires licensee to conduct a site specific Best Management Practice (BMP) determination to identify ways to reduce particle emissions.	19-September-2012
Coal Handling and Preparation Plant Commissioning Water Quality Monitoring Study	CHPP commissioning water quality monitoring study	12-October-2016



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## Dictionary

### General Dictionary

<b>3DGM [in relation to a concentration limit]</b>	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
<b>Act</b>	Means the Protection of the Environment Operations Act 1997
<b>activity</b>	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
<b>actual load</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>AM</b>	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>AMG</b>	Australian Map Grid
<b>anniversary date</b>	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>annual return</b>	Is defined in R1.1
<b>Approved Methods Publication</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>assessable pollutants</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>BOD</b>	Means biochemical oxygen demand
<b>CEM</b>	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
<b>COD</b>	Means chemical oxygen demand
<b>composite sample</b>	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
<b>cond.</b>	Means conductivity
<b>environment</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>environment protection legislation</b>	Has the same meaning as in the Protection of the Environment Administration Act 1991
<b>EPA</b>	Means Environment Protection Authority of New South Wales.
<b>fee-based activity classification</b>	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
<b>general solid waste (non-putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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<b>flow weighted composite sample</b>	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
<b>general solid waste (putrescible)</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>grab sample</b>	Means a single sample taken at a point at a single time
<b>hazardous waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>licensee</b>	Means the licence holder described at the front of this licence
<b>load calculation protocol</b>	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
<b>local authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>material harm</b>	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
<b>MBAS</b>	Means methylene blue active substances
<b>Minister</b>	Means the Minister administering the Protection of the Environment Operations Act 1997
<b>mobile plant</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>motor vehicle</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>O&amp;G</b>	Means oil and grease
<b>percentile [in relation to a concentration limit of a sample]</b>	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
<b>plant</b>	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
<b>pollution of waters [or water pollution]</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>premises</b>	Means the premises described in condition A2.1
<b>public authority</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>regional office</b>	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
<b>reporting period</b>	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
<b>restricted solid waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>scheduled activity</b>	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
<b>special waste</b>	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
<b>TM</b>	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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<b>TSP</b>	Means total suspended particles
<b>TSS</b>	Means total suspended solids
<b>Type 1 substance</b>	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
<b>Type 2 substance</b>	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
<b>utilisation area</b>	Means any area shown as a utilisation area on a map submitted with the application for this licence
<b>waste</b>	Has the same meaning as in the Protection of the Environment Operations Act 1997
<b>waste type</b>	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non - putrescible), special waste or hazardous waste

Ms Debbie Maddison

Environment Protection Authority

(By Delegation)

Date of this edition: 06-April-2000

# Environment Protection Licence

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## End Notes

- 1 Licence varied by notice V/M upgrade, issued on 10-Jul-2000, which came into effect on 10-Jul-2000.
- 2 Licence varied by notice 1005801, issued on 13-Aug-2001, which came into effect on 07-Sep-2001.
- 3 Licence varied by Change of contact details, issued on 16-Apr-2002, which came into effect on 16-Apr-2002.
- 4 Licence transferred through application 141582, approved on 21-Nov-2002, which came into effect on 07-Aug-2002.
- 5 Licence varied by notice 1024680, issued on 04-Feb-2003, which came into effect on 06-Feb-2003.
- 6 Licence varied by notice 1043601, issued on 14-Jan-2005, which came into effect on 08-Feb-2005.
- 7 Licence varied by notice 1055208, issued on 01-Mar-2006, which came into effect on 26-Mar-2006.
- 8 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 9 Licence varied by notice 1105215, issued on 23-Feb-2011, which came into effect on 23-Feb-2011.
- 10 Licence varied by notice 1502466 issued on 21-Dec-2011
- 11 Licence transferred through application 1517779 approved on 29-Oct-2013 , which came into effect on 17-Oct-2013
- 12 Licence varied by notice 1527523 issued on 13-May-2015
- 13 Licence varied by notice 1551540 issued on 12-May-2017



## 14 Appendix Noise Monitoring Results

Table 14.2: LAeq (15 min) Noise Monitoring Results – January 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	23/01/2018 10:30	2.5	-2.0	42	Yes	IA	Nil
RA2	23/01/2018 10:55	3.4	-1.6	39	No	IA	NA
RA3	23/01/2018 11:19	2.8	-2.0	39	Yes	IA	Nil
Evening							
RA1	22/01/2018 21:03	3.2	0.5	42	No	IA	NA
RA2	22/01/2018 21:28	1.8	3.0	39	Yes	IA	Nil
RA3	22/01/2018 21:48	1.8	3.0	39	Yes	IA	Nil
Night							
RA1	22/01/2018 22:58	0.6	3.0	41	Yes	IA	Nil
RA2	22/01/2018 22:30	1.6	3.0	39	Yes	IA	Nil
RA3	22/01/2018 22:03	2.4	3.0	39	No	IA	NA

Table 14.3: LA1 (1 min) Noise Monitoring Results – January 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	22/01/2018 22:58	0.6	3.0	49	Yes	IA	Nil
RA2	22/01/2018 22:30	1.6	3.0	47	Yes	IA	Nil
RA3	22/01/2018 22:03	2.4	3.0	49	No	IA	NA

Table 14.4: LAeq (15 min) Noise Monitoring Results – February 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	23/02/2018 11:28	4.5	-2	42	No	IA	NA
RA2	23/02/2018 11:53	2.4	-2	39	Yes	IA	Nil
RA3	23/02/2018 12:16	4.8	-2	39	No	IA	NA
Evening							
RA1	22/02/2018 20:49	2.4	3	42	Yes	IA	Nil
RA2	22/02/2018 21:11	1.8	3	39	Yes	IA	Nil
RA3	22/02/2018 21:35	2.4	3	39	Yes	IA	Nil
Night							
RA1	22/02/2018 22:56	2.7	3	41	Yes	IA	Nil
RA2	22/02/2018 22:26	2.2	3	39	Yes	IA	Nil
RA3	22/02/2018 22:00	2.5	3	39	Yes	IA	Nil

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Table 14.5: LA1 (1 min) Noise Monitoring Results – February 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	L <sub>Aeq</sub> Criteria (dB)	Criteria Applies? <sup>2</sup>	MC L <sub>Aeq</sub> (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	22/02/2018 22:56	2.7	3	49	Yes	IA	Nil
RA2	22/02/2018 22:26	2.2	3	47	Yes	IA	Nil
RA3	22/02/2018 22:00	2.5	3	49	Yes	IA	Nil

Table 14.6: LAeq (15 min) Noise Monitoring Results – March 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	L <sub>Aeq</sub> Criteria (dB)	Criteria Applies? <sup>2</sup>	MC L <sub>Aeq</sub> (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	19/03/2018 15:05	2.8	-2	42	Yes	IA	Nil
RA2	19/03/2018 15:28	2.4	-2	39	Yes	<30	Nil
RA3	19/03/2018 17:26	2.3	-2	39	Yes	IA	Nil
Evening							
RA1	19/03/2018 19:05	0.9	3	42	Yes	IA	Nil
RA2	19/03/2018 18:24	2.5	3	39	Yes	IA	Nil
RA3	19/03/2018 18:00	2.0	3	39	Yes	IA	Nil
Night							
RA1	20/03/2018 00:16	1.4	3	41	Yes	IA	Nil
RA2	20/03/2018 01:00	2.0	3	39	Yes	IA	Nil
RA3	20/03/2018 00:37	1.3	3	39	Yes	IA	Nil

Table 14.7: LA1 (1 min) Noise Monitoring Results – March 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	L <sub>A1,1min</sub> Criteria (dB)	Criteria Applies? <sup>2</sup>	MC L <sub>A1,1min</sub> (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	20/03/2018 00:16	1.4	3	49	Yes	IA	Nil
RA2	20/03/2018 01:00	2.0	3	47	Yes	IA	Nil
RA3	20/03/2018 00:37	1.3	3	49	Yes	IA	Nil

Table 14.8: LAeq (15 min) Noise Monitoring Results – April 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	L <sub>Aeq</sub> Criteria (dB)	Criteria Applies? <sup>2</sup>	MC L <sub>Aeq</sub> (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	17/04/2018 12:17	2.8	-2.0	42	Yes	IA	Nil
RA2	17/04/2018 12:41	2.8	-2.0	39	Yes	IA	Nil
RA3	17/04/2018 13:05	4.1	-1.8	39	No	IA	NA
Evening							
RA1	16/04/2018 20:32	1.1	3.0	42	Yes	IA	Nil
RA2	16/04/2018 20:58	1.6	3.0	39	Yes	NM	Nil
RA3	16/04/2018 21:23	1.4	0.5	39	Yes	IA	Nil
Night							
RA1	16/04/2018 22:50	1.0	3.0	41	Yes	IA	Nil
RA2	16/04/2018 22:24	1.7	3.0	39	Yes	IA	Nil
RA3	16/04/2018 22:00	1.4	3.0	39	Yes	IA	Nil

Table 14.9: LA1 (1 min) Noise Monitoring Results – April 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C / 100m) <sup>1</sup>	LA1,1min Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LA1,1min (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	16/04/2018 22:50	1.0	3.0	49	Yes	IA	Nil
RA2	16/04/2018 22:24	1.7	3.0	47	Yes	IA	Nil
RA3	16/04/2018 22:00	1.4	3.0	49	Yes	IA	Nil

Table 14.10: LAeq (15 min) Noise Monitoring Results – May 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C / 100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	22/05/2018 11:39	2.7	-2.0	42	Yes	IA	Nil
RA2	22/05/2018 12:02	2.8	-2.0	39	Yes	IA	Nil
RA3	22/05/2018 12:26	1.9	-2.0	39	Yes	IA	Nil
Evening							
RA1	21/05/2018 20:23	2.4	3.0	42	Yes	IA	Nil
RA2	21/05/2018 20:50	1.5	3.0	39	Yes	IA	Nil
RA3	21/05/2018 21:16	0.6	3.0	39	Yes	IA	Nil
Night							
RA1	21/05/2018 22:54	0.5	3.0	41	Yes	IA	Nil
RA2	21/05/2018 22:26	0.8	3.0	39	Yes	IA	Nil
RA3	21/05/2018 22:00	0.3	3.0	39	Yes	IA	Nil

Table 14.11: LA1 (1 min) Noise Monitoring Results – May 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C / 100m) <sup>1</sup>	LA1,1min Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LA1,1min (dB) <sup>3</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	21/05/2018 22:54	0.5	3.0	49	Yes	IA	Nil
RA2	21/05/2018 22:26	0.8	3.0	47	Yes	IA	Nil
RA3	21/05/2018 22:00	0.3	3.0	49	Yes	IA	Nil

Table 14.12: LAeq (15 min) Noise Monitoring Results – June 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C / 100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	29/06/2018 13:40	2.3	-2.0	42	Yes	IA	Nil
RA2	29/06/2018 11:32	1.8	-2.0	39	Yes	<30	Nil
RA3	29/06/2018 13:11	2.2	-2.0	39	Yes	IA	Nil
Evening							
RA1	28/06/2018 19:44	1.0	3.0	42	Yes	IA	Nil
RA2	28/06/2018 20:09	0.5	3.0	39	Yes	IA	Nil
RA3	28/06/2018 20:34	0.2	3.0	39	Yes	IA	Nil
Night							
RA1	28/06/2018 23:51	0.6	3.0	41	Yes	IA	Nil
RA2	29/06/2018 02:53	1.1	0.5	39	Yes	IA	Nil
RA3	29/06/2018 00:16	0.6	3.0	39	Yes	IA	Nil

Table 14.13: LA1 (1 min) Noise Monitoring Results – June 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LA1,1min Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LA1,1min (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	28/06/2018 23:51	0.6	3.0	49	Yes	IA	Nil
RA2	29/06/2018 02:53	1.1	0.5	47	Yes	IA	Nil
RA3	29/06/2018 00:16	0.6	3.0	49	Yes	IA	Nil

Table 14.1: LAeq (15 min) Noise Monitoring Results – July 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	25/07/2018 16:09	0.6	-2.0	42	Yes	IA	NA
RA2	25/07/2018 16:36	0.4	-2.0	39	Yes	NM	NA
RA3	25/07/2018 17:00	0.3	3.0	39	Yes	IA	NA
Evening							
RA1	25/07/2018 18:24	0.3	3.0	42	Yes	IA	NA
RA2	25/07/2018 18:00	1.3	-1.0	39	Yes	NM	NA
RA3	25/07/2018 18:51	0.7	-1.0	39	Yes	IA	NA
Night							
RA1	25/07/2018 22:01	0.4	3.0	41	Yes	IA	NA
RA2	25/07/2018 22:25	1.3	-1.0	39	Yes	38	NA
RA3	25/07/2018 22:58	1.0	-1.0	39	Yes	IA	NA

Table 14.2: LA1 (1 min) Noise Monitoring Results – July 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LA1,1min Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LA1,1min (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	25/07/2018 22:01	0.4	154	3.0	49	Yes	IA
RA2	25/07/2018 22:25	1.0	259	-1.0	47	Yes	42
RA3	25/07/2018 22:58	1.3	281	-1.0	49	Yes	IA

