Centennial Coal

Annual Environmental Management Report

Centennial Coal

Myuna Colliery

January 2014 to December 2014

TITLE BLOCK

Name of mine: Centennial Myuna Pty Ltd.

Titles/Mining Leases: Mining Lease 1632

Mining Lease 1370

Mining Purposes Lease 334

MOP Commencement Date: 8th October 2013

MOP Completion date: 30th June 2015

AEMR Commencement Date: 1st January 2014

AEMR End date: 31st December 2014

Name of leaseholder: Centennial Myuna Pty Ltd.

Name of mine operator (if different):

Reporting Officer: Morgan Gleeson

Title: Environment and Community Officer

Signature .....

Date: 27-3-2015

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1. Introduction

Myuna Colliery is an existing underground coal mine owned and operated by Centennial Myuna Pty Ltd, a wholly owned subsidiary of Centennial Coal Company Limited (Centennial). Myuna Colliery's Surface Facilities Area is on the western side of Lake Macquarie, at Wangi Wangi, approximately 25 kilometres south-west of Newcastle, New South Wales.

Myuna Colliery is an underground coal mine owned and operated by Centennial Myuna Pty Limited. Myuna is located 25 km south west of Newcastle NSW in the Lake Macquarie and Wyong Local Government Areas.

Lake Macquarie City Council (LMCC) granted Development Consent SH110_148 for the development and operation of the Myuna and Cooranbong Collieries in 1977. The development Consent was granted pursuant to the provisions of the now repealed Local Government Act 1919. The Development Consent remains in force and authorises the extraction of coal within the Development Consent Mining Area.

The development of Myuna Colliery began in 1979 and underground mining using bord and pillar mining methods commenced in 1982. Centennial Coal Company Ltd acquired Myuna Colliery in 2002, and has operated the mine since this time.

On 18 January 2012, the then Minister of Planning and Infrastructure granted Project Approval (PA) 10_0080 to Centennial Myuna. PA 10_0080 authorises the continued mining in areas outside the existing Development Consent SH110_148 mining area and within the boundary of existing mining leases held by Centennial Myuna. PA 10_0080 authorises the use of bord and pillar methods in the Wallarah, Great Northern and Fassifern coal seams and the continued use of ancillary infrastructure, for a further 21 years.

This Annual Environment Management Report (AEMR) 2014 details the environment and community performance of Myuna Collieries operations for the twelve month period ending 31 December 2014.

The AEMR has been prepared in accordance with Project Approval 10_0080, Schedule 5, Condition 4, and Department of Trade and Investment (DTI) Environmental Management Report Guidelines (edg03 MREMP guide version 3 January 2006).

1.1. Consents, Leases and Licences

The Colliery lease lies within the Parishes of Awaba, Cooranbong, Morisset and Wallarah in the County of Northumberland subsidence district and is located within the Shire of Lake Macquarie.

The Myuna Colliery Holding is covered by Mining Lease No 1632. The Mining Lease No 1632 includes a surface land area of 33 hectares for mine infrastructure (Mining Purposes Lease No. 334). The total lease area is 7426.5 hectares.

Centennial Myuna subleased part of Consolidated Coal Lease No 762 held by Centennial Mandalong Pty Limited. The sublease area was then transferred to Centennial Myuna Pty Limited, 13th April 2013, as ML1632 effectively replacing Part CCL762. A summary of Myuna's Approvals, Authorities and licences is presented in Table 1.

Table 1 Summary of Myuna Colliery Approvals, Leases and Licences

Name	Summary	Date Granted	Expiry Date
Development Consent	Development of Myuna and Cooranbong Collieries, as described in the EIS and subject to certain conditions	21/12/1977	No expiration date specified in the consent. Subject to renewal of mining leases
Project Approval 10_0080 MOD1	Extension of Mining as described in the EA and subject to certain conditions.	18/01/2012	31/12/2032
Environmental Protection Licence (EPL) 366	Licence authorising discharges to water and Mining for coal at a rate of 0.5 – 2 Mtpa	01/01/2000	N/A
Consolidated Coal Lease (CCL) 762	A title including the area originally in CL195 for coal mining purposes of approximately 10,820 Hectares	CL 195 granted 8/8/1979, consolidated into CCL 762 in 1991	Replaced by ML1632, 13/04/2013
Mining Lease (ML) 1632	Title that provides rights to mine the coal resource of approximately 7426.5 hectares	13/04/2013	13/10/2022
Mining Purposes Lease (MPL) 334	Title to construct and operate prescribed mine related plant and infrastructure of approximately 33 Hectares	20/10/1994	20/10/2015
Mining Lease (ML) 1370	Title that provides rights to mine the coal resource of approximately 653 hectares	26/09/1995	02/12/2016
Exploration Licence (EL) 4444	Licence granted to allow exploration to be undertaken to determine the occurrence and extent of the coal resource and to assess the potential for mining of approximately 5,164 hectares	16/10/2014	23/10/2017
Exploration Licence (EL) 6640	Licence granted to allow exploration to be undertaken to determine the occurrence and extent of the coal resource and to assess the potential for	14/10/2013	23/10/2017

Name	Summary	Date Granted	Expiry Date
	mining of approximately 1,599 hectares		
Trade Waste Permit (D 171027)	Permits the discharge of 'prohibited substances' to sewer in accordance with various quality requirements	23/10/1995	N/A
Section 151 Licence (Mining Operations – Various Licence)	Installation and Monitoring of Surface Subsidence Stations at Point Woolstoncroft	10/09/2009	10/09/2015
Section 151 Licence (Mining Operations – Various Licence)	Installation and Monitoring of Surface Subsidence Stations at Pulbah Island	1/11/2011	31/10/2016
Section 151 Licence (Mining Operations – Various Licence)	Installation and Monitoring of Surface Subsidence Stations at Wangi Wangi Point	16/02/2011	16/02/2016
Water Access Licence 20BL172565	Licensing of three existing dewatering bores at the Surface Facilities Area	13/12/2010	12/12/2015
Mining Operation Plan	Management and rehabilitation of surface lands pursuant to the mining leases within the colliery holding.	8/10/2013	30/06/2015

1.2. Mine Contacts

The following are the mine contacts for any information with regards to this report.

Table 2 Myuna Colliery Contacts

Name	Position	Email Address	Contact Telephone Number
Mal Yule	Colliery Manager	myunacolliery@centennialcoal.com.au	02 4970 0221
Morgan Gleeson	Environment and Community Officer		02 4970 0263

1.3. Actions Required at Previous AEMR Review

The NSW Trade & Investment – Division of Resources and Energy (DRE) conducted an annual environmental review at Myuna Colliery on 8 October 2014. The purpose of the inspection was to review compliance with environmental requirements of relevant approval instruments including the Mining Lease, Mining Operation Plan (MOP) and Annual Environmental Management Report (AEMR).

DRE reviewed the AEMR 2013 and conducted a site inspection and found Myuna to be in general compliance with the relevant statutory approval instruments. In the course of the inspection some issues were identified that either required comment and or continued management. The actions are listed in Table 3.

Table 3 DRE Actions Required From AEMR Review

Issue / Observation	Action	Section where addressed in this report
Consents, Leases and Licences	Include details regarding the MOP in table 1	Table 1
Tracking the mined area against the MOP	Provide a figure within the AEMR which compares the approved and actual mined areas.	Plan 4
Minor error – table references within the AEMR	Amend AEMR were table references are incorrect.	N/A
Report of stored water volumes	Update table 8 of the AEMR to include information associated with the storage and discharge of water.	Table 8
Quality of reporting accuracy	Surface water management reporting in section 3.2.3 is inconsistent (i.e. text and figure 3 does not align with table 12). Table 12 does not align with figure 7 and 8. The extent of vegetation clearance is inconsistently reported between sections.	Section 3.2.3
Phase 2 Contamination Assessment	Provide a summary of the findings. Report on the progress against the actions / recommendations within the report.	Section 3.2.5
RCE	Confirm that the liability identified by the Phase 2 Contamination Assessment has	Section 3.2.5

	been included in the RCE.	
Poor general house keeping associated with hydrocarbon management.	Complete a review of work practices and assess opportunities for improvement.	Section 3.2.16

The Department of Planning and Infrastructure reviewed the AEMR and considered it satisfied the requirements of Condition 4 of Schedule 5 Project Approval 10_0080.

Table 4 DP&I Action Required From AEMR Review.

Issue / Observation	Action	Section where addressed in this report
Accuracy of water quality data	Results set out in table 12 of the report for TSS and Oil and grease appear to be transposed as they do not reflect the results provided in the Annual Return.	Section 3.2.3

2. Operations during the reporting period

2.1. Exploration

The majority of the Colliery reserves lie below Lake Macquarie. Exploration is not only required to define the coal resource, which includes the geometry, seam levels and geological structures, it also serves an important role in determining the solid rock head cover (solid rock mass between the lake bed and the working seams). Exploration drilling methods used included lake bore drilling programmes and in-seam drilling programs.

During 2014 the exploration activities comprised of the drilling of a single in-seam drill hole. The drill hole consisted of 1,538m of HQ drilling size effectively intersecting 591m of the Great Northern Coal Seam (670 panel).

2.2. Land Preparation

Approximately 20.2 Ha of the surface lease holding is used for services and infrastructure. No additional land preparation occurred during the reporting period.

2.3. Construction

No construction within the surface lease holding of the mine occurred during the reporting period.

2.4. Mining

Mining continued in the Wallarah, Great Northern and Fassifern seam in 2014. Mining in the three seams allow the quality blending of run of mine coal to achieve the optimal life of Mine. Myuna Colliery produced 1,874,324 Tonnes of coal during the 2014 calendar year.

Mining activities conducted in the Wallarah, Great Northern & Fassifern Seams during the reporting period are illustrated on plans **MY11336, MY11337** and **MY11383**, respectively.

2.5. Coal Handling and Processing

The handling is achieved through a series of conveyors and coal bins which stow, transport and transfer the coal from underground to the customer. Coal is only placed on the Emergency Coal Stockpile Pad in the event of breakdowns or servicing of the Overland Enclosed Conveyor.

The coal processing plant is a sizing plant, consisting of a primary and two secondary crushers. This system delivers a final product size of less than 35mm. The final product is delivered to Eraring Power Station via the Overland Enclosed Conveyor.

Management of coal fines and coal plant dust suppression systems are discussed in the Air Quality and Greenhouse Gas Management Plan.

2.6. Waste Management

2.6.1. Mining

Waste material from the Coal Handling Plant refuse bin is classified as general waste and transported to the appropriate waste facility by the waste contractor. There is no coal processing waste stored on site.

2.6.2. General Waste

In 2011 Myuna Colliery moved over to total waste management with JR Richards. This is to allow for the efficient management and reporting of waste, and also greater recycling through the sorting of waste brought to the surface from underground.

General waste is placed into 15 m^3 and $3m^3$ general waste bins. The monthly volumes of general waste and recycled material is provided below in Table 5

Table 5 Monthly and Total Tonnes for Waste and Recycled Materials

Month	Solid Mixed Waste (Tonnes)	Recycled Materials (Tons)
Jan-14	56.3	41.9
Feb-14	35.7	24.7
Mar-14	30.4	16.1
Apr-14	30.0	18.6

Month	Solid Mixed Waste (Tonnes)	Recycled Materials (Tons)
May-14	33.4	1.3
Jun-14	22.1	0.3
Jul-14	21.7	0.6
Aug-14	42.0	19.8
Sep-14	25.1	7.4
Oct-14	46.2	22.9
Nov-14	47.2	23.5
Dec-14	23.4	9.1
TOTAL	**413.6**	**186.1**

2.6.3. Recyclable Waste Collection Systems

The recyclable material is separated out of the general waste into allocated bins for paper, steel and timber.