Table 14.3: LAeq (15 min) Noise Monitoring Results – August 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LAeq Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LAeq (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
Day							
RA1	29/08/18 10:03	2.3	-2.0	42	Yes	IA	Nil
RA2	29/08/18 12:23	3.5	-2.0	39	No	IA	NA
RA3	29/08/18 12:46	3.0	-2.0	39	Yes	IA	Nil
Evening							
RA1	28/08/18 18:42	0.9	3.0	42	Yes	IA	Nil
RA2	28/08/18 19:04	0.8	3.0	39	Yes	<30	Nil
RA3	28/08/18 19:25	0.7	-1.0	39	Yes	IA	Nil
Night							
RA1	28/08/18 23:05	1.1	-1.0	41	Yes	IA	Nil
RA2	29/08/18 01:29	1.0	0.5	39	Yes	40	1
RA3	28/08/18 23:28	1.4	-1.0	39	Yes	IA	Nil



**Table 14.4: LA1 (1 min) Noise Monitoring Results – August 2018**

Table 4.3: LA1,1minute GENERATED BY MC AGAINST OPERATIONAL NOISE IMPACT ASSESSMENT CRITERIA – AUGUST 2018

Location	Start Date and Time	Wind Speed (m/s)	VTG (°C/100m) <sup>1</sup>	LA1,1min Criteria (dB)	Criteria Applies? <sup>2</sup>	MC LA1,1min (dB) <sup>3,4</sup>	Exceedance (dB) <sup>4,5</sup>
RA1	28/08/18 23:05	1.1	-1.0	49	Yes	IA	Nil
RA2	29/08/18 01:29	1.0	0.5	47	Yes	42	Nil
RA3	28/08/18 23:28	1.4	-1.0	49	Yes	IA	Nil

**Table 14.5: LAeq (15 min) Noise Monitoring Results – September 2018**

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LAeq Criteria dB	Criteria Applies? <sup>2</sup>	MC LAeq dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	25/09/2018 14:33	2.2	-2.0	A	42	Yes	IA	Nil
RA1	25/09/2018 20:07	0.6	3.0	F	42	Yes	IA	Nil
RA1	25/09/2018 22:50	0.5	3.0	F	41	Yes	IA	Nil
RA2	25/09/2018 15:24	2.2	-2.0	A	39	Yes	IA	Nil
RA2	25/09/2018 20:39	1.2	3.0	F	39	Yes	IA	Nil
RA2	25/09/2018 22:24	0.6	3.0	F	39	Yes	IA	Nil
RA3	25/09/2018 14:59	2.7	-2.0	A	39	Yes	IA	Nil
RA3	25/09/2018 21:43	0.4	3.0	F	39	Yes	IA	Nil
RA3	25/09/2018 22:00	0.5	3.0	F	39	Yes	IA	Nil

**Table 14.6: LA1 (1 min) Noise Monitoring Results – September 2018**

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LA1,1min Criteria dB	Criteria Applies? <sup>2</sup>	MC LA1,1min dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	25/09/2018 22:50	0.5	3.0	F	49	Yes	IA	Nil
RA2	25/09/2018 22:24	0.6	3.0	F	47	Yes	IA	Nil
RA3	25/09/2018 22:00	0.5	3.0	F	49	Yes	IA	Nil

**Table 14.20: LAeq (15 min) Noise Monitoring Results – October 2018**

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LAeq Criteria dB	Criteria Applies? <sup>2</sup>	MC LAeq dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	23/10/2018 16:21	3.1	-2.0	A	42	No	IA	NA
RA1	23/10/2018 18:01	3.4	-1.0	D	42	No	IA	NA
RA1	23/10/2018 22:00	0.8	3.0	F	41	Yes	NM	Nil
RA2	23/10/2018 16:46	3.2	-2.0	A	39	No	IA	NA
RA2	23/10/2018 18:24	2.9	-1.0	D	39	Yes	IA	Nil
RA2	23/10/2018 22:22	0.9	3.0	F	39	Yes	IA	Nil
RA3	23/10/2018 17:10	2.9	-2.0	A	39	Yes	IA	Nil
RA3	23/10/2018 18:45	1.6	3.0	F	39	Yes	IA	Nil
RA3	23/10/2018 22:43	0.8	3.0	F	39	Yes	IA	Nil

Table 14.21: LA1 (1 min) Noise Monitoring Results – October 2018

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LA1,1min Criteria dB	Criteria Applies? <sup>2</sup>	MC LA1,1min dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	23/10/2018 22:00	0.8	3.0	F	49	Yes	40	Nil
RA2	23/10/2018 22:22	0.9	3.0	F	47	Yes	IA	Nil
RA3	23/10/2018 22:43	0.8	3.0	F	49	Yes	IA	Nil

Table 14.22: LAeq (15 min) Noise Monitoring Results – November 2018

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LAeq Criteria dB	Criteria Applies? <sup>2</sup>	MC LAeq dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	30/11/2018 16:49	3.1	-2.0	A	42	No	IA	NA
RA1	30/11/2018 21:40	0.5	3.0	F	42	Yes	IA	Nil
RA1	30/11/2018 22:00	0.4	3.0	F	41	Yes	IA	Nil
RA2	30/11/2018 17:37	2.0	-2.0	A	39	Yes	IA	Nil
RA2	30/11/2018 18:00	1.7	-2.0	A	39	Yes	IA	Nil
RA2	30/11/2018 22:22	0.2	3.0	F	39	Yes	IA	Nil
RA3	30/11/2018 17:16	2.4	-2.0	A	39	Yes	IA	Nil
RA3	30/11/2018 18:19	2.5	-2.0	A	39	Yes	IA	Nil
RA3	30/11/2018 22:43	0.3	3.0	F	39	Yes	IA	Nil

Table 14.23: LA1 (1 min) Noise Monitoring Results – November 2018

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LA1,1min Criteria dB	Criteria Applies? <sup>2</sup>	MC LA1,1min dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	30/11/2018 22:00	0.4	3.0	F	49	Yes	IA	Nil
RA2	30/11/2018 22:22	0.2	3.0	F	47	Yes	IA	Nil
RA3	30/11/2018 22:43	0.3	3.0	F	49	Yes	IA	Nil

Table 14.24: LAeq (15 min) Noise Monitoring Results – December 2018

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	LAeq Criteria dB	Criteria Applies? <sup>2</sup>	MC LAeq dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	19/12/2018 18:23	2.0	-2.0	A	42	Yes	IA	Nil
RA1	19/12/2018 22:42	2.5	-1.0	D	41	Yes	IA	Nil
RA1	20/12/2018 10:25	2.3	-2.0	A	42	Yes	IA	Nil
RA2	19/12/2018 16:07	1.0	-2.0	A	39	Yes	IA	Nil
RA2	19/12/2018 18:46	1.4	-2.0	A	39	Yes	IA	Nil
RA2	20/12/2018 02:08	0.6	3.0	F	39	Yes	33	Nil
RA3	19/12/2018 16:30	2.8	-2.0	A	39	Yes	IA	Nil
RA3	19/12/2018 19:06	1.3	3.0	F	39	Yes	IA	Nil
RA3	19/12/2018 22:18	3.9	-1.0	D	39	No	IA	NA

Review Date	Next Review Date	Revision No	Document Owner	Page
N/A	N/A	1	Environment and Community Coordinator	Page 65 of 76
DOCUMENT UNCONTROLLED WHEN PRINTED				

Table 14.25: LA1 (1 min) Noise Monitoring Results – December 2018

Location	Start Date and Time	Wind Speed m/s	VTG °C / 100m <sup>1</sup>	Stability Class	L <sub>A1,1min</sub> Criteria dB	Criteria Applies? <sup>2</sup>	MC L <sub>A1,1min</sub> dB <sup>3,4</sup>	Exceedance dB <sup>4,5</sup>
RA1	19/12/2018 22:42	2.5	-1.0	D	49	Yes	IA	Nil
RA2	20/12/2018 02:08	0.6	3.0	F	47	Yes	35	Nil
RA3	19/12/2018 22:18	3.9	-1.0	D	49	No	IA	NA

## 15 Appendix Weed Action Plan

Review Date	Next Review Date	Revision No	Document Owner	Page
N/A	N/A	1	Environment and Community Coordinator	Page 67 of 76
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## Weed Action Plan - 2016



### Lake Coal Australia Pty Ltd

Chain Valley Colliery  
Lake Munmorah, NSW

**13 December 2016**



# Weed Action Plan - 2016

## Lake Coal Mannering Park, NSW

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**Project No:** 20172115  
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**Prepared for:**

**LAKE COAL**  
WADE COVEY  
ENVIRONMENT AND COMMUNITY COORDINATOR  
LAKE COAL  
CHAIN VALLEY COLLIERY  
DOYALSON NORTH, NSW, 2262

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**Kleinfelder Australia Pty Ltd**  
95 Mitchell Road  
Cardiff, NSW 2282  
Phone: 02 4949 5200

ABN: 23 146 082 500





## EXECUTIVE SUMMARY

*This Weed Action Plan (WAP) is designed to identify the known extent of noxious and environmental weeds and to provide guidance for the management of weeds and the effectiveness of weed control measures across Lake Coal landholdings. The 2016 WAP covers the Chain Valley Colliery (CVC), the Mannering Colliery (MC), and the Summerland Point Ventilation Shaft (SPVS).*

*Specifically this WAP addresses the following:*

- *A mapped overview of the known Noxious Weeds, Weeds of National Significance (WoNS) and significant Environmental Weeds and their general locality across Lake Coal landholdings;*
- *Identify and set priorities for target species and areas for 2016/17 weed control works;*
- *Recommend control measures for targeted species based on location and abundance; and*
- *The incorporation of recommendations for an annual inspection of the effectiveness of treatment and control programs that will enable identification of any new outbreaks.*

*Weed mapping of all areas was undertaken during September – October 2016. The study area was divided into nine (9) zones to assist in the allocation of weed control resources. These zones correlate with the existing Biodiversity Management Plan and Lake Coal infrastructure (Figure 1, 2, 11):*

- *Chain Valley – Northern Zone (CVNZ);*
- *Chain Valley – Eastern Zone (CVEZ);*
- *Chain Valley – Southern Zone (CVSZ);*
- *Chain Valley – Western Zone (CVWZ);*
- *Mannering Colliery – Northern Zone (MCNZ);*
- *Mannering Colliery – Eastern Zone (MCEZ);*
- *Mannering Colliery – Southern Zone (MCSZ);*
- *Mannering Colliery – Western Zone (MCWZ); and*
- *Summerland Point – Ventilation Shaft (SPVS).*

The results of the weed mapping conducted within the study area show that there are noxious WoNs and environmental weed occurrences throughout Lake Coal landholdings. Annual monitoring will ensure that information about the current/known weed presence within the zones can be managed efficiently and any future outbreaks will be reduced.

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# 1. INTRODUCTION

---

Kleinfelder was engaged by Lake Coal to develop the 2016 Weed Action Plan (WAP) for Lake Coal's landholdings; Chain Valley Colliery (CVC), Mannering Colliery (MC), and the Summerland Point Ventilation Shaft (SPVS).

Lake Coal previously had a Biodiversity Management Plan (EMP-D-16372 developed for Chain Valley Colliery dated 16/3/2016 (Lake Coal, 2016), and the other covered Summerland Point Ventilation Shaft. This weed action plan consolidated all landholdings, including Mannering Colliery as one WAP.

This WAP is a practical document that aims to identify the extent of Noxious Weeds, Weeds of National Significance, and significant Environmental Weeds throughout Lake Coal landholdings and buffer lands, and provides management actions for each weed species. This WAP uses a framework to prioritise weed species and their impacts and to ensure their effective and realistic reduction within the study area through:

- The development and continued review of weed management actions across the Lake Coal landholdings to target noxious and environmental weeds in accordance with relevant legislation and best practice techniques;
- Providing a template for future monitoring and inspections events; and
- Ongoing consultation with the relevant National, State, and Local authorities regarding weed listings, weed occurrence and best practice management technologies.

## 1.1 STUDY AREA

This WAP covers an area of 74.15 hectares (ha) within the CVC, MC, and SPVS. The vegetation within these areas is predominantly disturbed grassland, fragmented Coastal Open Woodland, Swamp Oak Forest, and Swamp Sclerophyll Forest, which exhibit signs of previous agricultural use and mining-related activities. There are also parcels of natural bushland that have small areas of disturbance due to access tracks, fire trails and mining activities e.g. CVSZ and CVWZ (**Figure 1**).



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#### Legend

- Survey Zones
- Local Road
- Track

0 25 50 100 150 200 250  
Metres



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DATE DRAWN: 31/03/2017 13:09/Version 1

DRAWN BY: BDeane

DATA SOURCE:  
LPI - 2009  
nearmap - 2017  
Lake Coal Pty Ltd - 2016

### Chain Valley Colliery Management Zones

Lake Coal Pty Ltd  
Annual WAP 2016  
Chain Valley Colliery  
Vales Point NSW

FIGURE:

**1**



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- Local Road
- Sub Arterial Road
- Track

Metres  
0 25 50 75 100



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Lake Coal Pty Ltd - 2016

### Mannering Colliery Management Zones

Lake Coal Pty Ltd  
Annual WAP 2016  
Chain Valley Colliery  
Vales Point NSW

FIGURE:

**2**



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## 2. METHODOLOGY

---

The Lake Coal landholdings were surveyed on 28 September and 4 October 2016. The aim of the survey was to map the distribution and densities of weeds located on the site. The priority weed species identified as part of this WAP are categorised under one and/or multiple of the following categories:

- Declared noxious weed under the *Noxious Weeds Act 1993*;
- Listed as a Weed of National Significance (WoNS);
- Considered a significant environmental weed that has the ability to spread rapidly and substantially reduce biodiversity.

Weeds were then ranked into Priority Ranking Category 1, 2, or 3 based on the number of the above categories they fall under (**Table 1, Section 4.1**).