Surface cardboard is crushed into 50kg bails via a purpose built machine, which is then collected by JR Richards for recycling. Training has meant that more office material is being placed in recyclable materials bins. 4.6 tonnes of paper was recycled in 2014.

Ferrous & Non Ferrous Metal are collected using four scrap metal bins which are serviced as required. The removal of bulk scrap steel has greatly increased the amount of scrap steel being resold instead of put to general landfill. 152.1 tonnes of scrap steel was recycled during 2014.

Timber waste is stored onsite until a sufficient quantity is collected to have a tub grinder break it down to reusable wood chip. This chip is used for community requests & on-site rehabilitation works. Timber pallets in good condition are stored for reuse. Damaged pallets are placed in a separate bin for recycling. 21 tonnes of timber was recycled in 2014.

2.6.4. Liquid and Hazardous Wastes

Purpose built oil drainage bins were placed in the Oil Storage Shed and the wash down bay for the collection of waste oil. Waste oil is removed from site by the Waste Management Contractor as per the waste tracking guidelines.

Used batteries are stored on a spill collection tray in a safe, dry, designated area prior to removal off site by the Waste Management Contractor. No batteries were recycled within 2014 due to an insufficient quantity being accumulated. The collection will continue until there is a sufficient amount to request a collection.

Table 6 Volume of recycled materials for 2014

Recycled Material	Steel (Tonnes)	Waste Oil (Litres)	Paper (Tonnes	Timber (Tonnes)
Volume	152.1	5000	4.6	21

2.7. Product Stockpiles

Myuna Colliery temporarily stores coal on the Emergency Coal Stockpile Pad in the event of breakdowns or servicing of the Overland Enclosed Conveyor. The coal stockpile is reclaimed after the recommencement of the Overland Conveyor. The Emergency Coal Stockpile Pad is maintained at minimum levels at all times and has a capacity of 30,000 tonnes.

2.8. Water Management

2.8.1. Underground

The Fassifern and Great Northern seams hold reservoirs which are used for the retention and filtration of mine water and dirty surface water prior to pumping to the surface. The underground water is treated through a series of settlement ponds prior to delivery to the major dam underground.

The Mine water from the Wallarah, Fassifern and Great Northern seams is pumped to the surface Settling Pond 2, which then flows to Settling Pond 3 through a connecting weir, prior to discharge through LDP B to Wangi Creek.

2.8.2. Surface

Myuna Colliery's Surface Facilities Area is located adjacent to Wangi Creek which is a heavily modified waterway as a result of the Wangi Power Station outflow canal. Myuna Colliery's existing water management system discharges water to Wangi Creek through two discharge points licensed under Myuna Colliery's EPL 366.

Surface water consists of runoff (both clean and dirty) that contributes to surface water storages. At Myuna Colliery these include the CHP Dam, mine water settlement ponds and the Emergency Coal Stockpile Sediment Dam.

The surface water system is divided into clean and dirty water catchments, as follows:

Clean water management - includes diversion of external catchment runoff through a series of clean water diversion drains which direct the flow of surface water from clean catchments away from dirty catchment areas, and the management of clean surfaces within the surface facilities area. Clean surfaces managed within the Surface Facilities Area include:

- Roof runoff from the administration, bathhouse and workshop buildings, which is collected through downpipes and directed to the piped stormwater network, into the first flush settlement tank, eventually discharging to LDP B.
- Runoff from several clean hardstand areas including the car park and materials yard. To maintain these hardstand areas as clean catchments, regular sweeping is undertaken and these areas are also regularly inspected to ensure that they remain clean. This runoff is discharged through the first flush settlement tank to LDP B.

- External catchment runoff from areas surrounding the Surface Facilities Area. There are clean water diversions currently in place. External catchment runoff flows into Wangi Creek.

Dirty water management - includes the capture of water from disturbed surfaces and a series of diversions which direct flow of dirty water to the CHP Dam. The dirty water captured in the CHP Dam is pumped to the underground reservoirs for retention and filtration. Dirty water sources include:

- Runoff from the CHP and storage yard which is directed through a series of open drains, diversions, collection sumps and pipes to the primary settlement tank, which then discharges into the CHP Dam.
- Runoff captured from the Emergency Coal Stockpile Area within the Emergency Coal Stockpile Sediment Dam. Water levels in the Emergency Coal Stockpile Sediment Dam are monitored, and water is transferred to the CHP dam by an automated pumping system. LDP A is located at the Emergency Coal Stockpile Sediment Dam. Discharge through LDP A is permitted in the event of greater than 140mm of rain in a 24 hour period. The capacity of the Emergency Coal Stockpile Sediment Dam extends into the broader Emergency Coal Stockpile Area.
- Runoff from the wash down bay is directed to the oil/water separator and tank. Water from the oil/water separator is pumped to the sewer in accordance with a Trade Waste Permit from Hunter Water Corporation. Monitoring of the system is conducted on CITECT.

Dirty water from the CHP dam can overflow via a weir into the clean water dam due to a CHP dam pump failure or a high rainfall event. Centennial Myuna will investigate all options to increase the rate of flow from the CHP dam to the underground reservoir.

2.9. Hazardous Material Management

During 2014 a total of 1506 shots were fired as part of a project to enlarge the seam-to-seam drift between the Great Northern Seam and the Fassifern Seam. Explosives are managed according to the Myuna Shotfiring and Explosives Control Plan and are bought on site for specifically individual task. No explosives are stored on the site surface.

Centennial Coal employees have access to the online up to date register Chemwatch to assist all the employees to correctly manage all substances. Myuna Colliery's Hazardous Substance Management Plan specifies obligations, responsibilities and safe hazardous substances storage, purchase, use and general management of hazardous substances.

Generally hazardous waste is disposed off by Myuna's Waste Management contractor as part of the comprehensive service delivered.

2.10. Surface Infrastructure

Surface infrastructure at the Colliery comprises:

- Mine Infrastructure:
  - Men and materials portal;
  - Conveyor drift portal;
  - Drive houses;
  - Up-cast ventilation shaft and fan-house;
  - Downcast ventilation shaft;

  - Road ballast and concrete bore holes with associated infrastructure;
  - Power Factor Correction Banks;
  - Diesel and Oil Tanks;
  - Water storage tanks; and
  - Emergency Coal Stockpile Area.
- Coal Handling Plant:
  - Breaker and crusher groups, feeders and coal storage bins (ROM bin and Final Product Bin); and
  - Surface conveyor systems.
- Workshop and administration infrastructure:
  - Workshop, store and wash down facilities;
  - Material yard and equipment/oil and gas stores;
  - Materials reclaim area;
  - Administration offices and bath house;
  - Air compressors and associate infrastructure;
  - Service bay;
  - Hardstand areas, haul roads, car-parking areas and emergency heli-pad;
  - Explosives magazine; and
  - Fire station and associated fire fighting equipment.
- Pollution control infrastructure:
  - Wash down bay oil/water separator;
  - Primary settlement tank (sump);
  - Emergency Coal Stockpile Sediment Dam and pump-house;
  - Dust suppression system at the CHP and coal stockpile area;
  - Sewerage treatment plant and associated infrastructure; and
  - Hydrocarbon recycling depot.
  - Water management Infrastructure.

Table 7 Production and Waste Summary

	Cumulative Production (tonnes)		
	Start of Reporting Period	**At end of Reporting Period**	**End of Next Reporting Period**
Topsoil stripped	Nil	Nil	Nil
Topsoil Used / Spread	Nil	Nil	Nil

Waste Rock	8200	8332	8464
Processing Waste	Nil	Nil	Nil
Product (tonnes)	40,584,287	42,458,605	44,749,946

Table 8 Stored Water

	Volumes Held (cubic meters)		
	Start of Reporting Period	***At end of Reporting Period***	**Storage Capacity**
Clean Water	Nil	Nil	4X100,000 L
Dirty Water	1.34ML	1.34ML	5.94ML
Controlled Discharge Water	3.45ML	3.45ML	3.45ML
Contaminated Water	Nil	Nil	Nil

Note Clean Water: Backup water supply from Toronto Reservoir is connected to the incoming mains along with water supply from Wangi Reservoir in case of emergencies, allowing a secondary source of permanent mains pressure supply to the mine, however, this water supply was not required during the reporting period.

Note Dirty Water: Dirty water is collected, treated and processed in our Oil/Water sump and oil separator prior to discharge under Centennial Myuna's Trade Waste Permit with Hunter Water to sewer. Separated waste oil is transported and disposed of by licensed contractor with waste details saved for waste tracking. Dirty water storages are maintained at minimum levels.

Note Contaminated Water: Contaminated water is not stored on site.

3. Environmental Management and Performance

3.1. Environmental Risk Assessment

A risk assessment was completed using the Centennial Coal framework Stature (Previously known as Dyadem). This assessment was conducted for all relevant environmental management issues at the site. A copy of the risk assessment is attached as Appendix 1. The purpose of the risk assessment is to identify mine activities, processes and facilities which require control strategies to ensure environmental protection and compliance with conditions of the leases, licence(s) and the development consents.

To identify risks, consideration should be given to circumstances which may trigger or exacerbate risks from: intense rain or storm events; prolonged above average rain; drought; flood and inundation, wind, earthquake, fire, equipment breakdown, human error, and accidents.

The Environmental Risk Assessment is reviewed annually to identify any new risks, controls implemented or changes in legislative requirements. This document lists current or existing controls and new controls that may be investigated during the next report period.

The highest risks identified in the Annual Environmental Risk Assessment are listed in Table 9.

Table 9 Summary of Top Risks from Annual Environmental Risk Assessment

Background	Potential Incident	RR
Surface water management	There is a risk to Myuna from ::: Discharge from the LDPA with less than 140mm rain fall a day. ::: Caused by: Insufficient capacity of the emergency stockpile dam Resulting in: Exceedance of EPL Conditions.	12 (S)
Coal Handling on the surface. Includes CHP, stockpiling & handling.	There is a risk to Myuna from ::: Contamination of water runoff into CHP Dam ::: Caused by: Hydrocarbon spills / leaks or Rope greaser dripping or Spillage of coal fines or Storage of hydrocarbons in CHP or Storage of surplus plant and equipment or Surface transformers (including spare transformers) Resulting in: Community Complaints or Exceedance of EPL Conditions or Exceeding licence limits or Pollution of waterways.	8 (M)
Land management	There is a risk to Myuna from ::: Bushfire ::: Caused by: Accidental fire or Arson or Natural causes Resulting in: Damage to Flora & Fauna or Damage to infrastructure or Injury to person(s) or Legal prosecution.	8 (M)
Surface water management	There is a risk to Myuna from ::: Water discharge quality through Licenced Discharge Points greater then licence limits. (TSS, pH, O&G, heavy metals) ::: Caused by: Algae content in the water or Coal particles in water or Heavy metal content in water or High ash / clay levels in coal or Hydrocarbon spills / leaks or Insufficient water dilution from underground Pumping Resulting in: Community Complaints or Contamination of waterways or Exceedance of EPL Conditions or Non-compliance with Development Consent conditions.	8 (M)

Background	Potential Incident	RR
Surface water management	There is a risk to Myuna from ::: Discolouration of discharge from LDPB ::: Caused by: High iron and manganese content from the underground water Resulting in: Community Complaints or Exceedance of EPL Conditions or Non-compliance with Development Consent conditions or Pollution of waterways.	8 (M)
Surface water management	There is a risk to Myuna from ::: Contamination of the Gross Pollutant Trap storm water system ::: Caused by: Failure of the oil separator system or Hydrocarbon spills / leaks or Leaking machinery in clean areas or Underground machinery & equipment brought to the surface or Vehicle movements on site or Vehicles coming to & from the site Resulting in: Community Complaints or Contamination of waterways or Exceedance of EPL Conditions or Non-compliance with Development Consent conditions.	8 (M)
Operation of oil / water separators	There is a risk to Myuna from ::: High pollutant levels in discharge water in trade waste system ::: Caused by: Failure of the oil separator system Resulting in: Exceedance of EPL Conditions or Exceedance of Trade Waste Agreement conditions.	8 (M)

3.2. Environmental Performance

This section presents a summary of relevant monitoring data for Myuna Colliery.