Information from **Table 1** was then combined with information about the percentage cover of weeds (%), area of weed coverage (m<sup>2</sup>), and integration with Weed control principles (see 4.2 Weed control principles) to develop Priority Ranking for management in each zone (e.g. Chain Valley – Southern Zone: Priority Ranking 1 – Lantana). Management Zones were defined using spatial data provided by the client. Vegetation Communities for each Zone were identified from the Lake Coal Biodiversity Management Plan (Lake Coal, 2016).

The location and distribution of all weed species included in the WAP were collected and recorded using a GPS Garmin and a Trimble unit. GIS maps were created based on the GPS data collected and assigned priority based on weed percentage area coverage (m<sup>2</sup>). The site was surveyed by traversing on foot to spot weed occurrences and record observations. Not all areas were observed during the survey due to safety concerns, limited accessibility and timeframe restrictions.

### 3. MANAGEMENT ZONES

---

The study area has been divided into nine management zones for the purpose of identifying priority areas and recommending treatment methodologies. These management zones were delineated according to the following characteristics:

- Location of Lake Coal land holdings;
- Weed locations, abundance and density; and
- Areas nominated by the Biodiversity Management Plan (Lake Coal, 2016).

The delineation of management zones enables target weed species to be defined for each area and provides an effective means for allocating weed control resources. An overview of the management zones are shown in **Figure 1** and **Figure 2**. Detailed maps of each management zone are shown in **Figure 3** through to **11**.

The management zones correlate with the following areas:

- *Chain Valley – Northern Zone (CVNZ);*
- *Chain Valley – Eastern Zone (CVEZ);*
- *Chain Valley – Southern Zone (CVSZ);*
- *Chain Valley – Western Zone (CVWZ);*
- *Mannering Colliery – Northern Zone (MCNZ);*
- *Mannering Colliery – Eastern Zone (MCEZ);*
- *Mannering Colliery – Southern Zone (MCSZ);*
- *Mannering Colliery – Western Zone (MCWZ); and*
- *Summerland Point – Ventilation Shaft (SPVS).*

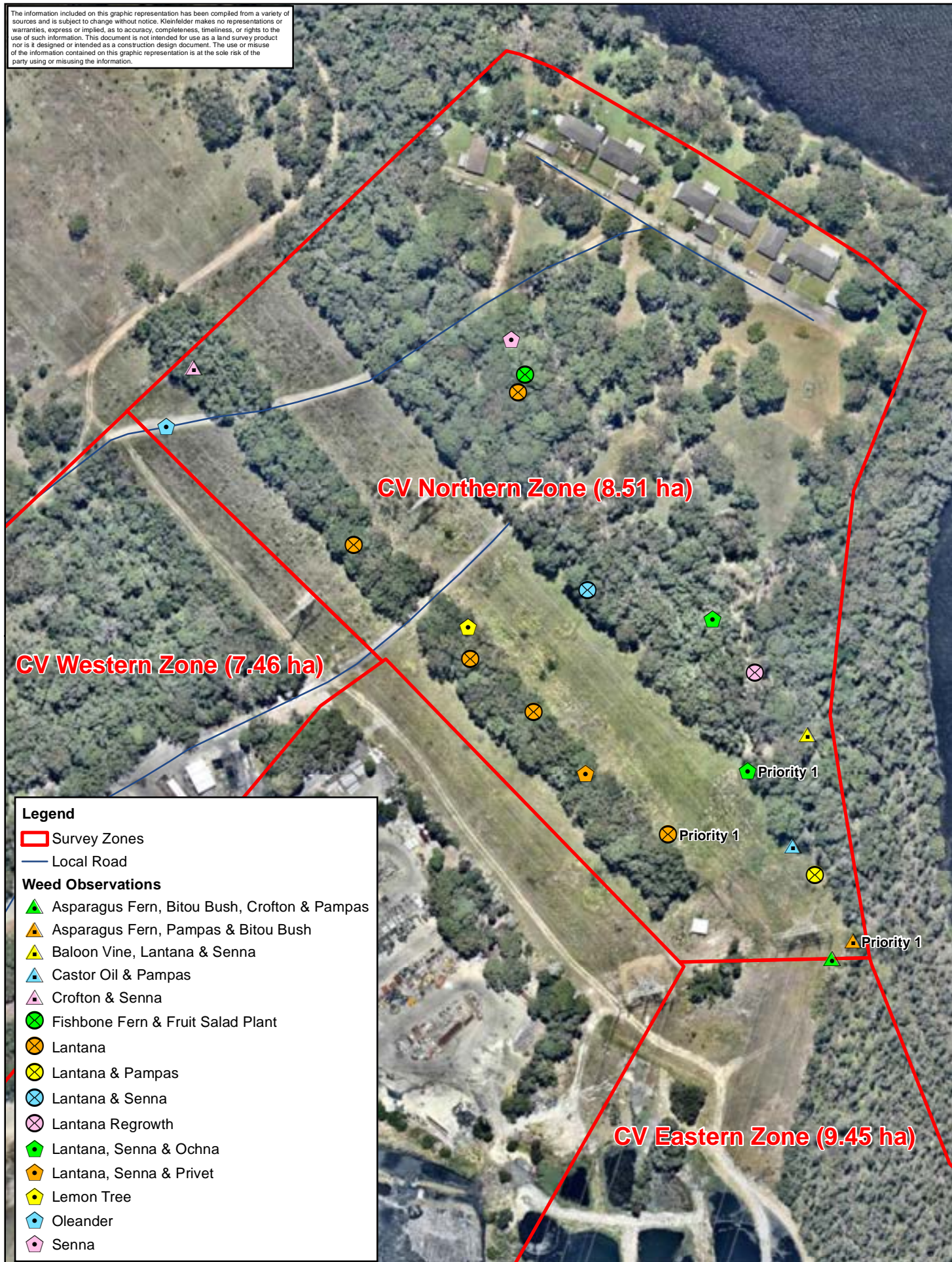
#### Chain Valley and Mannering Colliery - Central Zones

The Central Zones for the Chain Valley and Mannering Colliery are areas that contain the most disturbed areas on the site. This zone is void of any native vegetation and contains roads, administration buildings, workshops and Coal Handling Plants, as such the weed survey was not conducted in these zones.

Target weed species for each zone and key management issues are provided after each map.



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<p>0 10 20 40 60 80 100</p> <p>Metres</p> <p></p>	<p>PROJECT REFERENCE: 2017 2115</p> <p>DATE DRAWN: 11/16/2016 16:25Version 1</p>	<p>Chain Valley Northern Zone (CVNZ)</p>	<p>FIGURE:  3</p>
<p></p> <p>Bright People. Right Solutions.</p> <p>www.kleinfelder.com</p>	<p>DRAWN BY: bdeane</p> <p>DATA SOURCE: LPI - 2009 nearmap - 2016 Lake Coal Pty Ltd - 2016</p>		



### Chain Valley – Northern Zone (CVNZ)

<b>Description</b>	<b>Chain Valley – Northern Zone (CVNZ)</b> consist of 8.51 ha of Modified and Degraded Areas (Resilience Priority 3 & 4) of Swamp Sclerophyll Forest bordering the cottages area (Lake Coal 2016). Lantana, Senna, and Bitou Bush are the dominant weeds in CVNZ, with scattered occurrences of Asparagus Fern, Fish Bone Fern and Fruit Salad Plant identified around the cottages and along the southern fence line ( <b>Figure 3</b> ). Some of the area adjacent to the cottages have been previously treated with good results, and other areas are showing signs of regrowth that require follow-up treatment to ensure they do not become re-infested.
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Lantana, Bitou Bush;</li> <li>• Priority ranking 2 – Asparagus Fern, Fish Bone Fern, Senna; and</li> <li>• Priority ranking 3 – Fruit Salad Plant, Castor Oil Plant.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Follow up treatment of Lantana, Senna, Fruit Salad Plant and Wild Tobacco in previously treated areas around cottages;</li> <li>• Primary treatment of Asparagus Fern, Fish Bone Fern, and Senna of Priority 1 nominated areas (<b>Figure 3</b>); and</li> <li>• Primary treatment of remaining priority 2 and 3 weeds above.</li> </ul>
<b>Notes</b>	Vehicular access will be restricted due to grass height, uncertain terrain beneath the grass, and boundary fences restricting entry into site. Access is possible from the cottages side depending on permission from the residents.

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### Chain Valley – Eastern Zone (CVEZ)

<b>Description</b>	<p><b>Chain Valley – Eastern Zone (CVEZ)</b> extends from the southern-border fence following the powerline easement through to Lake Macquarie at its northern extent, and is bordered by a small creek to the east (<b>Figure 4</b>). The CVEZ vegetation consists of a mixture of Little Disturbed and Modified (Resilience Priority 2 &amp; 3) Swamp Sclerophyll Forest that becomes Degraded to Highly Degraded (Resilience Priority 4 &amp; 5) Swamp Oak Forest on the northern-half of the site at the point where the Sediment Ponds begin. The total area of the site is 9.45 ha, which receives constant overflow from the Sediment Ponds, and some of the area, particularly on the eastern side of the dams, is frequently inundated. Disturbance in these areas has allowed a number of large aquatic and riparian weeds to establish. Most of the weeds occurring in the riparian area fringe the creek line, and include Lantana, Fishbone Fern, Coral Trees, Senna, and Giant Reeds, with isolated Crofton Weed scattered throughout (<b>Figure 4</b>). There is evidence of ongoing disturbance along the creek lines during high flows.</p>
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Lantana, Asparagus Fern, Pampas Grass, Bitou Bush;</li> <li>• Priority ranking 2 – Broad-Leaf Privet, Senna, Fishbone Fern; and</li> <li>• Priority ranking 3 – Crofton Weed, Ochna, Watsonia, Coral Tree.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Lantana, Pampas Grass, Bitou Bush infestation and scattered Asparagus Fern within the zone, including most of the riparian area along the creek and wetland area adjacent to the sediment pond to the west (<b>Figure 4</b>);</li> <li>• Primary treatment of Broad-Leaf Privet, Senna, and large outbreak of Fishbone Fern on the south-eastern side of the site (<b>Figure 4</b>); and</li> <li>• Opportunistic treatment of scattered Crofton Weed, Ochna, Watsonia, and Coral Tree within the rest of the zone.</li> </ul>
<b>Notes</b>	<p>Vehicular access to the site is available from a road that leads into the spillage ponds, which then reaches down to the northern extent of the bushland and wetland area.</p>



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#### Weed Observations

- ▲ Asparagus Fern, Pampas & Ochna
- ▲ Bitou Bush
- ▲ Camphor Laurel
- ▲ Farmers Friend
- ▲ Fishbone Fern
- ▲ Lantana
- Oleander
- Oleander & Pampass Grass
- Pampas Grass
- Radiata Pine
- Watsonia

#### Legend

- Survey Zones
- Local Road
- - Track

Metres  
0 10 20 40 60 80 100



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DATA SOURCE:  
LPI - 2009  
nearmap - 2016  
Lake Coal Pty Ltd - 2016

Chain Valley  
Southern Zone (CVSV)

Lake Coal Pty Ltd  
Annual WAP 2016  
Chain Valley Colliery  
Vales Point NSW

FIGURE:

5




### Chain Valley – Southern Zone (CVSZ)


<b>Description</b>	<p><b>Chain Valley – Southern Zone (CVSZ)</b> consists of large areas of Near Natural (Resilience Priority 1) Coastal Open Woodland with Little Disturbance (Resilience Priority 2) around the edges on the western side of the easement. Powerline infrastructure exists on the easement, which predominantly contains grassy paddocks, with some native Acacia species and scattered Pampas Grass (<b>Figure 5</b>). The CVEZ is 8.79 ha and contains the lowest density of weeds recorded during the site assessment (October 2016), other than a large stand of Radiata Pine located near Construction Road at the site's western edge. Lantana, Radiata Pine and Pampas Grass are the dominant weeds in this zone. There are some isolated patches of Crofton Weed and Oleander (<i>Nerium oleander</i>) fringing CVSZ parallel to the site-entry road (<b>Figure 5</b>).</p>
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Lantana, Pampas Grass;</li> <li>• Priority ranking 2 – Oleander, Bitou Bush; and</li> <li>• Priority ranking 3 – Crofton Weed, Radiata Pine.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Priority 1 and 2 weeds can be coordinated at the same time, with Priority 2 weeds targeted by convenience and proximity to Priority 1 weeds;</li> <li>• Primary treatment of Pampas Grass to take place after all seed heads are carefully collected and disposed of; and</li> <li>• Opportunistic treatment of Priority 3 weeds coordinated after treatment of Priority 1 &amp; 2 weeds.</li> </ul>
<b>Notes</b>	<p>Areas adjacent to the fire trail and close to Construction Road contain large stands of Radiata Pine that are spreading into the bushland. It is recommended they be felled or treated to stop further encroachment into the bush. Vehicular access via fire trails fringing the site on its southern side can be entered from Construction Rd.</p>

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**Legend**

 Survey Zones

 Local Road



PROJECT REFERENCE: 2017 2115

DATE DRAWN: 11/16/2016 17:15 Version 1

DRAWN BY: bdeane

DATA SOURCE:  
LPI - 2009  
nearmap - 2016  
Lake Coal Pty Ltd -2016

Chain Valley  
Western Zone (CVWZ)  
and Access Trails

Lake Coal Pty Ltd  
Annual WAP 2016  
Chain Valley Colliery  
Vales Point NSW

FIGURE:

6



### Chain Valley – Western Zone (CVWZ)

<b>Description</b>	<p><b>Chain Valley – Western Zone (CVWZ)</b> consists of 7.46 ha of Little Disturbed and Modified (Resilience Priority 2 &amp; 3) Coastal Open Woodland. The majority of the weed infestations are located close to the edges and along drainage lines leading off the Chain Valley Colliery. Wet conditions, partly as a consequence of drainage into the area (beginning around the Maintenance Shed leading Northward), have contributed to degradation and allowed the proliferation of a number of noxious and WoNS weed species, with most weeds located along the eastern edge. Weeds of significance within this area include: Lantana, Senna, and Crofton on the eastern side, with patches of Fishbone Fern and Sow Thistle close to the Maintenance Shed; Oleander on the Northern Fringe; and, Camphor Laurel on the North-Western Fringe (<b>Figure 6</b>).</p>
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Lantana, Senna, Crofton Weed;</li> <li>• Priority ranking 2 – Fishbone Fern, Camphor Laurel; and</li> <li>• Priority ranking 3 – Oleander (<i>Nerium oleander</i>), Sow Thistle.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Lantana, Senna, Crofton Weed;</li> <li>• Primary treatment of Fishbone Fern, Camphor Laurel;</li> <li>• Systematic treatment of priority 3 weeds.</li> </ul>
<b>Notes</b>	<p>There are limited walking tracks into some of the site and paths would have to be cut in. Vehicular access is available around the edge of the entire site, though staff would need to be careful to not block access around the Maintenance Shed.</p>



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**Legend**  

Survey Zones

**Weed Observations**  

Asparagus Fern

Bitou Bush & Crofton

Bitou Bush & Juncus acutus

Crofton

Crofton & Pampas

Crofton & Wild Tobacco

Golden Wreath Wattle

Juncus acutus

Lantana & Bitou Bush

Lantana & Crofton

Lantana, Crofton & Senna

Pampas Grass

Radiata Pine

<div> <div> <div> <div>0</div> <div>5</div> <div>10</div> <div>20</div> <div>30</div> <div>40</div> <div>50</div> </div> <div>Metres</div> </div> <div> </div> </div>	<div>PROJECT REFERENCE: 2017 2115</div>	<div> <div>Mannering Colliery Northern Zone (MCNZ)</div> </div>	<div> <div>FIGURE:</div> <div>7</div> </div>
	<div>DATE DRAWN: 12/13/2016 17:26Version 1</div>		
<div> <div> <div>Bright People. Right Solutions.</div> <div>www.kleinfelder.com</div> </div> </div>	<div>DRAWN BY: BDeane</div>		
	<div> <div>DATA SOURCE:</div> <div>LPI - 2009</div> <div>nearmap - 2016</div> <div>Lake Coal Pty Ltd - 2016</div> </div>		



### Manning Colliery – Northern Zone (MCNZ)

<b>Description</b>	<p><b>Manning Colliery – Northern Zone (MCNZ)</b> covers 3.58 ha that contains several dams and a spillage drainage. This area is a Degraded to Highly Degraded (Resilience Priority 4 &amp; 5) Swamp Sclerophyll forest and contains a ground cover that is dominated by weed grass species within the easement. It receives constant water from the dams which allows the spread and transfer of several aquatic weed species. Within the area, weeds in the bushland closest to the infrastructure on the southern side of MCEZ include some large clusters of Lantana, Senna, and Crofton Weed. Areas fringing the fence and dams several infestations of Pampas Grass, isolated patches of Crofton Weed, and an extensive infestation of <i>Juncus acutus</i> (1000 m<sup>2</sup>) exist. There is a mulched rehabilitation area that appears in good condition though there are several stands of Golden Wreath Wattle (<i>Acacia saligna</i>) with that can be easily treated with cut and paint methods. Treatment of the <i>Juncus acutus</i> infestation is recommended to limit further encroachment and allow native species to grow within the area.</p>
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Pampas Grass, Lantana;</li> <li>• Priority ranking 2 – Crofton Weed, Asparagus Fern; and</li> <li>• Priority ranking 3 – Senna, Bitou Bush, <i>Juncus acutus</i>, Golden Wreath Wattle.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Pampas Grass, Lantana;</li> <li>• Primary treatment of Crofton Weed, <i>Juncus acutus</i>, Asparagus Fern after control of Priority Ranking 1 weeds; and</li> <li>• Opportunistic treatment of Priority Ranking 3 - Senna, Bitou Bush, Golden Wreath Wattle.</li> </ul>
<b>Notes</b>	<p>Site is easy to traverse and vehicular access is available with permission from the mine and keys to access the dam area.</p>



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MC Eastern Zone (2.85 ha)

<p><b>Legend</b></p> <p><span style="color: red;">▬</span> Survey Zones</p> <p><span style="color: yellow;">▬</span> Local Road</p> <p><b>Weed Observations</b></p> <p><span style="color: yellow;">⊗</span> Crofton</p> <p><span style="color: red;">⊗</span> Pampas Grass</p>	<p>Metres</p> <p>0 5 10 20 30 40 50</p> <p></p> <p></p> <p></p> <p>Bright People. Right Solutions.</p> <p>www.kleinfelder.com</p>	<p>PROJECT REFERENCE: 2017 2115</p> <p>DATE DRAWN: 11/16/2016 16:43 Version 1</p> <p>DRAWN BY: bdeane</p> <p>DATA SOURCE: LPI - 2009 nearmap - 2016 Lake Coal Pty Ltd - 2016</p>	<p>Mannering Colliery Eastern Zone (MCEZ)</p> <p>Lake Coal Pty Ltd Annual WAP 2016 Mannering Colliery Vales Point NSW</p>	<p>FIGURE:</p> <p>8</p>
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### Mannering Colliery – Eastern Zone

<b>Description</b>	<b>Mannering Colliery – Eastern Zone</b> covers 2.85 ha and consists of Modified and Degraded (Resilience Priority 3 & 4) Coastal Open Woodland around the carpark and dam area. Despite the disturbance there is very little proliferation of weeds within this area, and the dam area consists predominantly of naturally regenerated Acacia and Gahnia species. Within this zone there is some isolated patches of Crofton Weed and Pampas Grass, but no large infestations <b>(8)</b> .
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1: Crofton Weed, Pampas Grass; and</li> <li>• Priority ranking 2: Secondary treatment and maintenance.</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Crofton Weed and Pampas; and</li> <li>• Follow-up treatment with spot-spray.</li> </ul>
<b>Notes</b>	Site is easily traversed by foot, and vehicular access is available around the edge of the entire site.



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#### Legend

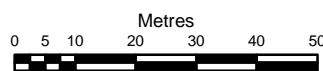
Survey Zones

Local Road

#### Weed Observations

Agave

Radiata Pine



PROJECT REFERENCE: 2017 2115

DATE DRAWN: 11/16/2016 16:45 Version 1

DRAWN BY: bdeane

DATA SOURCE:  
LPI - 2009  
nearmap - 2016  
Lake Coal Pty Ltd - 2016

### Mannering Colliery Southern Zone (MCSZ)

Lake Coal Pty Ltd  
Annual WAP 2016  
Mannering Colliery  
Vales Point NSW

FIGURE:

9



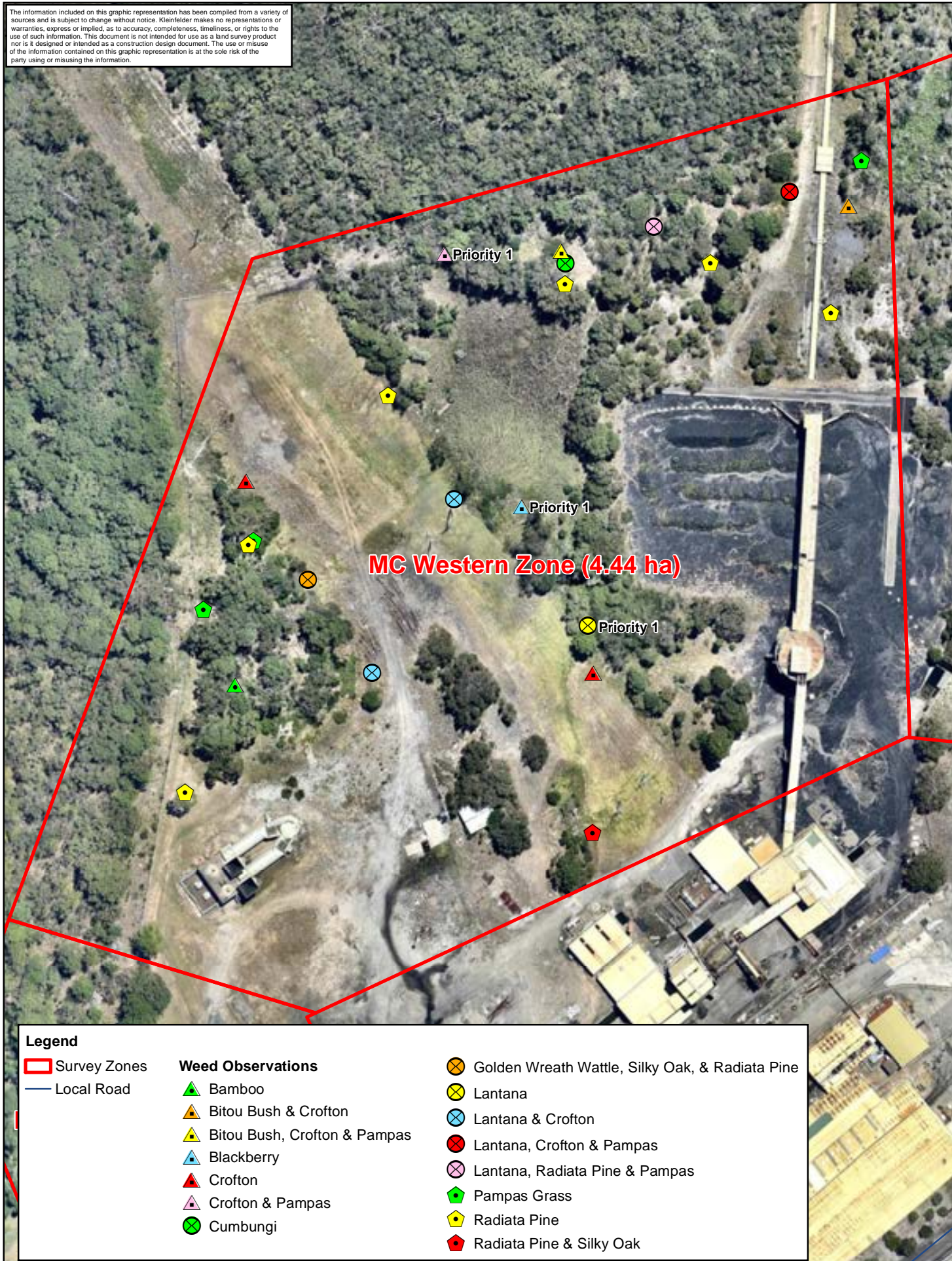
www.kleinfelder.com



### Mannering Colliery – Southern Zone (MCSZ)

<b>Description</b>	<b>Mannering Colliery – Southern Zone (MCSZ)</b> contains 2.21 ha of land that is located on the south site entry and main garden area <b>(9)</b> . The area is a totally cleared landscaped garden area, therefore weeds were mapped for the convenience of the client who knows to manage accordingly. There are two species of weed here including large planted stands of Radiata Pine and a clump of Agave.
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Radiata Pine and Agave</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Radiata Pine and Agave</li> </ul>
<b>Notes</b>	Zone 3 is a landscaped garden area which can be accessed by vehicle and easily traversed.