3.2.1. Air Pollution

(i) Management

The control strategies were implemented as per the Air Quality Management Plan and were adequate to manage the risks associated with the operation during the report period.

The Air Quality Management Plan for the site outlines potential sources and impacts of raised dust levels. The Plan also identifies measures which must be in place to reduce dust and environmental activities conducted to minimise elevated dust levels. All contractors and employees undergo induction and regular refresher training to help identify responsibilities.

The control measures implemented to minimise the potential for dust generation are outlined below.

- **Vacuum sweeping -** All hard stand and sealed roads are swept by a vacuum sweeper truck on a weekly basis.
- **Damping Down -** The haul road and coal pad areas are damped down when required.
- **Speed Limits -** Speed on site is limited to 20 km/h.
- **Conveyors** - Conveyors are enclosed and washed down weekly to prevent aeration
- **Buffer zone and topography -** Maintaining a vegetated buffer zone assists in reducing any airborne particulate movement from site. The mine is positioned in a small hollow which reduces the effect and severity of wind gusts, and the surrounding vegetation acts as a filter system if airborne dust is created.

(ii) Environmental Performance

Dust monitoring was performed at the Colliery during 2014 on a monthly basis at four dust depositional gauges and every 6 days at the two high volume air samplers (HVAS).

Air quality monitoring for PM^{10} and Total Suspended Particles (TSP) commenced in August 2013. The monitoring has been conducted in accordance with PA10_0080 condition 17 and EPL366 condition M2.

The results of the dust deposition monitoring show an upward trend for the four dust gauges over the 2014 report period. DG1 and DG4 display a slight upward trend of 0.2 and 0.6 g/m^2/month respectively from January 2014 to December 2014. DG3 and DG2 display an upward trend of 1.1 and 2.1 g/m^2/month from January to December 2014.

The significant increase at DG2 can be attributed to the August 2014 result of 21.3 g/m^2/month. An investigation was undertaken to determine the contributing factors to the high reading. Over a seven year period DG2 had recorded consistently low dust deposition results. During the August monitoring period there were no unusual activities undertaken on site and no unusual weather events. Centennial Myuna could not determine a cause for the high result.

The annual average for 2014 is higher than the long term average at DG2, DG3 and DG4.

The results of the PM^{10} and TSP monitoring show a downward trend for the report period.

A summary of the Air Quality monitoring data is provided in Figure 1, Figure 2 and Figure 3.

(iii) Reportable Incidents

The air quality monitoring data is assessed against the Project Approval limit criteria. There were no exceedances of the air quality limit criteria for the report period.

A non compliance was reported in the EPA 2014 Annual Return for a failure to collect and analyse the required number of samples for the report period from DG2.

Condition M2.2 requires monthly monitoring of deposited matter as per method AM-19 for DG2. The monthly sample collection and analysis for 2014 was undertaken by a contractor. No result is recorded for DG2 for the month September and December.

The sample jar collected from DG2 was broken during transport at the Myuna Colliery site on a bush track between DG2 and DG1 on the 22nd September and the 22nd December 2014. Transport procedures were reviewed and a container was designed and implemented for the secure transport of sample jars.

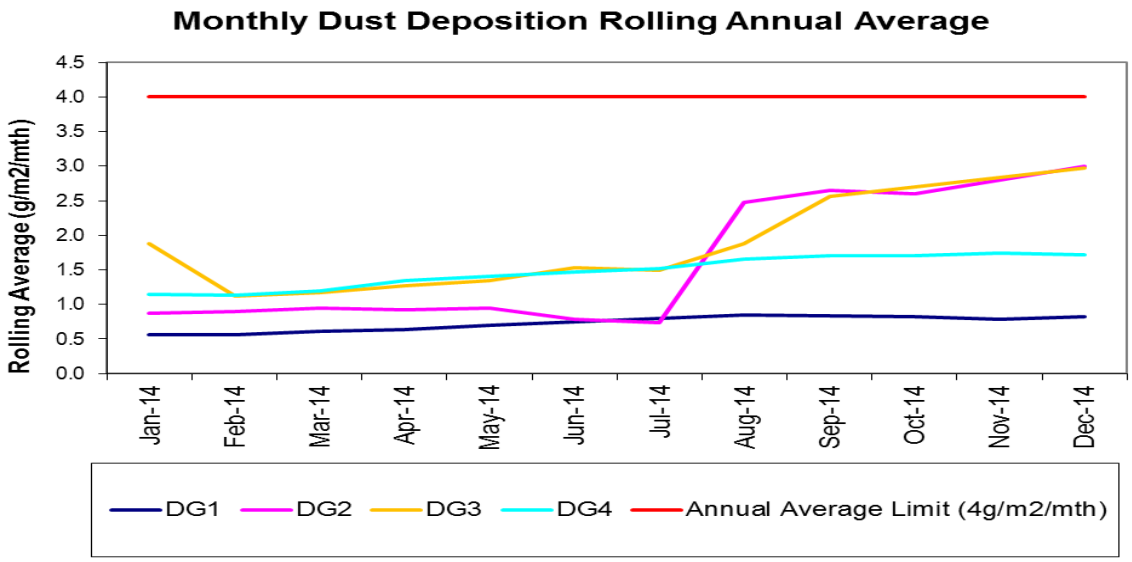


Figure 1 Monthly Dust Deposition Rolling Annual Average

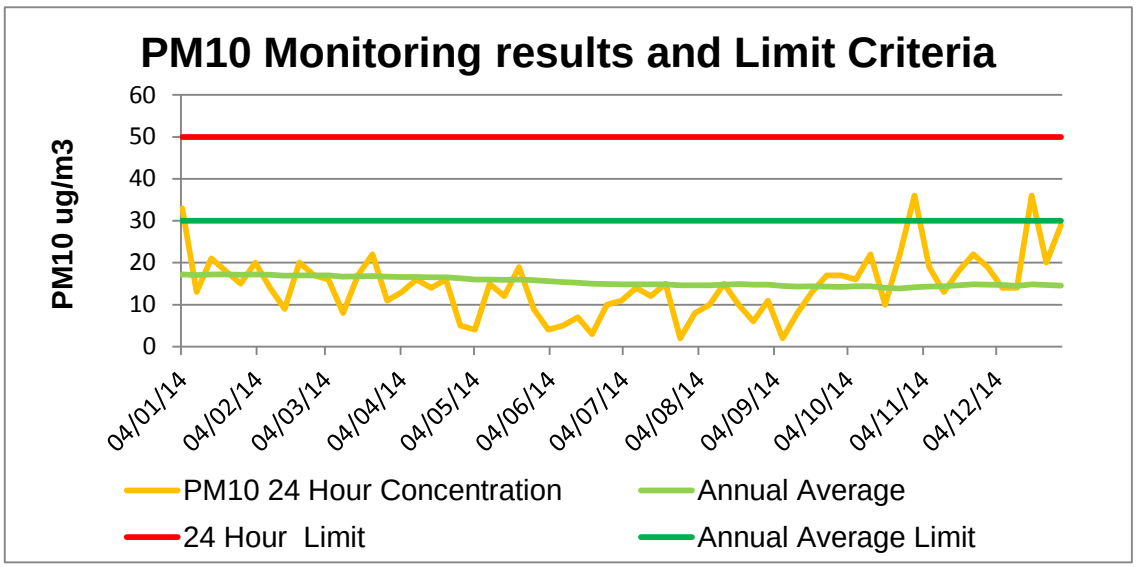


Figure 2 PM10 Monitoring Results and Limit Criteria

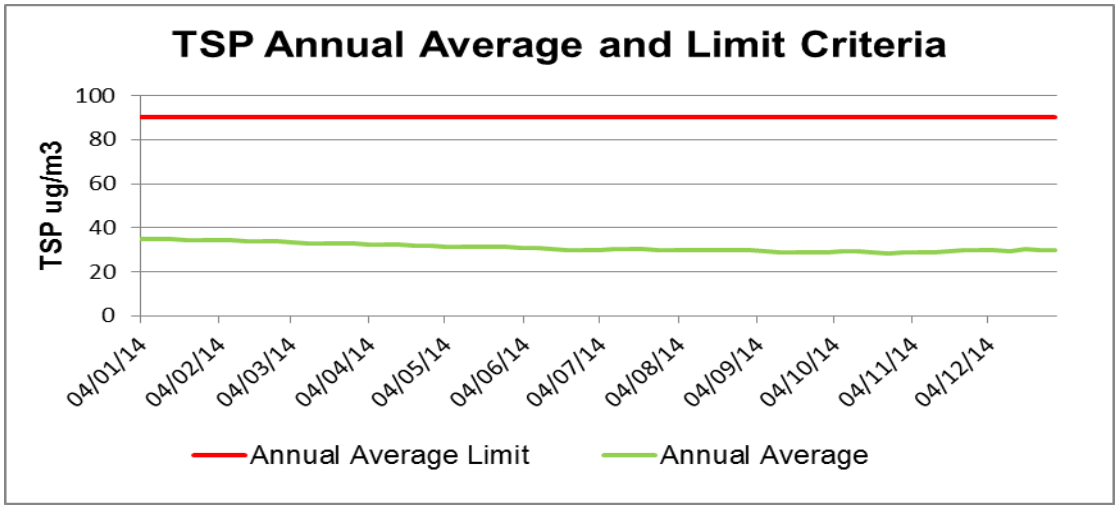


Figure 3 TSP Annual Average and Limit Criteria

3.2.2. Erosion and Sedimentation

The control strategies implemented as per the Land Management Plan and Water Management Plan were adequate to manage the risks associated with the operation during the report period.

Myuna Colliery has 3 dams designed with over/under weirs, permanent floating booms, and a drive in sump. These structures are inspected weekly. A status report is generated by the Environment & Community Officer and actions are initiated as and when required.

Emergency sediment control equipment is contained in the store and contains booms, stakes, sediment fencing, & shovels.

Checking of fire trails, roads and un-vegetated areas occurs routinely under work orders through the PULSE system. No vegetation clearing works were undertaken nor were erosion or sedimentation issues or incidents recorded for the reporting period.

3.2.3. Surface Water Management

i. Management

The control strategies were implemented as per the Water Management Plan and were in general adequate to manage the risks associated with the operation during the report period. The control strategies were found to be adequate in managing the risks at all areas with the exception of LDP A. The control strategies for managing risks associated with water quality at LDP A were found to be inadequate.