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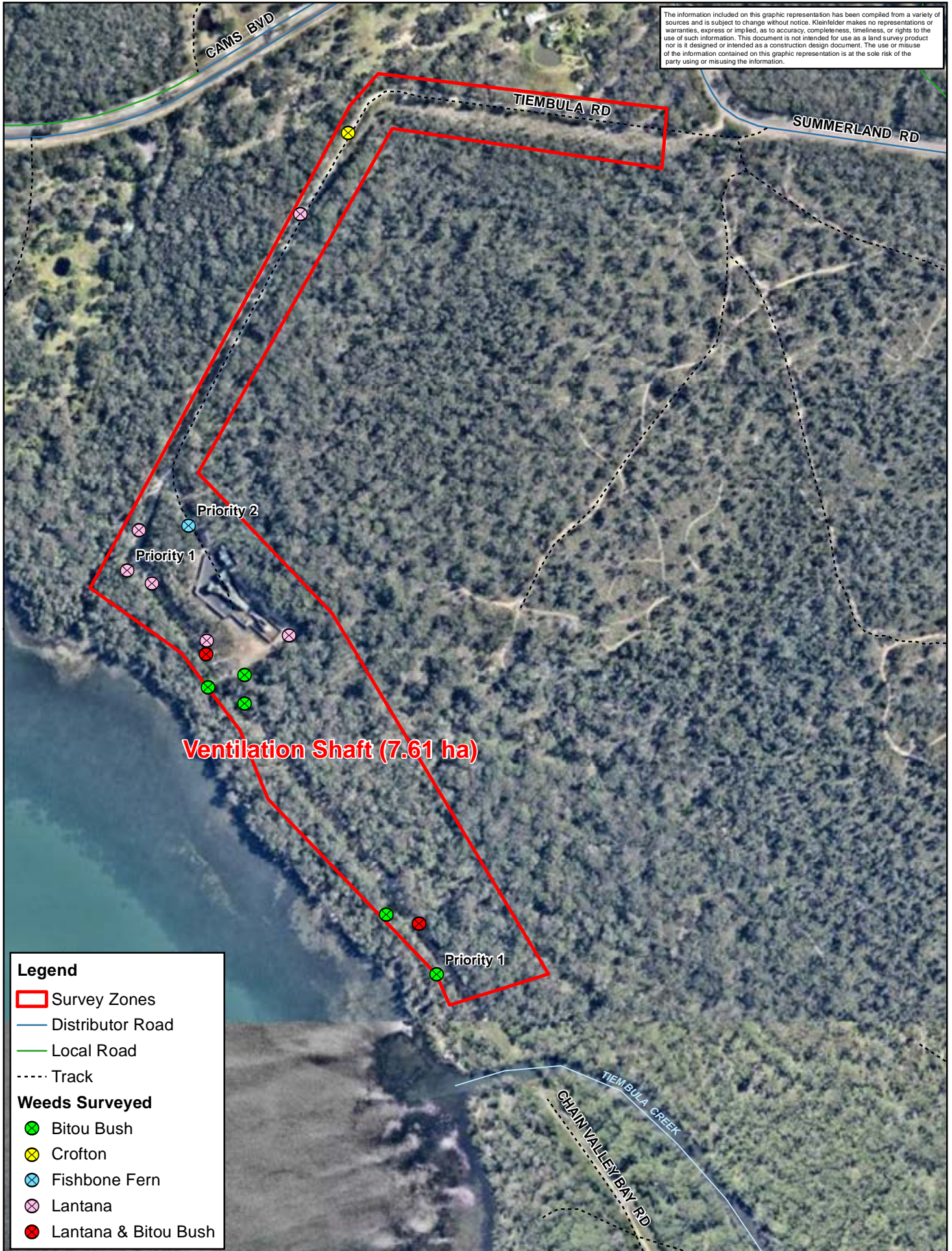
<div><div><div>Metres</div><div>051020304050</div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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### Mannering Colliery – Western Zone (MCWZ)

<b>Description</b>	Mannering Colliery – Western Zone (MCWZ) covers 4.44 ha starting at the western side of the coal loader. The vegetation community contains Modified to Degraded (Resilience Priority 3 & 4), and some areas of Highly Degraded (Resilience Priority 4) Coastal Open Woodland separated by grassy cleared areas <b>(10)</b> . Being a degraded environment, weed presence throughout the zone is high, though weed species are mainly located in either clusters or stands, with Lantana, Crofton Weed and Blackberry, and isolated Pampas Grass in the areas closest to the infrastructure on the southern side of MCEZ. Throughout the site there are also several places where Radiata Pine and Pampas Grass have taken advantage of disturbance and there is a small amount of Bamboo on the western side.
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Pampas Grass, Lantana, Blackberry</li> <li>• Priority ranking 2 – Crofton Weed and Radiata Pine</li> <li>• Priority ranking 3 – Bamboo</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Pampas Grass, Lantana, Blackberry</li> <li>• Primary treatment of Crofton Weed and Radiata Pine</li> </ul>
<b>Notes</b>	Zone 2 is easily traversed by foot and could be accessed in vehicles with permission from the mine.







### Summerland Point – Ventilation Shaft (SPVS)

<b>Description</b>	<p><b>Summerland Point - Ventilation Shaft (SPVS)</b> covers 9.29 ha from Tiembula Entry Road off Summerland Road, and the area surrounding the ventilation shaft located between Lake Macquarie foreshore and Lake Macquarie State Conservation Area (<b>Figure 11</b>). The SPVS area is Swamp Sclerophyll Forest, with a small 300 m stretch from Summerland Road down Tiembula Road heading south identified as Grassy Open Woodland. The Swamp Sclerophyll Forest surrounding the ventilation shaft is in relatively good condition, with some areas away from the edge in Near Natural (Resilience Priority 1) condition, with Modified and Degraded Areas (Resilience Priority 2 &amp; 3) fringing the new access road and power pole development. Scattered weed infestations exist along the road boundaries and lake foreshore including isolated Lantana and Bitou Bush clumps (<b>Figure 11</b>). A small clump of Fishbone Fern exists close to the SPVS and would be easily treated (<b>Figure 11</b>). Along Tiembula Road there is Crofton Weed, Blackberry and Lantana that can be treated within a day.</p>
<b>Priority weeds</b>	<ul style="list-style-type: none"> <li>• Priority ranking 1 – Bitou Bush, Lantana, Pampass Grass</li> <li>• Priority ranking 2 – Fishbone Fern and Crofton Weed,</li> <li>• Priority ranking 3 – N/A</li> </ul>
<b>Key Management Issues</b>	<ul style="list-style-type: none"> <li>• Primary treatment of Bitou Bush, Lantana, Pampass Grass</li> <li>• Primary treatment of Fishbone Fern and Crofton Weed</li> </ul>
<b>Notes</b>	<p>Access tracks within the zone allow easy vehicular access. Most bush areas can easily be traversed, though there are some steeper sections along the Lake Macquarie foreshore.</p>



## 4. PRIORITY WEED SPECIES

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Twenty-two (22) weed species have been chosen as priority species. The priority weeds are listed in **Table 1** below. The priority weeds fall under one and/or multiple of the following categories:

- Declared noxious weed under the *Noxious Weeds Act 1993*;
- Listed as a Weed of National Significance (WoNS); and
- Considered a significant environmental weed that has the ability to spread rapidly and substantially reduce biodiversity.

There are weed species that have not been included in this WAP that are present in the study area. Those weeds fall under one and/or multiples of the following categories:

- Those not declared as noxious weeds under the *Noxious Weeds Act 1993* or listed as WoNS;
- Their abundance within the study area is extremely low or isolated due to unsuitable conditions which contributes to a very low likelihood of their spread and/or effect on biodiversity;
- Considered as Annual or Biennial weeds that only have a short life cycle, consisting of two years or less that usually die back and do not provide permanent competition for native species; and
- They are present onsite and locally on such a scale that they are considered to have become naturalised. Most forms of control are considered to be extremely ineffective and/or impractical as the likelihood of re-establishment is very high.

### 4.1 PRIORITY WEED RANKING

A ranking of 1 indicates the highest priority of control required for a weed that is recognised on a national level (WoNS) and is a regionally declared noxious weed. The weed is currently abundant on site, spreading or has the capacity to spread into new areas. These weeds will significantly affect biodiversity where they are established.

A ranking of 2 indicates that significant management would be required before the next monitoring survey to reduce presence, abundance and spread.

A ranking of 3 indicates a weed that is currently in a low abundance, limited desirable conditions, and is unlikely to spread beyond its current distribution. Control should be undertaken with ongoing monitoring to ensure significant reduction in distribution.

**Table 1: Priority weed species**

\* NW Act = *Noxious Weed Act 1993*, Class applies to Lake Macquarie LGA Control Area

Priority Ranking Category	Common Name	Botanical Name	NW Act*	WoNS	Environmental Weed
1	Bitou Bush	<i>Chrysanthemoides monilifera</i>	Class 4	✓	✓
1	Blackberry	<i>Rubus fruticosus</i>	Class 4	✓	
1	Lantana	<i>Lantana camara</i>		✓	✓
1	Pampas Grass	<i>Cortaderia selloana</i>	Class 3		
2	Castor Oil Plant	<i>Ricinus communis</i>			✓
2	Crofton Weed	<i>Ageratina adenophora</i>	Class 4		✓
2	Giant Reed	<i>Arundo donax</i>	Class 4		✓
2	Golden Wreath Wattle	<i>Acacia saligna</i>			✓
2	Morning Glory	<i>Ipomoea indica</i> and <i>Ipomoea cairica</i>			✓
2	Radiata Pine	<i>Pinus radiata</i>			
2	Queensland Silver Wattle	<i>Acacia podalyriifolia</i>			✓
2	Senna	<i>Senna pendula</i> var. <i>glabrata</i>			✓
2	Wild Tobacco	<i>Solanum mauritianum</i>			✓
2	Fishbone Fern	<i>Nephrolepis cordifolia</i>			✓
2	Spiny Rush	<i>Juncus acutus</i>			
3	Broad-Leaf Privet	<i>Ligustrum lucidum</i>			✓

3	Camphor Laurel	<i>Cinnamomum camphora</i>			✓
3	Coral Tree	<i>Erythrina x sykesii</i>			✓
3	Moth Vine	<i>Araujia sericifera</i>			✓
3	Silky Oak	<i>Grevillea robusta</i>			✓
3	Hydrocotyl	<i>Phyllostachys species</i>	Class 4		
3	Spiny Rush	<i>Juncus acutus</i>			

## 4.2 WEED CONTROL PRINCIPLES

The principal objectives of weed management programs are guided by national, state and local legislation. A program must take into consideration factors such as the interest of all stakeholders, development consent conditions, biodiversity values, geographic location, accessibility and availability of adequate funding.

The basic set of guidelines used, along with current legislation to determine the prioritisation of weed species for targeted control within Lake Coal landholdings are as follows:

- Preventing the introduction of noxious and environmental weeds into new and highly desirable areas such as rehabilitation areas and high biodiversity value areas;
- Eradicating high risk infestations that are new and/or have the potential to spread quickly or significantly impact biodiversity if left unmanaged;
- Managing declared noxious weeds taking into account their class and known distribution;
- Containment and management of noxious and WoNs that are widespread; and
- Containment and control of environmental weeds that pose a high risk to biodiversity in riparian, bushland and grassland habitats. This includes areas where control measures have already been undertaken.



## 5. WEED MANAGEMENT

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In most cases weeds should be seen as a symptom of another problem or disturbance rather than just a stand-alone issue. All plant species have a desirable habitat or set of environmental conditions in which they prefer to grow and some exotic species can be faster growing and spread more vigorously than native species. Weed seed can be present within the soil but never establish, however, the majority of weed species require some form of disturbance to trigger germination in the soil.

Some of the most common disturbance triggers are:

- Land clearing;
- Soil disturbance;
- Fires or change in fire regimes; and
- Drought.

It is not always feasible or possible to effectively control all weeds over the long term and if these disturbances are still occurring, there will be a high likelihood that weeds will re-establish. Weed control itself is a form of disturbance, as it changes the canopy cover and therefore the ecological niche, which can trigger other weeds to germinate from the soil seed bank or provide existing weeds with more opportunity to flourish. Follow up weed control should always be undertaken and be considered essential to ensure an effective weed management program.

### 5.1 WEED CONTROL

There is an ever increasing range of control techniques available to weed management contractors. Different techniques can be used on a variety of weed species during various times of year.

Contractors using control techniques which are herbicide based must comply with the *Pesticides Act 1999* (NSW). Only registered herbicides can be used to control weeds according to the directions on each herbicide's label. The *Pesticides Amendment (Records) Regulation 2001* (NSW) stipulates the requirements for record keeping when undertaking herbicide application. More information on this can be located in the "Noxious and environment weed control handbook" (Ensbey, 2016). The handbook also lists all the current control techniques and herbicides registered for each weed species. Not all registered herbicides and techniques

work well on different species and they all have a varying level of control under different environmental circumstances.

**Appendix 3** recommends techniques and methods under a variety of environmental situations to which best achieve effective control of the priority species. It is desirable that all contractors be trained in Conservation and Land Management Level II or higher, or equivalent. All contractors must hold a chemical accreditation of Level 3 (AQF 3) or higher to ensure that herbicide application is carried out in a safe manner for the applicators, the public and the environment.

**Appendix 4** provides information regarding resilience and explains the way weed treatment methodologies can encourage or obstruct natural regeneration - that is the recruitment and germination of native species. Sound land management practices such as bush regeneration can provide the right conditions for degraded native bushland to recover and establish strong resilience.

## 6. MONITORING AND REPORTING

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Monitoring is the systematic collection, recording and analysis of on ground observations over time. Without monitoring the effectiveness of the control methods, weed management cannot be improved or adjusted to improve results and reduce costs.

### 6.1 ANNUAL MONITORING

Annual monitoring will be vital to assessing the effectiveness of the treatment methods carried out. Assessing the site response to the treatments will be essential in providing follow up treatments. This can be done by collecting information about the site and the treatment methods in the following ways:

- Using photographic monitoring points;
- Mapping of weed species, their location and densities;
- Noting if the weeds have been previously treated; and
- Recording significant native species and their density within the treatment area.

Information on best practice weed monitoring and detail on the monitoring techniques is available in the “Guidelines for monitoring weed control and recovery of native vegetation” (Auld, 2009).

### 6.2 REPORTING

Reporting is essential in compiling the results of the monitoring with the information collected pre and post weed treatments. The results and recommendations from the monitoring should be prepared in an annual report or WAP for the Lake Coal Environment & Community Department.

Basic information should be collected when treatments are carried out. This will be used as baseline data when assessing the effectiveness of control and measuring the presence and densities of weed species over time.



The weed contractors must maintain daily activity reports recording the following information:

- Number of contractors and total number of person hours worked;
- Weed control methods used;
- Herbicide application including the type of chemical and quantity/volume used;
- Weather conditions, morning, midday and afternoon, including Delta T measurements;
- Location of work performed;
- The approximate area (m<sup>2</sup>) or % of weeds treated within each management area;
- Consider establishing photo points at significant infestation areas;
- Other information or observations that may be relevant;
- Provide this information in a report to Lake Coal, summarising weed management activities undertaken; and
- Record threatened or endangered flora of fauna identified within the study area.

## **7. DISCUSSION AND RECOMMENDATIONS**

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The results of the weed mapping conducted within the study area show that there are noxious WoNs and environmental weed occurrences throughout Lake Coal landholdings. Annual monitoring will ensure that information about the current/known weed presence within the zones can be managed efficiently and any future outbreaks will be reduced. It is recommended that the following points be considered by Lake Coal to ensure an effective outcome for the study area and surrounding lands:

- Consistent recording and tracking of works undertaken in the study area;
- Weed management activities during 2016/2017 to focus on the mapped priority weeds in the areas identified in this WAP;
- Annual monitoring be undertaken to assess their success and identify the need for any additional and/or follow up works;
- Annual weed mapping to establish the overall decline and spread of priority weeds and recommendations provided for 2016/2017 weed control works.

## 8. REFERENCES

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Auld, B. (2009). *Guidelines for monitoring weed control and recovery of native vegetation*, NSW Department of Primary Industries.

Buchanan, R. (1999). *Bush regeneration*. Sydney: TAFE Student Learning Publications.

Ensby, R. (2016). *Noxious and environmental handbook a guide to weed control in non-crop aquatic and bushland situations*, Department of Primary Industries.

Lake Coal (2016). Biodiversity Management Plan. Chain Valley Colliery: Lake Coal Pty Ltd.



## APPENDIX 1. PRIORITY WEED SPECIES

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### Noxious Weeds

A noxious weed is a weed that is declared noxious by the NSW Minister for Primary Industries in accordance with the *Noxious Weeds Act 1993*. The *Noxious Weeds Act 1993* provides for the Minister for Primary Industries to issue an order declaring a plant noxious, either in the whole of the state or a portion of the state. The Act requires declared Noxious Weeds to be listed in one of the five control categories specified in the Act.

Priority for noxious declaration categories is determined by the detrimental effect a plant has on the environment and its ability to cause severe economic loss to agriculture or the environment. Weeds are declared noxious on local and state levels and will only be declared noxious if there are reasonable and enforceable means of control.

### Noxious Weed Control Categories

The following weed control classes may be applied to a plant by a weed control order and the characteristics of each class are described below:

- Class 1 - State Prohibited Weeds;
- Class 2 - Regionally Prohibited Weeds;
- Class 3 - Regionally Controlled Weeds;
- Class 4 - Locally Controlled Weeds; and
- Class 5 - Restricted Plants.

**Class 1** noxious weeds are plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent. According to the Act, "The plant must be eradicated from the land and the land must be kept free of the plant".

**Class 2** noxious weeds are plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent. According to the Act, "The plant must be eradicated from the land and the land must be kept free of the plant".

**Class 3** noxious weeds are plants that pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area. According to the Act, "The plant must be fully and continuously suppressed and destroyed".

**Class 4** noxious weeds are plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area. According to the Act, "The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority".

**Class 5** noxious weeds are plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State. According to the Act, "Requirements in the *Noxious Weeds Act 1993* for a notifiable weed must be complied with" and "The plant must not be sold, propagated or knowingly distributed".

A noxious weed that is classified as a Class 1, 2 or 5 noxious weed is referred to in this Act as a notifiable weed. An occupier of land on which there is a notifiable weed must notify the local control authority for that land within 3 days of becoming aware that a notifiable weed is on their property.

### **Weeds of National Significance (WoNS)**

Under the National Weeds Strategy, 32 introduced plants were identified as Weeds of National Significance (WoNS).

This list of 32 weeds has been developed based on the following key criteria:

- Invasiveness;
- Impacts;
- Potential for spread; and
- Socioeconomic and environmental values.

National management strategies have been published for all of these species. Five of these species have been identified as occurring within Lake Coal landholdings.

Further information about the WoNs program, including national management arrangements, is available from the ([www.weeds.org.au](http://www.weeds.org.au)).

### **Significant Environmental Weeds**

A significant environmental weed is a weed that is not declared noxious but locally will still impact on the environment through the degradation of natural systems and biodiversity by interfering with the growth and spread of native flora species endemic to the local area. Environmental weeds can also impact on native fauna by replacing their natural food sources and making wildlife corridors impenetrable. These species often can be limited to only a few areas within the study area and may require specific habitat or environments to spread and establish.



## APPENDIX 2. RECOMMENDED CONTROL TECHNIQUES

Botanical Name	Common Name	Control Methods	Level of occurrence/Notes
<i>Rubus fruticosus</i>	Blackberry	Most plants can be sprayed using a large range of herbicides, selective herbicides include Picloram 100 g/L + Triclopyr 300 g/L +Aminopyralid 8 g/Grazon Extra® 350 or 500 mL per 100 L water or Metsulfuron-methyl 600 g/kg 10 g per 100 L of water	Scattered within Mannering Zone 4
<i>Cinnamomum camphora</i>	Camphor Laurel	Glyphosate 360 g/L (Roundup®). Rate: 1 part glyphosate to 50 parts water. Spray seedlings and coppice shoots. Alternatively, Rate: 1 part glyphosate to 1.5 parts water and cut stump/scrape stem application for saplings. Stem injection application large trees and shrubs.	Scattered within Western Zone
<i>Ricinus communis</i>	Castor Oil Plant	Hand pull smaller plants. Herbicide treatment Triclopyr 600 g/L (Garlon® 600). Rate: 1.0 L per 30 L of diesel	Light to medium infestations in Zone 3 and 4.
<i>Ipomoea cairica</i>	Coastal Morning Glory	Glyphosate 360 g/L (Roundup®). Rate: 200 mL per 10 L of water. Spot-spray for seedling control. Alternatively, Rate: 1 part glyphosate per 1.5 parts water and stem scraping application.	Medium to Heavy infestations along several roads and tracks, especially in Zone 4.
<i>Erythrina x sykesii</i>	Coral Tree	Glyphosate 360 g/L (Roundup®). Rate: 1 part glyphosate to 1.5 parts water. Cut stump/drill/axe cut/inject. Picloram 44.7 g/kg + Aminopyralid 4.47 g/L (Vigilant II ®). Rate: Undiluted. Cut stump/stem injection application. Apply a 3–5 mm layer of gel for stems less than 20 mm. Apply 5 mm layer on stems above 20 mm.	Isolated stands in Zone 3
<i>Ageratina adenophora</i>	Crofton Weed	Metsulfuron-methyl 600 g/kg, Rate: 15 g per 100 L of water. Add surfactant and thoroughly wet all foliage to point of run-off up to bud stage to prevent seed set. Glyphosate - Round Up Bioactive at 5 mL per 1 Litre of water. Apply to actively growing plants with full foliage.	Medium to light along the tracks of all zones.
<i>Nephrolepis cordifolia</i>	Fishbone Fern	Glyphosate 360 g/L with Metsulfuron-methyl 600 g/kg (Various products). Rate: 200 mL glyphosate plus 1.5 g Metsulfuron-methyl per 10 L of water. Knapsack spot spray. Metsulfuron-methyl 600 g/kg (Brush-off®). Rate: 1.0–2.0 g Metsulfuron-methyl per 10 L of water. Knapsack spot spray.	One dense clump in Zone 3

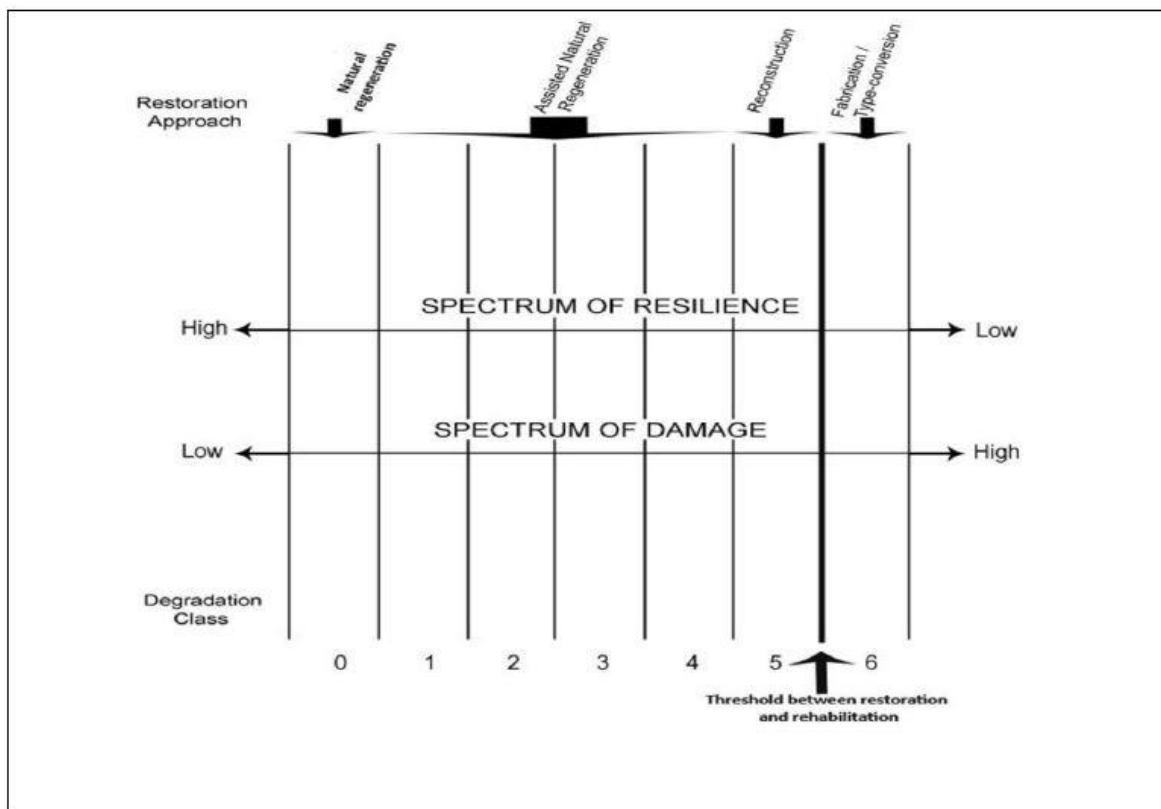
<i>Arundo donax</i>	Giant Reed	Glyphosate 360 g/L (Roundup®). Rate: 1 part glyphosate to 50 parts water. Knapsack application. Alternatively, Rate: 1 part glyphosate to 1.5 parts of water for cut stump application.	One dense stand in Zone 6
<i>Acacia saligna</i>	Golden Wreath Wattle	Picloram, Garlon and glyphosate are used for chemical control as overall sprays, stem injection or cut stump. Use Garlon 480 at 1:400 and Roundup CT at 1:200 as an overall spray for control of juvenile trees and 2 L/ha Garlon 480 for control of seedlings. Fire destroys the mature trees but usually leads to a mass germination of seedlings. However if these seedlings are controlled it very quickly reduces the seed bank in the soil. Seedlings tend not establish in mature stands. A long term control plan is usually required for success. Target areas that have been recently burnt because these will be more prone to invasion and the seed bank will be reduced due to the fire induced germination of seed.	Scattered and only present in Zone 7 (rehabilitation zone)
<i>Lantana camara</i>	Lantana	Splatter gun application using Glyphosate 360 g/L (Roundup®). Rate: 1 part per 9 parts water. Metsulfuron-methyl 600 g/kg (Brush-off®). Rate: 10 g per 100 L of water. Apply to bushes up to two metres tall. Spray to wet all foliage and stems. Re-treatment will be necessary.	Heavy to medium infestation in all Zones
<i>Ligustrum lucidum</i>	Broad-Leaf Privet	Glyphosate 360 g/L (Roundup®). Rate: Undiluted (1–2 mL per cut). Stem injection technique, as per label. Metsulfuron-methyl 300 g/kg + Aminopyralid 375 g/kg (Stinger™). Rate: 20 g per 100 L of water. Hand gun application. Metsulfuron-methyl 600 g/kg (Brush-off®). Rate: 10 g per 100 L of water. Apply to bushes up to 3 m high; complete coverage is essential.	Light to medium infestations in all Zones except Zones 1, 7 and 8
<i>Anredera cordifolia</i>	Madeira Vine	Glyphosate 360 g/L (Roundup®). Rate: Undiluted glyphosate. Stem scraping application. Alternatively, rate: 100 mL glyphosate per 10 L of water. Spot spray for seedling control. Add a surfactant. Fluroxypyr 200 g/L (Starane™). Rate: 500 mL in 100 L of water. Apply at times of active growth. Avoid drift on to desirable plants.	Light infestation restricted to Zone 1
<i>Ipomoea indica and Ipomoea cairica</i>	Morning Glory	Glyphosate 360 g/L (Roundup®). Rate: 200 mL per 10 L of water. Spot-spray for seedling control. Alternatively, Rate: 1 part glyphosate per 1.5 parts water and stem scraping application.	Medium to Heavy infestations along several roads and tracks, especially in Zone 4
<i>Araujia sericifera</i>	Moth Vine	Spot spray with Glyphosate 360 g/L with Metsulfuron-methyl 600 g/kg (Various products). Rate: 2 L glyphosate plus 15 g Metsulfuron-methyl in 100 L water. Or Metsulfuron-methyl 600 g/kg Rate: 10–20 g per 100 L of water.	Light infestation restricted to Zones 1 and 3
<i>Senna pendula var. glabrata</i>	Senna	Glyphosate 360 g/L (Roundup®). Rate: 1 part per 1.5 parts of water. Stem injection/cut stump application. Alternatively, rate: 200 mL glyphosate per 10 L water. Spot spray application. Metsulfuron-methyl 600 g/kg (Brush-off®). Rate: 1.0–2.0 g Metsulfuron-methyl per 10 L water. Spot spray application.	Medium to light along the track of most Zones except Zones 4, 7 and 8.
<i>Grevillea robusta</i>	Silky Oak	Glyphosate 360 g/L (Roundup®). Rate: 1 part per 1.5 parts of water. Stem injection/cut stump application.	Light infestation restricted to Zone 3