Myuna Colliery has a Water Management Plan which discusses responsibilities, pollution sources, hazards, risks and mitigation strategies of water management. Regular refresher training and site inductions discuss water management to make personnel aware of the site issues.

ii. Environmental Performance

The surface water monitoring has been conducted in accordance with the conditions of EPL366. This Licence specifies monitoring and reporting requirements along with limit criteria for water discharge through LDP A and LDP B. Other EPL monitoring requirements

include condition U1 Pollution Studies Reduction Program which encompassed the monitoring of metals from LDP B and condition E1 Manganese monitoring in Wangi Bay.

LDP B

Mine water discharged from LDP B is required to be monitored daily during discharge. Discharge of mine water occurred on 365 days in the report period. A sample was collected and analysed for every day of discharge.

A limit criteria applies to the parameters volume, pH, Total Suspended Solids and Oils and Grease. A summary of the monitoring data is provided in Table 10.

The flow volumes through LDP B are monitored continuously in accordance with EPL366. The daily volume discharge limit for LDP B is 13000kL. The maximum daily volume discharge was 10383kL. The average daily volume discharge for 2014 is 4421kL. There is a 30% decrease in the average daily volume discharge from the 2013 report period to the 2014 report period.

The pH of the mine water discharged through LDP B was consistent throughout 2014 with a maximum pH level of 8.16 and a minimum of 6.94 (Figure 5)

The concentration of total suspended solids analysed in the mine water discharged through LDP B was consistently low with an average concentration of 6 mg/L for 2014 (Figure 6)

The concentration of oils and grease analysed in the mine water discharged through LDP B was consistently low with a value recorded from nine of the 377 samples collected.

Table 10 Summary of Monitoring Results for LDP B

Pollutant	Unit of Measure	Licence limit criteria	No. of Samples Required	No. of samples collected	Minimum Value	Mean	Maximum Value
pH	pH	6.5 – 8.5	365	377	6.94	7.65	8.16
Total Suspended Solids	mg/L	50	365	377	<LOR	6.17	43
Oil & Grease	mg/L	10	365	377	0	0.04	5

<LOR Indicates that the result was below detectable limits of the NATA accredited instrumentation at laboratory.

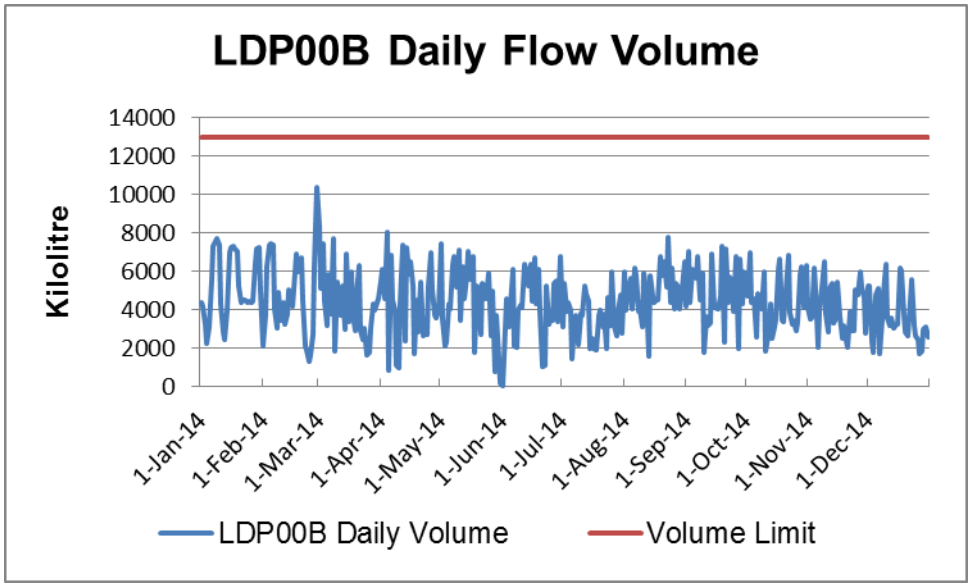


Figure 4 LDP B 2014 Daily Flow Volume and Limit Criteria

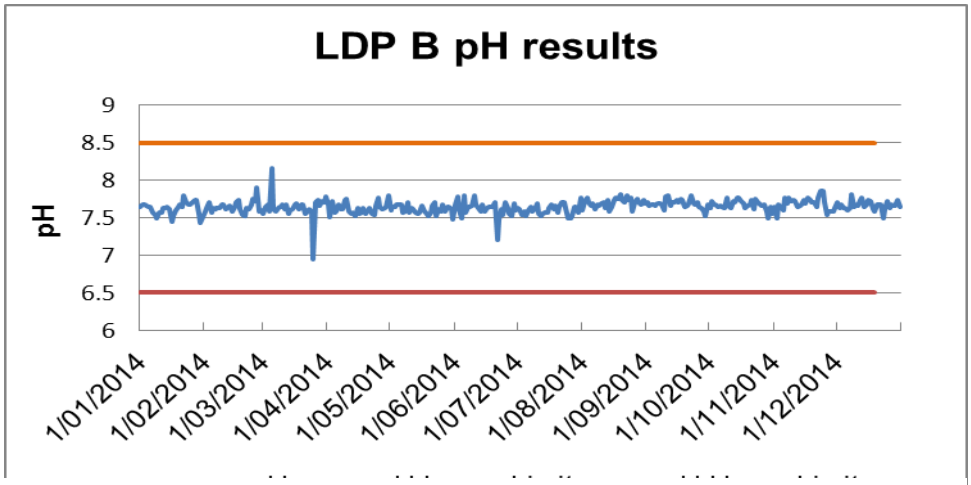


Figure 5 LDP B 2014 pH results and Limit Criteria

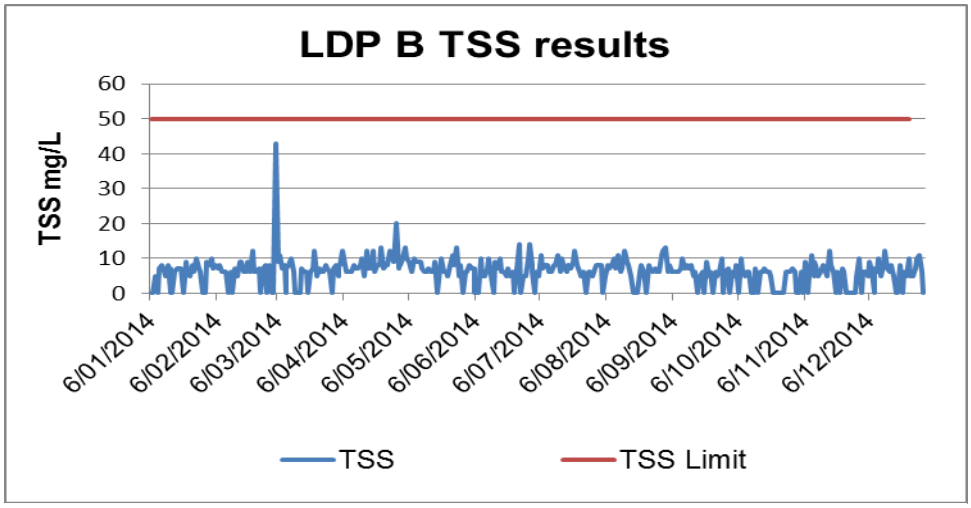


Figure 6 LDP B 2014 TSS Results and Limit Criteria

Dam water discharge from LDP A is only permitted when rain fall exceeds 140mm in any 24 hour period as per EPL366, condition L2.5.

Dam water discharged from LDP A is required to be monitored daily during discharge. Discharge of dam water occurred on 2 days in the report period. A sample was collected and analysed for every day of discharge.

A limit criteria applies to the parameters pH, Total Suspended Solids and Oils and Grease. A summary of the monitoring data is provided in Table 11.

The discharge of dam water at LDP A occurred on the 28th February 2014. The Myuna Colliery weather station recorded rainfall of 302mm for the 28th February. The discharge continued until 9 a.m. on the 1st March. The discharge was permitted under condition L2.5 of EPL 366.

The pH value of the samples is 6.31 and 7.75. There was one exceedance of the pH range limit criteria. The concentration of total suspended solids analysed in the dam water discharge was 29mg/L and 157mg/L. There was one exceedance of the TSS concentration limit. The concentration of oils and grease analysed in the dam water discharge through LDP A was below detectable limits.

Table 11 Summary of 2014 Monitoring Results for LDP A.

Pollutant	Unit of Measure	Licence limit criteria	No. of Samples Required	No. of samples collected	Minimum Value	Mean	Maximum Value
pH	pH	6.5 – 8.5	2	2	6.31	7.03	7.75
Total Suspended Solids	mg/L	50	2	2	29	93	157
Oil & Grease	mg/L	10	2	2	0	0	0

Manganese Monitoring

The monitoring of filterable Manganese is undertaken as per special condition E1 Additional Monitoring of EPL366, in Wangi Bay on a quarterly schedule. The monitoring results are submitted to the EPA. Table 12 provides the results for the report period. There has been a slight downward trend in Manganese concentrations recorded in Wangi Bay over the four year period of monitoring.

Table 12 Manganese concentrations in Wangi Bay 2014

Date	Filterable Manganese (mg/L)

	T2 – 5m (1)	T2 – 5m (2)	T2 – 10m (1)	T2 – 10m (2)
Mar-14	0.255	0.250	0.171	0.168
Jun-14	0.025	0.025	0.044	0.045
Sep-14	0.025	0.023	0.091	0.093
Dec-14	0.202	0.026	0.039	0.047

Metals

The monitoring of metals from LDP B is undertaken as an EPL Pollution Studies Reduction Program.

Centennial Myuna completed the 24 months of monitoring required in February 2015. Centennial Myuna will conduct an assessment of metals detected in mine water discharges from the mine in accordance with ANZECC water quality guidelines and provide the assessment to the EPA.

The results of the assessment will be provided in the next AEMR reporting period.

iii. Reportable Incidents

The water quality monitoring data is assessed against the Environmental Protection Licence limit criteria.

There were no exceedances of the limit criteria at LDP B during the report period.

There were two exceedances of the limit criteria at LDP A during the report period.

The exceedances were immediately reported to the EPA (reference no.C03221-2014), Ministry of Health, WorkCover, Lake Macquarie City Council and Fire and Rescue NSW in accordance with the POELA Act. The exceedances were reported in the EPA 2014 Annual Return.

An exceedance of the pH value limit and the TSS concentration limit occurred at LDP A on the 28th February and 1st March 2014 respectively. LDP A is located at the Emergency Coal Stockpile Dam. The dam receives the surface run off from the emergency stockpile area. Clean water diversion drains divert surface run off from the surrounding bushland away form the emergency stockpile area. A pump is established at the dam to move water from the stockpile dam to the settlement ponds.

In an eight hour period from 12:00 a.m. on the 28th February Myuna Colliery had recorded 277mm of rainfall. Myuna Colliery had recorded a total of 302mm of rain for the 28th February. By 8:00 a.m. the Emergency Coal Stockpile Dam had filled to capacity and began to discharge through LDP A. The rainfall event was calculated the to have an average recurrence interval (ARI) of greater than or equal to 100 years.

iv. Further Improvements

The Emergency Stockpile Dam pump system upgrade was completed in January 2015. The upgrade, a new pump and automated float switch, has increased the maximum rate of transfer of water from the Stockpile Dam to the CHP dam.

Centennial Myuna has determined to investigate all options in regard to increasing the volumetric rate of transfer from the CHP Dam (dirty water dam) to the underground reservoir.

3.2.4. Groundwater

i. Management

The control strategies were implemented as per the Water Management Plan and were adequate to manage the risks associated with the operation during the report period.

Water in underground workings is generated from ground water which is released from the strata into mine workings, as well as process water. The collected water is pumped through an extensive system that allows filtration and settlement in large dams. The water is then pumped from the mine into the surface settlement pond systems prior to discharge via LDP B. Sampling and inline flow monitoring enables monitoring of groundwater quality and increase or decrease in groundwater make.

ii. Environmental Performance

The NSW Office of Water issued a bore licence (20BL172565) to Centennial Myuna for ground water extraction. The volume of ground water extracted from the works authorised by the licence shall not exceed 4380 mega litres in any twelve month period commencing the 1st July. The total volume of water discharged through LDP B for the 2014 financial period was 1849.2 ML. There was no exceedance of the Bore Licence limit criteria.

No incident of ground water contamination occurred over the report period.

No piezometer groundwater monitoring was undertaken during the report period.

iii. Reportable Incidents

There were no reportable incidents for the report period.

3.2.5. Contaminated Polluted land

Phase 2 ESA

A Targeted Phase 2 Environmental Site Assessment (ESA) was conducted, by AECOM 2013, subsequent to the decommissioning by foam filling of the Underground Petroleum Storage Systems (UPSS) infrastructure. The objective of the Phase 2 ESA was to assess the presence of soil, sediment, surface water and ground water contamination in targeted areas which have been identified as areas of potential concern within the Site and to determine Centennial's remedial obligations.

The targeted Phase 2 ESA identified on-site Phase separated hydrocarbons, soil and ground water impact related to historic and current Site mining operations, which under the Contaminated Land Management Amendment Act 2008 triggered the duty to report to the NSW EPA. The extent and associated risk of the impact was not evaluated and therefore it had not been determined if remedial action was required or not.

Centennial Coal had reported Myuna Colliery to the EPA in a letter dated 2nd February 2012. The EPA responded to Centennial acknowledging receipt of the Duty to Report letter and Centennial's commitment to staged investigation and remediation works at its mine sites.

Recommendations

The following data gaps were identified and the following investigations / management measures are required to determine and then develop appropriate remedial strategies:

- Recommended works to be conducted in the short term:
    - Undertake a comprehensive hydraulic investigation including but not limited to the assessment of the hydraulic gradient of the groundwater.
    - Delineate the extent of the PSH plume and petroleum hydrocarbon impacted groundwater, further down gradient of the decommissioned UST's and towards Wangi Creek.
    - Document the nature and location of the identified PSH, TPH impacted soils and ground water across the site in Centennial's Environmental Management Plan.
    - Undertake a Human Health and Ecological Risk Assessment.

- Recommended works to be conducted in the mid to long term:
    - Undertake an additional ground water monitoring event of the existing well network
    - Undertake additional sediment sampling and analysis along Wangi Creek, particularly but not limited to up gradient of the site nearer to SS01 sediment sampling location.
    - Characterise soils and ground water beneath the existing building footprints.

Actions

The Phase 2 Environmental Site Assessment was reviewed and an estimate of the contaminated land rehabilitation costs calculated. The contaminated land rehabilitation costs were included in the annual review of the Schedule of Rehabilitation Costs (Section 5.5).

Centennial Myuna has commissioned consultants to provide a proposal for undertaking the recommendations of the Phase 2 ESA. Centennial Myuna intends to undertake an investigation to determine connectivity between the identified plume at the UST and BH38.

i. Management

The control strategies were implemented as per the Land Management Plan and Hydrocarbon Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

Under Section 3 of the Environmental Management System, a Hydrocarbon Management Plan is in place to reduce the risk of soil and water contamination by hydrostatic materials. Spills are reported in accordance with the internal environmental incident reporting system and investigated.

ii. Environmental Performance

Possible contaminants are removed from the site by a registered Waste Contractor. The total volume of hazardous material recycled was 8.346 tonne which is 2% of the total waste generated for the report period. The total volume of hazardous material disposed was 0.398 tonne.

iii. Reportable Incidents

There were no reportable incidents for the report period.

3.2.6. Flora & Fauna

i. Management

The control strategies were implemented as per the Land Management Plan, the Bushfire Management and Bio-Diversity Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

ii. Environmental Performance

Myuna Collieries activities are restricted to the Surface pit top area and Emergency Coal Stock Pile Area. The only activities undertaken in the bush land areas involve weed control and Bush Fire Management.

iii. Reportable Incidents

There were no reportable incidents for the report period.

3.2.7. Weeds

i. Management

The control strategies were implemented as per the Myuna Colliery Weed Action Plan 2014 and were adequate to manage the risks associated with the operation during the reporting period.

This plan identifies the weeds on site and management techniques used to control them. A Land Management Contractor is engaged to manage weeds at the Colliery on a regular basis. A weed audit was conducted during the reporting period, with a weed action plan implemented in the 2014 reporting period.

ii. Environmental Performance

Centennial Myuna had commissioned a Land Management Contractor to produce a Weed Action Plan for the report period. The Weed Action Plan identifies and locates weed infestations and proposes priority control and maintenance areas.

Priority control and maintenance areas identified in the 2012 and 2013 Weed Action Plan have progressed to the point were the areas are designated as maintenance zones for 2014. The Focus Area for 2014 was moved to Area 5 adjacent to Land Care activities along Donnelly Road which involved weed eradication and planting of local indigenous species. This area represents a disturbed margin above a large expanse of intact bush land with a low weed load.

Weed control was undertaken and completed as per the 2014 Weed Action Plan.

iv. Reportable Incidents

There were no reportable incidents for the report period.

v. Further Improvements

The Land Management Contractor has been commissioned to produce and implement Weed Action Plan for the 2015 report period.

3.2.8. Blasting

During 2014 a total of 1506 shots were fired as part of a project to enlarge the seam-to-seam drift between the Great Northern Seam and the Fassifern Seam. Explosives are managed according to the Myuna Shotfiring and Explosives Management Plan and are bought on site for specifically individual task. No explosives are stored on the site surface.

3.2.9. Operational Noise

i. Management

The control strategies were implemented as per the Noise Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

A permanent noise logger was installed on the Myuna Colliery site and commenced operation in January 2014. The noise monitoring program uses a combination of real time and supplementary attended monitoring to evaluate the performance of the project. The attended monitoring is conducted on a quarterly schedule and in accordance with the Project Approval.

ii. Environmental Performance

Noise monitoring commenced at Myuna in December 2012 as required by the Project Approval received in January 2012. The noise results were inconclusive from the first round of monitoring due to high background noise levels which has continued throughout 2013.

Direct measurement of operational noise from the Colliery during this report period was not possible due to the influence of extraneous noise sources, in particular traffic operating on Wangi Road, Summerhill Drive and Donnelly Road.

A noise model was created using SoundPLAN 7.3 noise modelling software to determine noise attenuation from the logger location to each assessment location. Each attenuation value subtracted from the measured onsite noise level to predict the noise impacts from the Colliery at each assessment location.

Colliery noise was generally in-audible at all locations during the day, varied from audible to in-audible in the evening and is generally barely audible / audible at night. L_{Aeq} levels were largely controlled by extraneous noise sources such as passing traffic, where as L_{A90} levels were controlled by insects during the day or Colliery operations during the evening and night. Colliery operations were subjectively observed to contribute little to the measured L_{Aeq} noise levels during any period throughout the day. Definitive compliance with PA noise limits was therefore difficult to determine through direct measurement due to the influence of extraneous noise events.

Continuous noise monitoring data from a permanent noise logger installed on-site was incorporated into a noise model to determine noise impacts at the six assessment locations. No non compliances were predicted during any period of the day. Predicted noise levels correlated well with operator attended observations of the Colliery noise contributions.

The noise monitoring program for the report period has been conducted in accordance with the conditions of the Project Approval and the Noise Management Plan as approved by the Department of Planning and Environment. Myuna Colliery is currently communicating with the EPA in regard to variations to the noise conditions in EPL366.

iii. Reportable Incidents

There were no reportable incidents for the report period

3.2.10. Visual, Stray Light

i. Management

The control strategies were implemented in accordance with the Project Approval and were adequate to manage the risks associated with the operation during the reporting period.

The Myuna Colliery Surface Facilities Area is surrounded by ridgelines which vary from 20 to 50 metres RL. The Surface Facilities Area is bound in all directions by a natural bushland buffer and road network, with the closest receivers over 500 metres away. The surface facilities are well shielded from passing traffic and residences and contribute a very low visual impact to the area.

ii. Reportable Incidents

There were no reportable incidents for the report period

3.2.11. Aboriginal Heritage

i. Management

The control strategies were implemented as per the Northern Holdings Aboriginal Cultural Heritage Management Plan and were adequate to manage the risks associated with the operation during the reporting period**.**

A Cultural Heritage Assessment was also completed as part of the Part 3A process. Results of the OEH Aboriginal Heritage Information Management System (AHIMS) found that the most commonly occurring heritage site type associated with Lake Macquarie are middens. The AHIMS database search identified 11 middens, two isolated finds and one Potential Archaeological Deposit previously recorded across the lease Area, and a number of artefact scatters, open camp sites and scarred trees within the surrounding area.

The field survey conducted as part of the Assessment recorded an additional 4 new sites, and two previously identified sites, as detailed below:

- Midden located at Myuna Bay
- Cultural Site at Buttaba Hills
- Midden – Previously recorded site. Anadara trapezia adjacent waterhole
- Midden; artefacts; cultural site – extensive Anadara trapezia, few Ostr

ii. Environmental Performance

The requirement to asses Aboriginal cultural heritage sites was not triggered during the report period.

iii. Reportable Incidents

There were no reportable incidents during the report period

3.2.12. Natural Heritage

i. Management

An extensive Environmental Assessment undertaken for the mine's original Development Consent approval included information regarding cultural heritage, natural drainage and current land use.

ii. Environmental Management

Mine design is such that there is no visible disturbance to the surface due to mine subsidence therefore no impact predicted to natural heritage or the requirement for investigation triggered.

iii. Reportable Incidents

There were no reportable incidents during the report period

3.2.13. Spontaneous Combustion

There were no occurrences of spontaneous combustion during the reporting period in stockpiles or underground.

3.2.14. Bush fire

i. Management

The control strategies were implemented as per the Bush Fire Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

ii. Environmental Performance

Surface structures have fire protection equipment installed around them for compliance with the Coal Mines Regulation Act 1999. A designated Fire Officer maintains the fire equipment on the surface and underground areas of the site.

Regular mowing of the lawns surrounding the building structures ensured fire fuel loading was well within acceptable limits.

Hazard reduction slashing around the boundary and Asset Protection Zones were undertaken on a quarterly basis during the report period. Fire Trails and vegetated zones were routinely inspected.

A fuel loading assessment was performed throughout the sites buffer zones by the NSW Rural Fire Service and Environment and Community Officer. The buffer zone Area 1, Area 2 and Area 6 were assessed as having a high full load. The full loading of Area 3, Area 4, Area 5 and Area 7 was assessed as within acceptable limits.

iii. Reportable Incidents

No bushfire incidents occurred in the reporting period.

iv. Further Improvements

The NSW RFS has scheduled a hazard reduction burn for the Myuna Colliery buffer zone Area 1, Area 2 and Area 6 to be conducted in the 2015 report period.

3.2.15. Mine Subsidence

i. Management

The Development Consent and Part 3A approval constrains the mining activities at Myuna based on the maximum predicted mine subsidence over the area. Mine design criteria are used to manage the predicted subsidence in the design phase of the operation and the predictions are based on latest pillar design principles, local geological characteristics and results of existing subsidence monitoring data.