<i>Cortaderia sp</i>	Pampas Grass	Glyphosate 360 g/L (Roundup®). Rate: 1.0 or 1.3 L per 100 L of water. Actively growing plants, before flowering, spring to autumn. Use higher rate on plants over 1 m high.	Medium to heavy infestations within most Zones except Zones 2, 5, 6 and 9
<i>Solanum mauritianum</i>	Wild Tobacco	Stem injection using Glyphosate 360 g/L Undiluted.	Light to heavy in all Zones except Zone 8.
<i>Pinus radiata</i>	<i>Radiata Pine</i>	Picloram, Garlon and glyphosate are used for chemical control as overall sprays, stem injection or cut stump. Use Garlon 480 at 1:400 and Roundup CT at 1:200 as an overall spray for control of juvenile trees and 2 L/ha Garlon 480 for control of seedlings. Fire destroys the mature trees but usually leads to a mass germination of seedlings. However if these seedlings are controlled it very quickly reduces the seed bank in the soil. Seedlings tend not establish in mature stands. A long term control plan is usually required for success. Target areas that have been recently burnt because these will be more prone to invasion and the seed bank will be reduced due to the fire induced germination of seed	Light to heavy in CVSZ and in MCSZ
<i>Monstera deliciosa</i>	Fruit Salad Plant	Glyphosate 360 g/L (Roundup®). Rate: 1 part glyphosate to 50 parts water. Spray seedlings and coppice shoots. Alternatively, Rate: 1 part glyphosate to 1.5 parts water and cut stump/scrape stem application for saplings. Stem injection application large trees and shrubs.	Large Cluster in CVNZ
<i>Nerium oleander</i>	Oleander	Picloram 44.7 g/kg + Aminopyralid 4.47 g/L (Vigilant II ®). Rate: Undiluted Cut stump/stem injection application. Apply a 3–5 mm layer of gel for stems less than 20 mm. Apply 5 mm layer on stems above 20 mm .	Scattered along Northern Fringe – CVSZ, and Southern Fringe – CVWZ.
<i>Asparagus aethiopicus</i>	Asparagus Fern	Spot spray with Glyphosate 360 g/L with Metsulfuron-methyl 600 g/kg (Various products). Rate: 2 L glyphosate plus 15 g Metsulfuron-methyl in 100 L water. Or Metsulfuron-methyl 600 g/kg Rate: 10–20 g per 100 L of water.	Scattered throughout all Zones.
<i>Juncus acutus</i> subsp. <i>acutus</i>	Spiny Rush	Spot spray with glyphosate 360 at a rate of 20 ml glyphosate 360 to one litre of water, plus the addition of a penetrant, e.g. Pulse® at 2 ml/L water. Avoid spraying over free water. Where appropriate, supplement regular glyphosate with APVMA approved formulations such as Raze® and Roundup Biactive®. Arrange for follow up spraying to control missed plants and new seedlings.	
<i>Phyllostachys spp.</i>	Bamboo	Glyphosate 360 g/L (Roundup®). Rate: 1 part glyphosate to 50 parts water. Knapsack application. Alternatively, Rate: 1 part glyphosate to 1.5 parts of water for cut stump application	



## APPENDIX 4. SITE RESILIENCE

The likelihood and degree of weed infestation in an area can be directly associated with the level of resilience an area has, that is the ability to recover from disturbance or damage with or without assistance based on the presence of native species and degree of disturbance. **Figure A4** shows the spectrum of resilience and the approach required at each level.



**Figure A4: Spectrum of resilience**

The manner in which weed treatment is carried out can encourage or obstruct natural recruitment and germination of native species. Sound land management practices such as bush regeneration can provide the right conditions for degraded native bushland to recover and establish strong resilience. The Bradley method is preferred for weed species and is considered as best practice. This method aims to remove weeds with minimal disturbance and allow native species to re-establish naturally (Buchanan, 1999). Further information on this method and bush regeneration can be found at the Australian Association of Bush Regenerators (AABR) website <http://www.aabr.org.au/>.

Throughout the study area different vegetation types, areas of bushland and management zones will have different levels of resilience. Those with a high level of resilience will generally have less invasive weeds in low abundance. Sites with a low resilience generally have a higher instance of invasive species in high abundance.

When undertaking weed control in each one of the management units, priority should generally be given to individual areas of high resilience, those with the most amount of native vegetation and fewer amount of weed species. A guide for resilience prioritising is given below.

**Table A4: Resilience priority**

<b>Vegetation condition</b>	<b>Vegetation resilience</b>	<b>Restoration approach</b>	<b>Actions</b>	<b>Resilience Priority</b>
Near - Natural	Intact	Protect	Monitor	1
Little Disturbed	Intact	Protect	Monitor and Consider implanting further management	2
Modified – Generally not cleared or subject to prolonged disturbance	Largely intact	Natural regeneration	Remove causes of degradation. Ensure native recruitment in occurring and is not inhibited. Monitor.	3
Degraded	Depleted	Assisted Natural Regeneration	Remove causes of degradation. Ensure native recruitment is occurring and is not inhibited. Monitor.	4
Highly degraded	Severely depleted	Assisted natural regeneration with revegetation of some species	Remove causes of degradation. Ensure native recruitment is occurring and is not inhibited. Monitor. Reintroduce native plant species	5
Totally cleared	absent	Revegetation	Remove causes of degradation. Substantial Re-introduction of native species. Monitor.	6

Benefits of considering the resilience of an area when establishing a strategy throughout the study area include but is not limited to:

- Less follow up weed control required;
- Increased native recruitment/regeneration; and
- Cost effective control of priority species.

## 16 Appendix Community Complaints Register

Review Date	Next Review Date	Revision No	Document Owner	Page
N/A	N/A	1	Environment and Community Coordinator	Page 68 of 76
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Date	Nature of Complaint	Complaint/Incident Details	Action Taken
28/07/2018	Noise	Complaint recieved from resident in Kingfisher Shores at 6:15am on Saturday 28th July complaining about noise impacts from the mine in the early hours of the morning.	<p>LakeCoal's EC Coordinator contacted site at 7am and organised for site supervisor to attend Tall Timbers Road to investigate the complaint.</p> <p>It was determined that the complaint was related to the sites loader which was working the product coal stockpile at the time of the complaint.</p> <p>Follow up discussion with the complainant undertaken at 1.20pm on 30 July. Complainant advised that noise impacts were experienced at around 5am on the Saturday morning. The complainant explained that he was very frustrated as his wife had come off night work and the whole family were woken by heavy machinery noise. I explained to the complainant the outcomes from the sites investigation and that it was most likely the product loader they could hear. I explained to the complainant that the operational issues had forced the site to use the loader throughout the night and weekend period which unfortunately could not be avoided on this occasion. I explained that the mine had been able to stand the loader down on the Saturday and Sunday night and he explained that it had made a big difference.</p>

Date	Nature of Complaint	Complaint/Incident Details	Action Taken
06/08/2018	Noise	Complainant contacted Mannering Colliery directly to complain about noise impacts.	<p>CPP operator spoke with complainant and worked with the resident to turn various pieces of plant on and off to determine the source of the noise. It was determined from the investigations that the noise was most likely attributable to the coal handling plant and was most likely as result of wet coal product pulsing through the plant at the time of the complaint.</p> <p>LakeCoal's E&amp;C Coordinator contacted the complainant at 10.30am on 7/8/18 to further understand the nature of the complaint and provide an update on the investigation findings. The complainant advised that the noise was intermittent and confirmed it sounded like a Jet taking off. He confirmed that it made a big difference when the CPP was turned off. The complainant advised that he happy with the sites response to his complaint at the time and appreciated the follow up.</p>
14/08/2018	Noise	Complaint recieved from resident in Macquarie Shores Retirement Village. Complainant advised of loud buzzing noises starting at 12.10am to the morning	Follow up meeting with complainant on 15/8/18 by LakeCoal. Comitted to investigating the complaint further in consultation with the resident.

Date	Nature of Complaint	Complaint/Incident Details	Action Taken
17/08/2018	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Complaint regarding loud bass noise from Colliery. Complainant advised that he was woken at 3.30am and again at 6.20am with the same noise. Complainant advised that he was feeling very ill as a result of the noise and was unable to sleep.	Spoke with complainant on 17/08. Advised that the site was still trying to determine to source of the noise as it was not characteristic of the operation.
18/08/2018	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Complaint regarding loud buzzing noise from Colliery at 7.22pm	Met with the complainant face to face at 11am on Monday 20/08. . Explained that the site was operating both the plant and the loader over the weekend.
19/08/2018	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Complaint regarding loud buzzing noise from Colliery at 8.26pm	Met with the complainant face to face at 11am on Monday 20/08. Explained that the site was operating both the plant and the loader over the weekend. Based on discussions it was concluded that it was most likely the product loader that was causing his complaints. Committed to undertaking some attended monitoring in the village as well as installing a data logger. LakeCoal E&C Coordinator undertook site inspection at the village at 7.20pm and confirmed that the noise source being heard was the product coal loader.
21/08/2018	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Complaint regarding about loader noise at 6.25am from Mannering Colliery.	Responded to complainant on 21/08. Advised that the site was looking into the loader to see if there were any abnormal operating issues.

Date	Nature of Complaint	Complaint/Incident Details	Action Taken
26/08/2018	Noise	Complaint recieved from resident in Macquarie Shores Retirement Village. Text message notification from complainant advising he was woken by loader noise at 7.24am. Asked that his complaint be noted for noise analysis.	Responded to complainant on 26/08. Advised that his concern had been recorded and would be used as part of the noise analysis. Asked complainant to keep a noise diary.
29/08/2018	Noise	Complaint recieved from resident in Macquarie Shores Retirement Village. Complainant advised he was woken up by the product loader at 6.50am this morning. He asked that the logger be moved closer to his house.	Responded to complainant on 29/08. Advised that his concern had been recorded and that LakeCOal would assess the location of the logger.
30/08/2018	Noise	Complaint recieved from resident in Macquarie Shores Retirement Village. Complainant advised he was woken up at 1.26am by banging noises.	Spoke with complainant on 30/08 and advised that it was most likely the Rotary Breaker noise he could hear as the loader was not operating. I advised the complainant that we had not been operating the loader during the night. The complainant advised he was very happy with the Colliery's response to his concerns however wanted to understand what could be done regarding the loader noise in the longer term.



# 17 Appendix Action Plan for RAR: 2016 Independent Environmental Audit

## Manning Colliery IEA- Updated Action Plan: Independent Environmental Audit 2016

Reference Item	Audit Finding/Audit Recommendation 2016	Action Status Update: 2019
1) Schedule 2, Condition 2A	A number of non-compliances with the conditions of PA 06_0311 and one with regard to the statement of commitments have been identified by the IEA. See recommendations below.	Noted. LakeCoal continues to operate in accordance with relevant licenses and project approval.
2) Schedule 2, Condition 8	Management plans have not been subject to regular review or revision. In most cases documents have been revised but not resubmitted to DP&E for approval.  All relevant management plans should be reviewed, updated and submitted to DP&E in consultation with the relevant regulators for review and approval.	Noted. LakeCoal undertook a detailed review of Manning Colliery's environmental management plans following the submission of its 2015 Annual Review. The Department was notified of the outcomes of this review via a letter dated 28 July 2016. LakeCoal is progressing with the review of Manning's environmental management plans in accordance with the review schedule provided to the Department on 28 July 2016.  Ongoing revision and submission with various timeframes depending on management plan.
3) Schedule 2, Condition 12	Duplication of condition requirements.  This condition should be updated as part of the next modification to make reference to the fact that Chain Valley Colliery coal coming to Manning via the Link Road will not be subject to this condition as it is subject to a similar condition under SSD-5465.	LakeCoal will seek to have this condition amended at the next modification to the conditions of PA 06_0311.  This has since been completed.
4) Schedule 3, Condition 1	The Q3 2013 Noise monitoring reports were not available at the time of the audit. The Q3 2013 noise monitoring records should be obtained from Centennial to confirm that there were no noise exceedances during this period. These should also be made publicly available either on the Centennial or LC website for Manning Colliery.	LakeCoal has not received the Q3 2013 Noise monitoring report from Centennial. Further consultation is to be made, ready to be implemented for the next reporting period to obtain information and address matter appropriately.  Noise mitigation works are currently being completed on site. LakeCoal since 2016, has employed a noise specialist and EMM Consulting Pty Limited have undertaken various noise mitigation surveys.  Ongoing.