Controls have been implemented to ensure that mining occurs according to the design dimensions and a mining panel inspection system has been implemented to monitor and report any deviation from the plan and the corrective action taken.

A subsidence monitoring program has been implemented to collect data on surface movement.

ii. Environmental Performance

Results of subsidence monitoring programs in areas of Point Woolstoncroft, Wangi Wangi Point and Pulbah Island continue to show negligible subsidence of less than 20mm with this trend expected to continue.

iii. Reportable Incidents

There were no reportable incidents in the report period.

iv. Further Improvements

Additional subsidence monitoring points will be installed on Morisset Peninsula.

3.2.16. Hydrocarbon Contamination

i. Management

The control strategies were implemented as per the Hydrocarbon Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

The Hydrocarbon Management Plan identifies hazards and risks and outlines mitigation methods.

ii. Environmental Performance

The NSW Trade & Investment – Division of Resources and Energy (DRE) conducted an annual environmental review at Myuna Colliery on 8 October 2014. In the course of the inspection some issues were identified that either required comment and or continued management.

An issue raised by DRE was the poor general house keeping associated with hydrocarbon management. The action issued by DRE was to complete a review of work practices and

assess opportunities for improvement. In particular the waste oil IBC and empty drums did not have bunding underneath.

Centennial Myuna reviewed the work practices and the following actions were taken:

Wash Down Bay,

- A portable bund was placed under the empty drum cage.
- The primary waste oil IBC was replaced with a purpose built waste oil drainage bin.
- A portable bund was placed under the secondary waste oil IBC.

Bulk Oil Storage Shed,

- The waste oil IBC was replaced with a waste oil drainage bin.

All hydrocarbon materials are stored within a dedicated bunded bulk oil store building which drains to the oil / water separator sump. The wash down bay drains to the oil / water separator sump.

Emergency spill stations are positioned in strategic locations around the site surface and provide hydrocarbon spill containment equipment. All emergency spill equipment is checked weekly and refilled as required and a written report carried out monthly.

Hydrocarbon spills are immediately cleaned up and contaminated material disposed of appropriately and reported to Environment and Community Officer.

iii. Reportable Incidents

There were no reportable incidents during the report period.

iv. Further Improvements

Within the next report period second waste oil drainage bin will be placed in the wash down bay to replace the waste oil IBC.

3.2.17. Greenhouse Gas

i. Management

The control strategies were implemented as per the Air Quality and Greenhouse Gas Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

ii. Environmental Performance

Estimation of the GHG emissions associated with the Myuna was undertaken using the emission factors and methods outlined in the National Greenhouse and Energy Reporting (Measurement) Determination 2008.

Table 13 provides the total energy and fugitive emissions in carbon dioxide equivalent tonnes for the report period.

Table 13 Greenhouse Gas Emissions

Emissions (CO_2-eT) 2014	
Diesel	928
Electricity	26,902
CO_2 Emissions	7,155
CH_4 Emissions	280,357
Total Emissions (CO_2-eT)	315,343

iii. Reportable Incidents

There were no reportable incidents during the report period.

3.2.18. Public Safety

i. Management

The control strategies were implemented as per the Land Management Plan and were adequate to manage the risks associated with the operation during the reporting period.

ii. Environmental Performance

The Myuna Colliery perimeter is secured with security fencing and is patrolled by security staff on a regular basis. The pit top surface area is monitored at the control room with surveillance cameras.

iii. Reportable Incidents

There were no reportable incidents during the report period.

No surface impacts from mining that could pose a risk to public safety were identified during the report period.

3.2.19. Other Issues and Risks

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

4. Community Relations

4.1. Community Complaints & Enquiries

A community complaints register is kept on site. All community enquiries and complaints received by Myuna Colliery are to be recorded as per MY-EWP-038 Community Complaint and Enquiries Procedure. This information is then entered into the Centennial Coal Environment and Community Database (ECD).

There were no community complaints regarding Myuna Colliery during the reporting period.

4.2. Community Liaison and Sponsorships

The Myuna Community Consultative Committee was established 14th August 2012 in accordance with Project Approval schedule 5, condition 6. The meetings have been conducted quarterly with four meetings held during the report period. The committee is comprised of representatives from Centennial Myuna, the community, Lake Macquarie City Council and Wyong Shire Council. Centennial Myuna presented updates each meeting on the environmental performance, mining operations, community complaints and progress on approval applications.

Centennial Myuna operates under a Stakeholder Engagement Plan, and continues to support the local community through various sponsorship schemes. The following is the sponsorship and support carried out locally during the calendar year:

- Myuna Colliery was a major sponsor of the Wangi Dobell Festival of Arts and Crafts 2014;
- Sponsorship of the Centennial Coal Australia Day Regatta run by the Wangi RSL Amateur Sailing Club
- Sponsorship of the Wangi Lions Club
- Wangi Amateur Sailing Club Youth sail Lake Macquarie Regatta

Centennial Myuna also supported corporate sponsorships for local sporting organisations, with sponsorship assistance for new equipment and operational costs. These sporting clubs include: Westlake Wildcats, Royal Motor Yacht Club Toronto, Toronto Awaba Junior Soccer Club, Lake Macquarie Dockers, Westlakes District Netball, Lake Macquarie Dolphins, Macquarie Shores Swim Club, South Lakes Rugby, Cricket Southern Lakes, Westlake Wild Cats and Macquarie Scorpions Rugby League.

The colliery also supported corporate sponsorship for community organisations and events including: Speers Point Park Australia Day Festival, Morisset / Toronto Meals on Wheels, Dora Creek Rural Fire Brigade, Hunter Rescue Helicopter West Cycle Classic, sponsorship and participation in the Rotary Club of Toronto Sunrise's Paddlefest event, Hunter Life Education Australia Secondary high school program, the YMCA Lake Macquarie, Hunter Valley Research Foundation, Chuck Duck Breakfast Club Food supporting in need local school children, and the Hunter Medical Research Institute Capital Campaign .

5. Rehabilitation

5.1. Buildings

Myuna Colliery surface infrastructure is listed in detail in section 2.9 Surface Infrastructure.

Buildings include the administration offices, bathhouse, fire station, cable shed, stone dust shed, car parks and hardstand areas

Due to Myuna's minimal foot print mining infrastructure areas will continue to be used throughout the MOP period to facilitate mining operations.

No buildings were renovated, removed or rehabilitated during the AEMR period.

5.2. Rehabilitation of Disturbed Lands

There was no disturbance of native vegetation during the reporting period.

Myuna Colliery proposes to rehabilitate the land to a combination of native vegetation and grasses upon mine closure.

5.3. Other infrastructure

During the reporting period no surface exploration, new infrastructure, shafts, dams or fences were built, requiring rehabilitation works.

5.4. Rehabilitation Trials and Research

No rehabilitation trials, research or initiatives were undertaken during the reporting period.

5.5. Further development of the Final Rehabilitation Plan

Centennial Myuna conducts an annual review of the, NSW Department of Resources and Energy, Schedule of Rehabilitation Costs. A summary of the Rehabilitation Cost Calculation is provided in appendix 3.

All surface infrastructure associated with Myuna Colliery's operations is located at the Surface Facilities Area. The Surface Facilities Area encompasses a footprint of approximately 89 hectares, of which 20.2 hectares includes the surface infrastructure. These 20.2 hectares is the total area currently requiring rehabilitation following mine closure. The remainder of the Surface Facilities Area is predominantly natural bushland vegetation, the Wangi Creek watercourse and existing cleared easement corridors.

Final landform creation and rehabilitation activities will largely be undertaken following the completion of mining and removal of surface infrastructure. The final landform will reflect the existing topography providing a free draining landform similar to that which currently exists with the exception of the mine access road.

The site will also be largely revegetated with native tree and shrub species (except within transmission line easements) and will blend with the surrounding landscape. Hence, the potential visual impact from Summerhill Drive will remain negligible.

Plan MY11215 illustrates the planned final landform following the completion of all approved coal mining operations at the mine.

The current MOP / Rehabilitation Management Plan includes a conceptual final land use plan for the Surface Facilities Area in accordance with Project Approval (10_0080).

6. Activities Proposed in the Next Reporting Period

Planned activities for the next reporting year:

- Review and Development of Management Plans as per Project Approval (10_0080) conditions.
- Ongoing improvements to the surface water management.

A summary of the rehabilitation progression and proposed rehabilitation activities is shown on Table 14.

A summary of the maintenance activities on rehabilitated land is shown on Table 15

Table 14 Rehabilitation Summary

A	MINE LEASE AREA	Area Affected/Rehabilitated (hectares)		
		Total Area, start of MOP	**Total Area, end of MOP**	**At mine closure (*anticipated*)**
A1	Mine Lease(s) Area	6500ha	6500ha	
B.	DISTURBED AREAS			
B1	Infrastructure Area (other disturbed areas to be rehabilitated at closure including facilities, roads)	20.2ha	20.2ha	
B2:	Active Mining Area (excluding items B3-B5 below)	Na	Na	
B3:	Waste Emplacements (active/unshaped/in or out-of-pit)	Nil	Nil	
B4	Tailings Emplacements (active/unshaped/uncapped)	Nil	Nil	
B5	Shaped Waste Emplacement (awaits final vegetation)	Nil	Nil	
ALL DISTURBED AREAS		20.2ha	20.2ha	
C.	REHABILITATION			
C1	Total Rehabilitated Area (except for maintenance)	Nil	Nil	Nil
D.	REHABILITATION ON SLOPES			
D1	10 to 18 Degrees	Nil	Nil	Nil
D2	Greater than 18 degrees	Nil	Nil	Nil
E:	SURFACE OF REHABILITATED LAND			
E1	Pasture and Grasses	Nil	Nil	15ha
E2	Native Forest/Ecosystems	Nil	Nil	5.2ha
E3	Plantations and Crops	Nil	Nil	Nil
E4	Other(include non-vegetative outcomes)	Nil	Nil	Nil

Table 15 Maintenance Activities on Rehabilitated Land

Nature of Treatment	Treated Area (ha)		Comment / Control Strategies / Treatment
	Period Report	Next Report	
Additional erosion control works (drains re-contouring, rock protection)	Nil	Nil	
Re-covering (detail - further topsoil, subsoil sealing etc)	Nil	Nil	
Soil treatment (detail -fertiliser, lime, gypsum etc)	Nil	Nil	
Re-seeding/Replanting (detail - species density, season etc)	Nil	Nil	
Adversely Affected by Weeds (detail - type and treatment)	Nil	Nil	
Feral animal control (detail - additional fencing, trapping, baiting etc)	Nil	Nil	

7. LIST OF PLANS

MY11336 – Wallarah Seam Workings 1 Jan 2014 – 31 Dec 2014

MY11337 – Great Northern Seam Workings 1 Jan 2014 – 31 Dec 2014

MY11338 – Fassifern Seam Workings 1 Jan 2014 – 31 Dec 2014

PC14 – Holding Plan Myuna Colliery

MY11342 – Final Rehabilitation

MY11236 – Myuna Colliery Water Management Plan

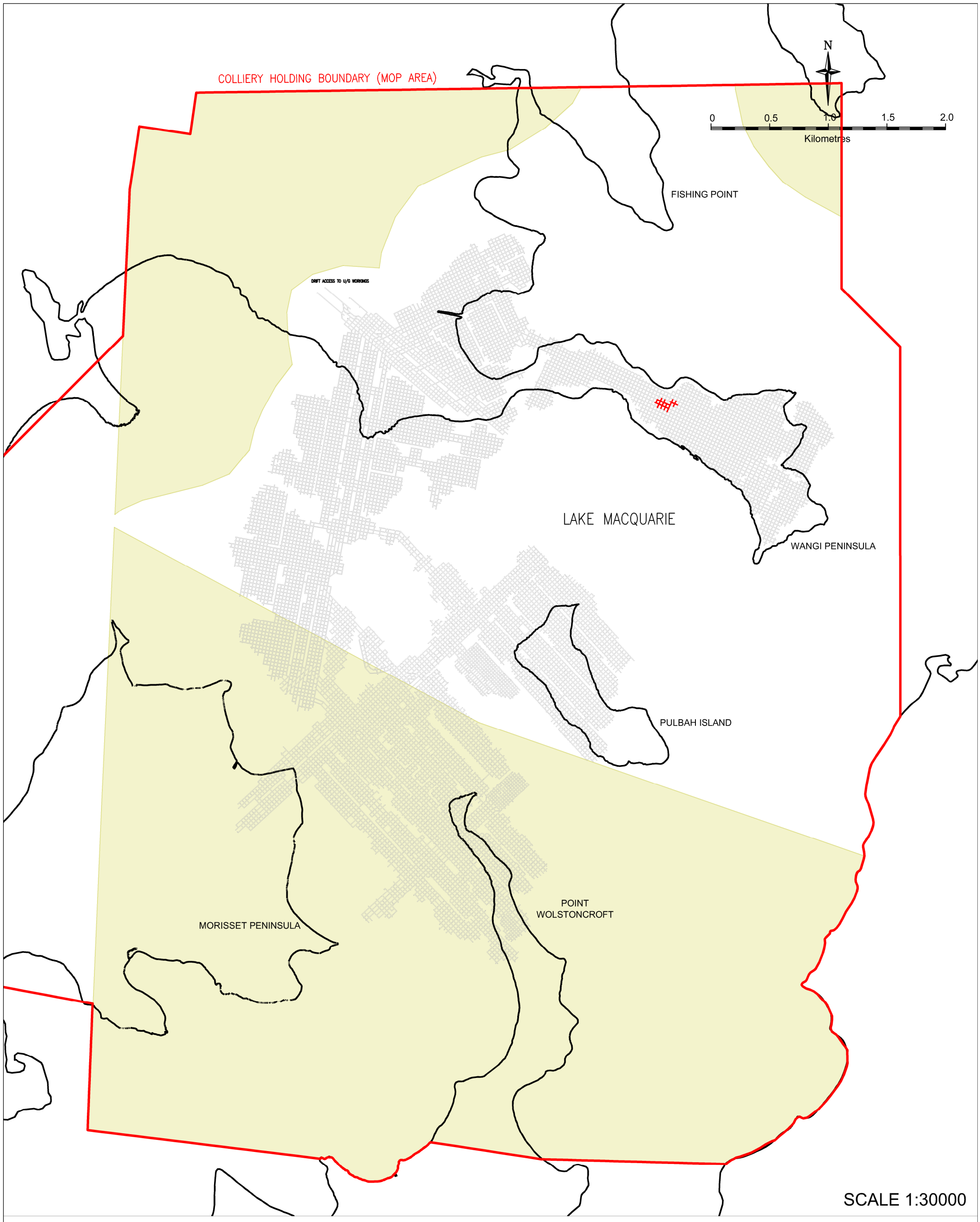
8. APPENDICES

Appendix 1 - Myuna Colliery Environmental Risk Assessment

Appendix 2 – Myuna Colliery Annual Return (EPL 366)

Appendix 3 - DPI-MR Rehabilitation Cost Calculation

Appendix 4 – Project Approval 10_0080(MOD1)



Centennial Myuna

MYUNA COLLIERY

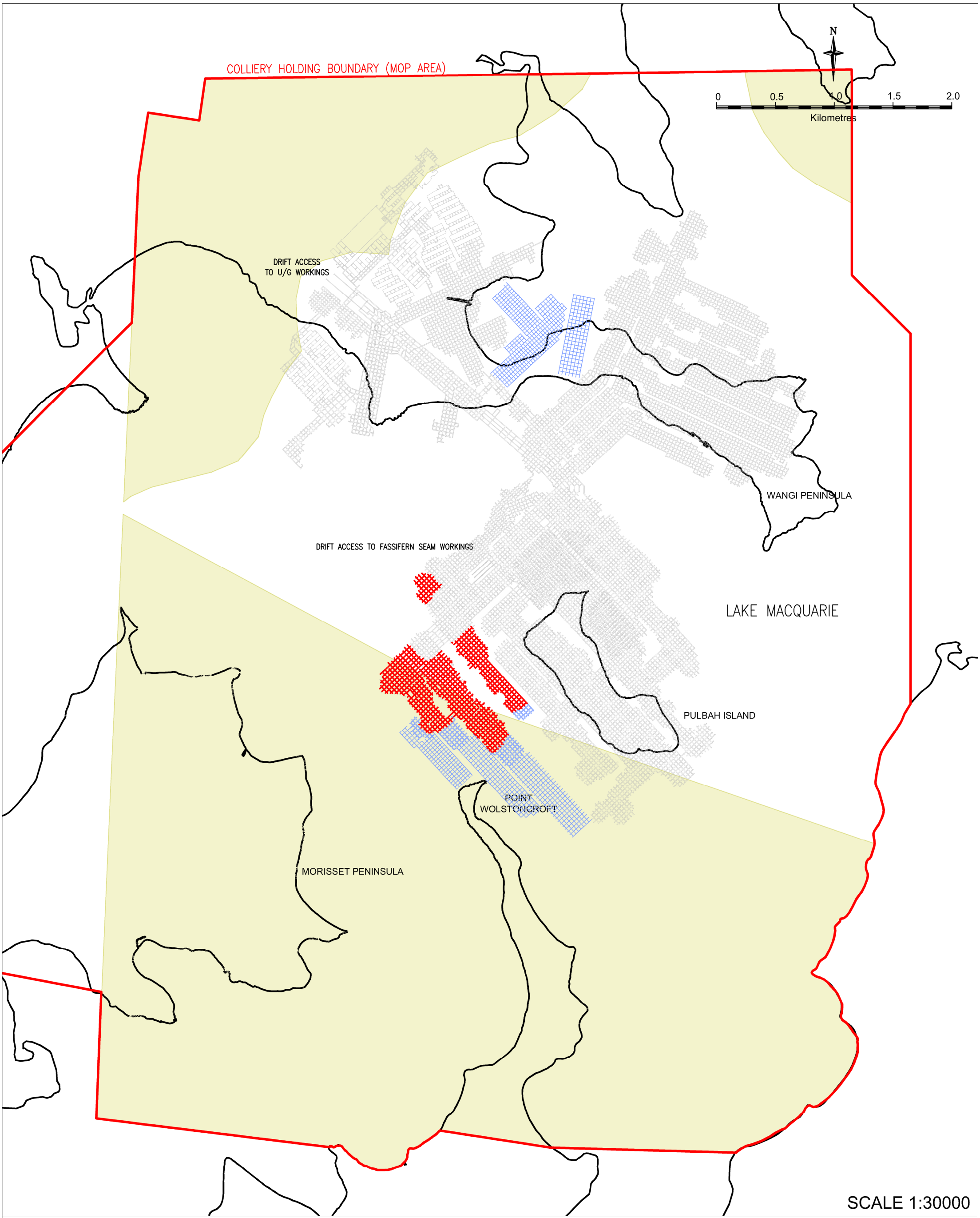
ANNUAL ENVIRONMENTAL REPORT

1 JAN. 2014 - 31 DEC. 2014

WALLARAH SEAM WORKINGS

- PART 3A PROJECT APPLICATION AREA
- EXISTING MINE WORKINGS
- WORKINGS FOR PERIOD 01 JAN 2014 TO 31 DEC. 2014

MY11336 11/03/2015



Centennial Myuna

MYUNA COLLIERY

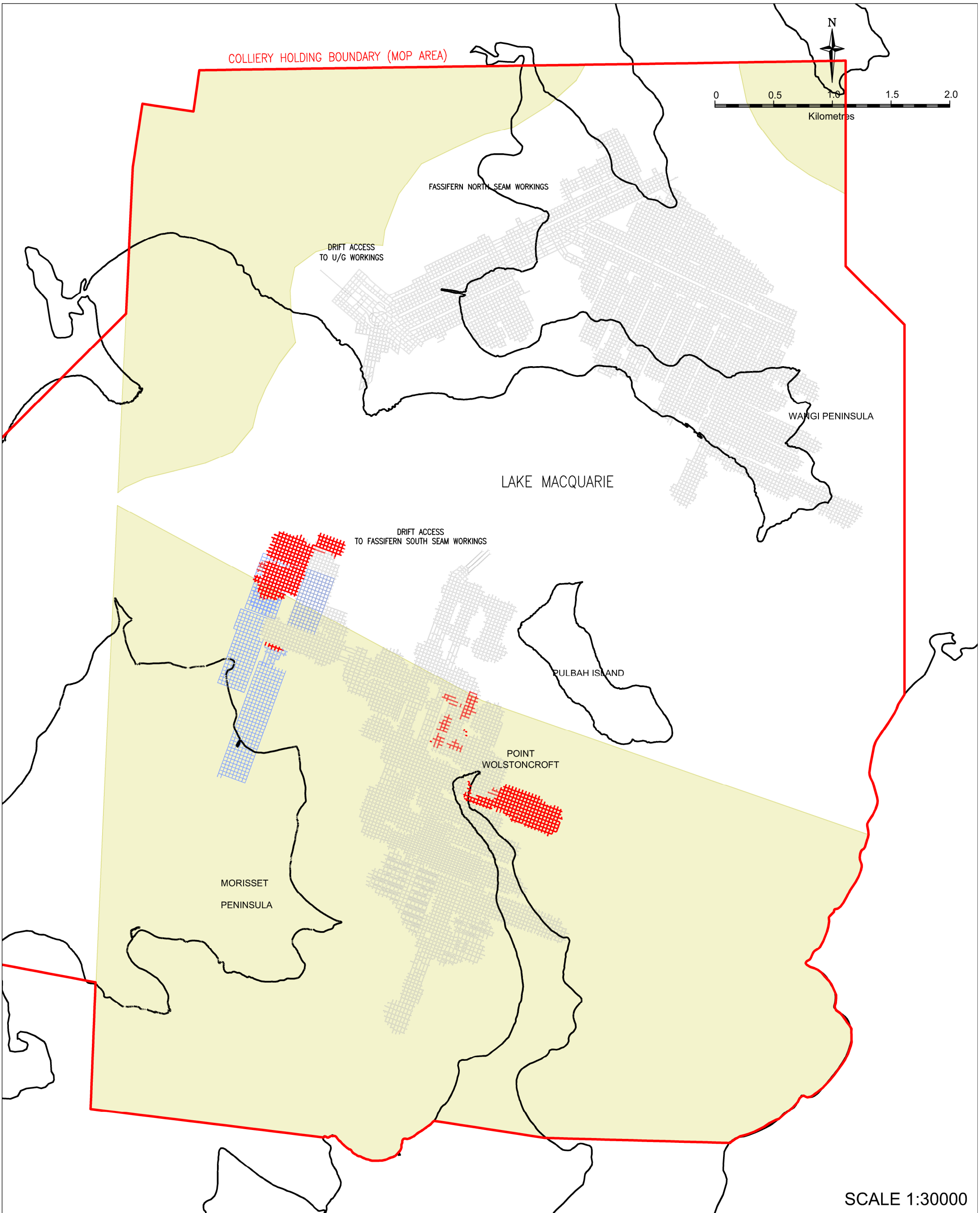
ANNUAL ENVIRONMENTAL REPORT

1 JAN. 2014 - 31 DEC. 2014

GREAT NORTHERN SEAM WORKINGS

- PART 3A PROJECT APPLICATION AREA
- EXISTING MINE WORKINGS
- WORKINGS FOR PERIOD 01 JAN 2014 TO 31 DEC. 2014
- WORKINGS (PROPOSED) FOR PERIOD 01 JAN 2015 TO 31 DEC. 2015