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5) Schedule 3, Condition 6	<p>There have been seven discharge related non-compliances reported against EPL 191 relating to water quality during the audit period.</p> <p>Further investigations should be undertaken with regard to improving the automation of the flocculent system on the water management system in order to prevent future water quality exceedances.</p>	<p>The water management system at Mannering Colliery was upgraded in 2013 to improve the operations ability to handle rainfall events.</p> <p>LakeCoal would like it noted that Mannering Colliery has not recorded an exceedance of its water quality criteria since April 2015. Since this time LakeCoal has trialled the use of flocculent blocks at strategic locations to improve the treatment of dirty water onsite. These blocks were proven to be effective.</p> <p>LakeCoal will continue to monitor the water quality within the site water management system in accordance with the sites water monitoring program. Monitoring results will be reported in the sites Annual Review.</p> <p>Complete.</p>
6) Schedule 3, Condition 9	The GHD reports referenced in the EA (January, 2013) for Mannering Colliery should be considered in the 2016 review of the WMP.	LakeCoal will include the GHD reports for reference in the next review of the Mannering Colliery WMP.
7) Schedule 3, Condition 10	The recommendations from the 2013 independent compliance audit remain valid and should be considered in the 2016 review of the WMP.	LakeCoal will review and include (where relevant) the recommendations from the 2013 Independent Compliance Audit in the next review of the Mannering Colliery WMP.
8) Schedule 3, Condition 12	<p>No evidence available at the time of audit to confirm DP&amp;E approval of the groundwater monitoring program under the current WMP</p> <p>Follow up with DP&amp;E to gain confirmation over the adequacy of current groundwater monitoring arrangements.</p>	<p>Groundwater Management Plan was revised and submitted in March 2019. Awaiting confirmation and approval from DP&amp;E.</p> <p>LakeCoal will continue to consult with DP&amp;E and DPI Water during the process and the current status of the groundwater monitoring program at Mannering Colliery.</p>
9) Schedule 3, Condition 18	The ACHMP and NIHMP should be updated to a LakeCoal document and address the management of heritage items at Mannering Colliery.	<p>30 September 2017</p> <p>Aboriginal heritage items were addressed in the 2017 AEMR. There have been changes to the operational areas on site during the reporting period and there are no identified Aboriginal sites within the pit top areas, there has been no potential for activities at Mannering Colliery to negatively impact on Aboriginal sites during the reporting period.</p> <p>The Non-Indigenous Cultural Heritage Management Plan identifies that there are no items of cultural significance within the pit top area, and identifies</p>

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		<p>the following items of heritage significance within the Project Approval area;</p> <ul style="list-style-type: none"> <li>• Morisset Hospital Precinct (listed under the NSW Heritage Act and Lake Macquarie City Council LEP)</li> <li>• Eaton's Bulk Store (listed under the Wyong Shire Council LEP)</li> </ul> <p>There were no activities undertaken on site that had the potential for impact to either of these heritage features.</p> <p>LakeCoal is to provide separate heritage updated reports for the following reporting period.</p>
10) Schedule 3, Condition 22	Consultation should be undertaken with EPA and DP&E regarding the proposal to include the GGEEP required under this condition as a component of the revised AQMP.	LakeCoal will consult with DP&E regarding the relevance of the Energy Savings Action for Mannering Colliery and whether it requires updating or incorporation into the sites Air Quality Management Plan.
11) Schedule 5, Condition 1	The EMS should be reviewed and updated by LC to reflect the current status of operations at Mannering.	<p>LakeCoal will review and update the Mannering EMS to reflect the current status of operations on site in accordance with the approved review schedule provided to the Department on 28 July 2016.</p> <p>The Pollution Incident Response Plan has been updated and can be viewed onsite (2019).</p>
12) Schedule 5, Condition 2	<p>Updates are required for a number of Mannering management plans to ensure that they reflect current status of operations and the requirements of contemporary statutory requirements, regulatory guidelines and management measures on site.</p> <p>Expedite the revision of all site management plans to reflect the current status of operations following MOD 3 and the recommencement of mining activities at Mannering.</p>	Ongoing
13) Schedule 5, Condition 3	The 2013 Annual Review was not submitted by the required due date.	<p>Noted.</p> <p>LakeCoal will ensure future Annual Reviews are submitted within a timeframe agreed to by the secretary. LakeCoal is intending on modifying this condition in the next modification to PA 06_0311 to require the Annual Review to be submitted by the end of March each year which is consistent with Chain Valley Colliery's SSD</p>

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		consent.
14) Schedule 5, Condition 4	<p>No evidence available of the required management plan reviews being undertaken in accordance with this condition (i.e. following incident reports, Modifications, etc).</p> <p>Develop and implement a protocol to ensure that all strategies, plans and programs are regularly reviewed as required under this condition and provided to DP&amp;E for approval after each revision.</p>	<p>Complete. LakeCoal has developed and implemented a systematic process which triggers the requirement for the reviews required under Schedule 5, Condition 4. LakeCoal completed the first of these formal reviews in a letter to DP&amp;E dated 28 July 2016 which provided the outcomes from the management plan reviews and an indicative review timetable for Mannering Colliery.</p>
15) Schedule 5, Condition 6	<p>No evidence available at the time of audit to confirm that the reportable incidents under the EPL were reported to DP&amp;E within 7 days from the date they occurred.</p> <p>Develop a procedure that outlines the respective regulatory agencies and (if relevant) landholders to be notified in the event of environmental incidents on site.</p>	<p>Complete.</p> <p>LakeCoal has commenced the development of a system document that outlines the relevant regulatory and community stakeholders to be notified in the event of environmental incidents that occur on site.</p> <p>LakeCoal reviewed and updated its incident management system during the reporting period (2018). The system contains a checklist that triggers reportable incident notifications for environmental incidents.</p>
16) Schedule 5, Condition 7	<p>The monthly environmental monitoring reports and complaints registers are only available from October 2013 (which aligns with period LakeCoal took over as operator for Mannering Colliery). CCC meeting minutes are only available from August 2013. No records are maintained on the Mannering website (which is administered by LakeCoal) for the site for the period prior to October 2013.</p> <p>All monitoring records and reports for the period prior to LakeCoal's operation of Mannering Colliery should be obtained from Centennial and made publicly available either on the Centennial or LC website.</p>	<p>At the end of the reporting period LakeCoal had not received the previous monitoring reports and registers from Centennial. Further consultation with Centennial is planned for the next reporting period to address this matter.</p> <p>Update: No further information yet received.</p>
17) Schedule 5, Condition 8	<p>The audit was completed in accordance with this condition however it was not completed by 31 March 2016 date as requested in the DP&amp;E correspondence dated 28/01/16.</p> <p>No action required</p>	<p>2019 Independent Environmental Audit has been commissioned and LakeCoal is waiting feedback.</p>
18) Schedule 5, Condition 9	<p>The 2013 audit report was not submitted within the required timeframe.</p> <p>No further action required.</p>	n/a
19) Schedule 5, Condition 5	The monthly environmental monitoring	Complete. No further action.

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	<p>reports and complaints registers are only available from October 2013. CCC meeting minutes are only available from August 2013. No records are maintained on the LC website for the site for the period prior to these dates.</p> <p>All documentation required under this condition for the period prior to LC's operation of Mannering should be obtained from Centennial and made publicly available either on the Centennial or LC website.</p>	
20) Water Management	<p>The water level within the sediment pond system will be monitored and kept at a relatively low operating level, such that the ponds can provide a detention function in a significant rainfall event.</p> <p>A number of non-compliances were reported under EPL 191 during the audit period associated with discharges from LDP001.</p>	No action required.
21) Condition A1.2	<p>There was an inconsistency identified between PA 06_0311 and EPL191 regarding coal handling volumes approved.</p> <p>Update the approved coal handling volume described in EPL191 at the next variation of the licence for consistency with PA 06_0311.</p>	<p>There were no variations to the Mannering Colliery EPL required during the reporting period. The next review of the licence is scheduled for Q2 2017. The licence will be updated to reflect the new limits approved under Mannering Colliery's Project Approval.</p> <p>Ongoing.</p>
22) Condition L2.4	<p>The following exceedances were identified against this condition:</p> <ul style="list-style-type: none"> <li>- Exceedance of TSS limits occurred at LDP001 on 30 June and 1 July 2013. Results of 77 mg/L and 88 mg/L were recorded against a limit of 50 mg/L.</li> <li>- Exceedance of TSS limits occurred at LDP001 on the 17/11/13 – 18/11/13. Results of 112 mg/L and 105 mg/L recorded against limit of 50 mg/L;</li> <li>- Exceedance of pH limit (8.5) at LDP001 (EPL ID#1) occurred on the 13/10/ 2014. Result of pH 8.6; and</li> <li>- Exceedance of TSS criteria occurred at LDP001 (EPL ID#1) from the 28/2/14 – 1/3/14.</li> </ul> <p>Further investigations should be undertaken with regard to improving the automation of the flocculent system on the water management system in order to prevent future</p>	No further action required.

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	water quality exceedances.	
23) Condition L2.1	<p>The following exceedances were identified against this condition:</p> <ul style="list-style-type: none"> <li>- Exceedance of oil and grease limit at LDP001 on 30/3/15 (recorded result of 11mg/L against limit of 10mg/L)</li> <li>- TSS exceedance at LDP001 on 5/4/15 (recorded result of 56mg/L against limit of 50 mg/L).</li> <li>- Exceedance of TSS limit for Monitoring Point 1 on 20/4/15 and 21/4/15 (recorded result of 58 mg/L against limit of 50 mg/L).</li> </ul>	No further action required.
24) Condition M7.1	During the audit period there were multiple occasions where data wasn't captured due to power outages on site.	Complete. LakeCoal installed and commissioned a solar powered monitoring system at Mannering's licensed discharge point to improve the data capture rates during the reporting period. The unit has provided a 100% data capture rate since its installation in November 2016.
25) Condition O3	Update condition O3 describing measures to minimise dust emissions from haul trucks described in EPL 191 at the next variation of EPL 191 for consistency with PA 06_0311.	<p>LakeCoal agrees that the condition is no longer relevant to current operations as the site does not have approval to haul coal from the premises. LakeCoal will seek to correct this condition in the next variation to EPL 191 variation which is scheduled for Q2 2017.</p> <p>Complete. EPL 191 update 2014 variation.</p>
26) Condition R1.5	<p>Annual Return for the 17 October 2013- 31 December 2013 reporting period was submitted to the EPA via email on 10/03/14, outside of the 60 day timeframe required under the condition.</p> <p>No action required.</p>	n/a
27) Condition R2.2	The notification to the EPA for the TSS exceedance on 5/04/15 was provided to the EPA by LC via the EPA hotline on 10/04/15, with the incident report provided on 17/04/15. This was outside of the 7 day period from the occurrence of the incident required under the condition.	<p>Noted.</p> <p>LakeCoal provided an incident report to the EPA within 7 days of becoming aware that an incident had occurred on 05/04/2015 (ie receipt of a laboratory report indicating an exceedance had occurred). LakeCoal will continue to report incidents to the relevant authorities as soon as practical.</p> <p>No further action required.</p>
28) Condition M7.1	Failure to monitor flow volume (continuously) at LDP001 on multiple occasions in 2015 as a result of loss	See response to Reference Item 24.

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	<p>of power to the discharge point, flow meter and data logger.</p> <p>Install a solar powered discharge monitoring system at Mannering to reduce potential for missed data capture as a result of power outages.</p>	
29) Condition 5	<p>Notification and subsequent incident reports were not provided for breaches of the <i>Protection of the Environment Operations Act 1997</i> that occurred during the audit period to the Department of Resources and Energy.</p> <p>Refer to Reference Item 15.</p>	<p>Complete. LakeCoal reviewed and updated its incident management system during the reporting period. The new incident management system contains a checklist that triggers reportable incident notifications for environmental factors.</p>
30) Condition 12	<p>Evidence not available at the time of audit to confirm DPI-Water is satisfied with the arrangements put in place by LC to monitor the quantity of water extracted from the underground workings.</p>	<p>See response to reference item 18. LakeCoal will consult with DPI Water to confirm that the current U/G monitoring devices associated with measuring dewatering volumes are to their satisfaction and will include details relating to these devices in the next revision of the WMP.</p>
31) General Observation	<p>Relevant conditions of the water licence should be considered and included in the revision of the WMP.</p>	<p>LakeCoal has included a review of the water licence monitoring and reporting conditions in the next revision of the Mannering WMP.</p>
32) General Observation- Noise	<p>Ensure that all required noise mitigation options are investigated and reported in accordance with the requirements of PA 06_0311 Appendices 4A and 4B. Additional noise mitigation controls for coal processing infrastructure should be implemented as required from the review.</p>	<p>LakeCoal has commenced noise mitigation projects in accordance with the project approval. LakeCoal continues to implement any required noise mitigation measures to achieve noise performance criteria. Ongoing.</p>
33) General Observation- Air Quality	<p>Prior to recommencement of full scale coaling activities at Mannering review all required air quality monitoring and mitigation measures and ensure that these are accurately captured within the revision of the Air Quality Management Plan and implemented as required.</p>	<p>Complete. LakeCoal commenced a review of the sites air quality monitoring management plan to reflect the current and future operations at MC. The revised management plan has been submitted to DPE (2017).</p>
34) General Observation- Water Management	<p>Further works should be undertaken to improve the rock lining at LDP 001 discharge outlet.</p>	<p>Noted. LakeCoal is currently seeking quotes for this work to be undertaken. Allowance will be made in the site 2017 budget for these works to be commissioned and completed.</p> <p>Due to occur 2019.</p>
35) General Observation- Water Management	<p>Review Mannering's harvestable rights against the sites catchment area.</p>	<p>LakeCoal commenced this review as recommended by the auditors. LakeCoal will consult with DPI Water once the review has been completed.</p>

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<p>36) General Observation- Land Management</p>	<p>The regular Environmental Inspection process should include weed management as an inspection item. Areas where weeds have been identified such as the coal stockpile area should be treated to reduce the spread of weeds into surrounding areas.</p>	<p>Complete. LakeCoal has revised its internal Environmental Inspection checklist to include consideration/identification of invasive weeds.</p> <p>In addition, LakeCoal has engaged a weed management consultant to undertake a detailed weed survey of the operation. The outcomes from this assessment will be used to develop a weed action plan for the 2018 reporting period.</p>
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