MY11337 11/03/2015



Centennial Myuna

MYUNA COLLIERY

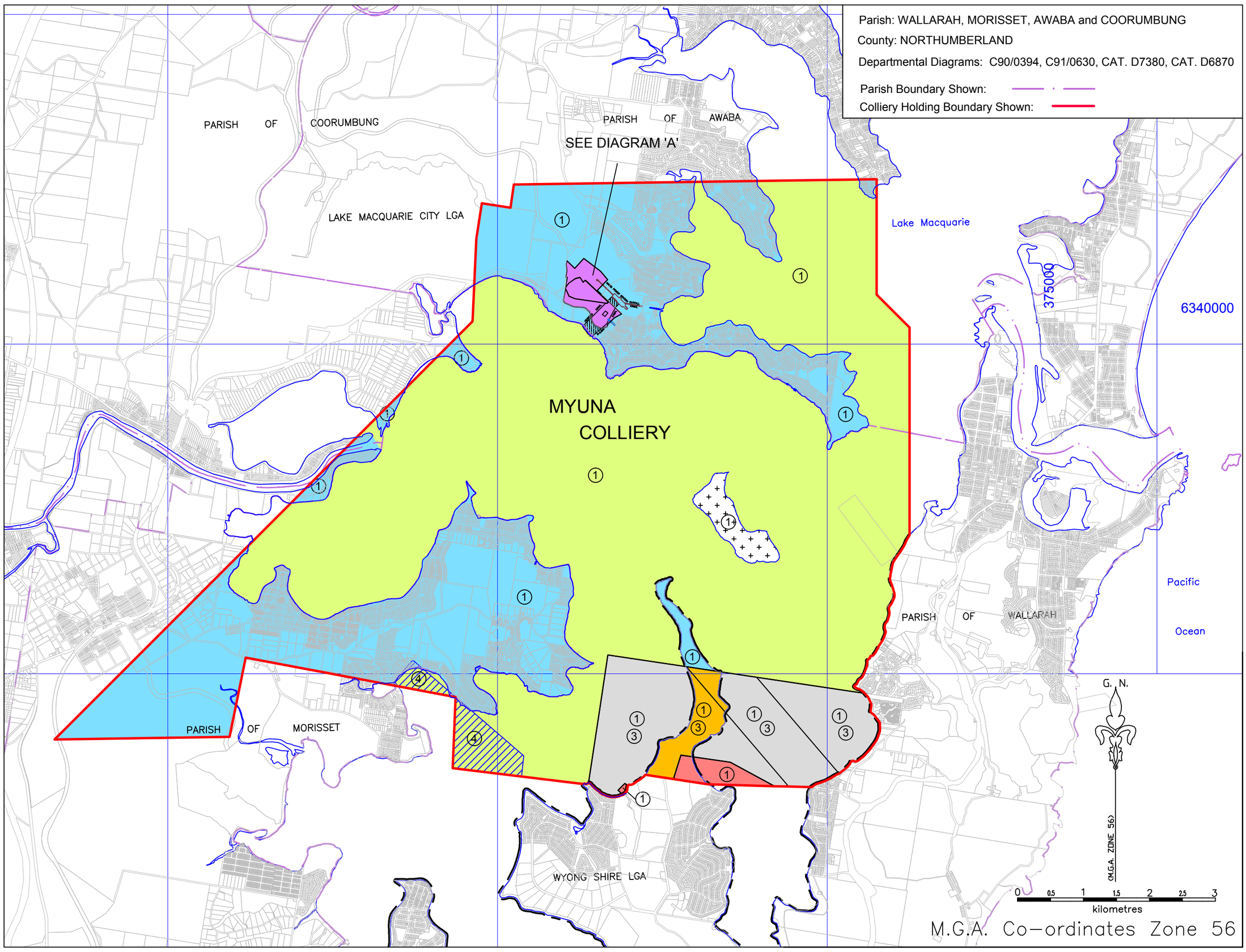
ANNUAL ENVIRONMENTAL REPORT

1 JAN. 2014 - 31 DEC. 2014

FASSIFERN SEAM WORKINGS

- PART 3A PROJECT APPLICATION AREA
- EXISTING MINE WORKINGS
- WORKINGS FOR PERIOD 01 JAN 2014 TO 31 DEC. 2014
- WORKINGS (PROPOSED) FOR PERIOD 01 JAN 2015 TO 31 DEC. 2015

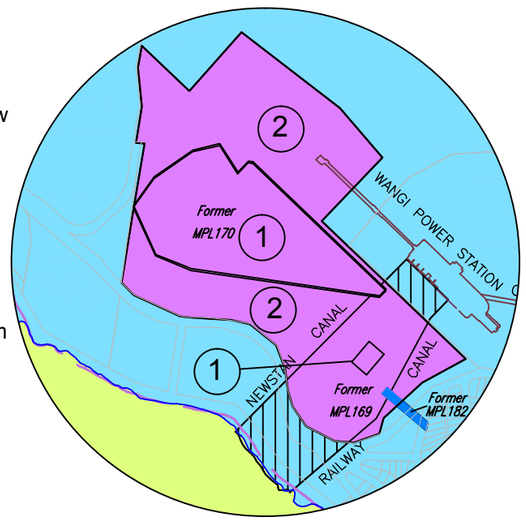
MY11338 11/03/2015



SURFACE / DEPTH RESTRICTION

- Embraces the strata between the depths of 20 metres below the Surface and 5 metres below the floor of the seam known in the Department of Minerals and Energy as the Fassifern Seam.
- Embraces the strata between the depths of 30 metres below the bed of Lake Macquarie and 5 metres below the floor of the Fassifern Seam
- Embraces the strata between the depths of 30 metres below the Surface and 5 metres below the floor of the Fassifern Seam
- Embraces the strata between the depths of 15.24 metres below the bed of Lake Macquarie and 5 metres below the floor of the Fassifern Seam
- Embraces the surface and land below to a depth of 5 metres below the floor of the Fassifern Seam.
- Embraces the strata between the depths of 30 metres below the bed of Lake Macquarie and 5 metres above seam known in the Department as the Fassifern Seam
- Embraces the strata between the depths of 15.24 metres below AHD and 5 metres below the floor of the Fassifern Seam.
- Embraces the strata between the depths of 121.98 metres below AHD and 5 metres below the floor of the Fassifern Seam.
- Embraces the strata between the depths of 20 metres below the surface or 10 metres below AHD (whichever is the greater) and 5 metres below the floor of the seam known in the Department of Minerals and Energy as the Fassifern Seam
- Embraces the strata between the depths of 20 metres below the surface and 30 metres below the floor of the Fassifern Seam
- Embraces the strata between the depths of 20 metres below the Surface and 5 metres above seam known in the Department as the Fassifern Seam

DIAGRAM 'A'



DETAILS OF MINING TITLES HELD UNDER THE MINING ACT

Plan Ref.	Lease Type	Lease No.	Mining Act	Registered Holder	Lease Date	Expiry Date	Mineral Area (ha) Lease	Mineral Area (ha) Holding	Surface Area (ha)	Private Royalty	Comments
1	Mining Lease	1632	1992	Centennial Myuna Pty Limited	13-Apr-13	13-Oct-22	7426.5	7311.5 115	13.54		Lake Macquarie City Council Wyong Shire Council
2	Mining Purposes Lease	334	1973	Centennial Myuna Pty Limited	20-Oct-94	20-Oct-15	0	0	33.3		
3	Mining Lease	1370	1992	Centennial Myuna Pty Limited	26-Sep-95	02-Dec-16	635	545 91			Lake Macquarie City Council Wyong Shire Council

DETAILS OF SUB-LEASES BENEFITING OTHERS

Plan Ref.	Registered Holder	Lease No.	Mining Act	Sub Lessee	Sub-Lease Date	Expiry Date	Mineral Area (ha) Lease	Mineral Area (ha) Sublease	Surface Area (ha)	Private Royalty	Comments
4	Centennial Myuna Pty Limited	1632	1992	Lake Coal Pty Limited & Fassi Coal Pty Ltd	27-Jun-12	01-Jul-18	7426.5	95.44	0		Reference PA27 - Fassifern Seam Only

HOLDING SUMMARY

Description	Area (ha)	Remarks
Total Mineral Area within Colliery Holding	7426.50	
Surface Area (under Mining Lease) within Colliery Holding	46.84	
Surface Area (Freehold) within Colliery Holding	0.00	
Total Surface Area within Colliery Holding	46.84	
Total Area of Colliery Holding	**7426.50**	

I, Paul Craig Duncan of Centennial Coal Company Limited - ACN 003 714 538, a surveyor registered under the Surveying Act 2002, hereby certify that the information shown heron, to the best of my knowledge and belief is correctly represented

Signed ..... Date .....
Surveyors Reference : No 8327

Plot Files PC14.pdf

LOCATION	MYUNA
SEAM	
DRAWN	C.P.T.
CHECKED	P.C.D.
APPROVED	
SCALE	Refer to scalebar

CENTENNIAL COAL COMPANY LIMITED

HOLDING PLAN

MYUNA COLLIERY

Centennial Myuna

DATE 12-02-2014 PC14

LEGEND

- Mining Leases
- Final Rehabilitation
- Cadastral Boundary
- Roads
- Water features
- Lake Macquarie
- Surface contours 10m intervals

Certification

The information shown on this plan was prepared in order to comply with the Mining Operations Plan requirements with reference to the NSW Trade and Investment (MOP) Guidelines ESG3.

The accuracy of any Mine Workings shown are certified at the time of dating.

Signed : ..... Date : .....

Daniel Hart Registered Mining Surveyor persuant to the Surveying and Spatial Information Act 2002, NSW BOSSI Identification No 8421.

DRAWN :	DH
DATE :	16.03.2015
CHECKED :	
DATE :	
APPROVED :	
DATE :	
SCALE	1:2000

Centennial Myuna

MYUNA COLLIERY

TITLE

MINING OPERATIONS PLAN

PLAN 4 : Final Rehabilitation and Post Mining land use

CAD FILE
N:\shared\PLANS\MY\MY11342.dwg
N:\shared\PLOT\MY\MY11342.pdf

PLAN NO. MY11342 | REV. 0 | A1

Legend

- Water monitoring sites
- 10m Contours
- Dirty water pit and pipe network
- Dirty water flow paths
- Transfer pipeline

DRN	DATE
DH	21/01/2014
CKD	
APP	

TITLE

Myuna Colliery
Water Management Plan

Dirty Water Flow Paths
and Pipe Network

Centennial Myuna

CAD FILE	PLAN NO.	REV.		SCALE
N:SHARED/DWGS/MY/MY11236.dwg N:SHARED/PLOT/MY/MY11236.pdf	MY11236		A4	1:4000