MAULES CREEK COAL MINE

2015 ANNUAL REVIEW

WHITEHAVEN COAL

Table 1 Annual Review Title Block

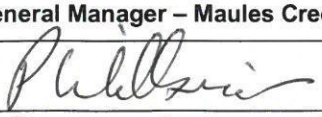
Name of Operation	Maules Creek Coal Mine
Name of Operator	Maules Creek Coal Pty Ltd
Development consent / Project Approval #	Project Approval 10_0138
Name of holder of development consent/project approval	Aston Coal 2 Pty Ltd.
Mining lease #	CL 375, ML1719 and ML1701.
Name of holder of mining lease	Maules Creek Coal JV which comprises: Aston Coal 2 Pty Ltd (75%), ICRA MC Pty Ltd (15%), J Power Australia Pty Ltd (10%)
Water Licence #	Refer to Water Licences in Table 1
Name of holder of water licence	Aston Coal 2 Pty Ltd, ICRA MC Pty Ltd, J Power Australia Pty Ltd
MOP/ RMP start date	March 2014
MOP/RMP end date	March 2016
Annual Review Commencement Date	1 January 2015
Annual Review Completion Date	31 December 2015

I, Peter Wilkinson, certify that this audit report is a true and accurate record of the compliance status of Maules Creek Coal Mine for the period 1st January 2015 to 31 December 2015, and that I am authorised to make this statement on behalf of Maules Creek Coal Pty Ltd.

Note.

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 information for 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.

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).

Name of Authorised Reporting Officer	**Peter Wilkinson**
Title of Authorised Reporting Officer	**General Manager – Maules Creek Coal**
Signature	
Date	31 / 03 / 2016

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MAULES CREEK COAL MINE
2015 ANNUAL REVIEW

1 STATEMENT OF COMPLIANCE

This Annual Review has been prepared to provide a summary of the environmental performance of the Maules Creek Coal Mine (MCCM) over the reporting period. The compliance status of the MCCM against relevant approvals during the reporting period was assessed as at the end of the reporting period (i.e. 31 December 2015) and is summarised in **Table 2**. The compliance status also considers the Independent Environmental Audit and the DPE Archaeological and Biodiversity Audit that were also conducted during the period. Compliance with the Environment Protection Licence (EPL) has been assessed against where required against the Project Approval, specifically Schedule 3, conditions 33 (c), 38(b) 40(b) and Schedule 5, Condition 10 (c) and (e).

Table 2
Statement of Compliance

Where all the conditions of the relevant approvals complied with?	Yes/No
Project Approval PA 10_0138	No
Coal Lease CL 375	No
Mining Operations Plan (MOP)	No
Mining Lease ML 1701	Yes
Mining Lease ML 1719	Yes
Exploration Licence A 346	No
Environment Protection Licence (No. 20221)	Yes
90WA801901 DWE Ref no: 90AL801900	No
90BL255704	Yes
Groundwater Monitoring Bores: 90BL255779, 90BL255780, 90BL255781, 90BL255782, 90BL255783, 90BL255784, 90BL255785, 90BL255786, 90BL255787, 90BL255788, 90BL255789 and 90BL255790.	Yes
WAL12811	Yes
WAL29467	Yes
WAL29588	Yes
WAL 27385	Yes
WAL12479	Yes
WAL27383	Yes
WAL13050	Yes

Any non-compliances during the reporting period are detailed in **Table 3** and ranked according to the compliance status key below. **Section 11** provides further details of any non-compliance and actions undertaken or proposed for the following reporting period to prevent re-occurrence and mitigate any potential adverse effects.

Compliance Status Key

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: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non–compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
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)

Table 3
Non-Compliances

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
PA 10_0138	Schedule 2 #10	Surrender the existing DA85/1819 by the end of 2013 or as otherwise agreed by the DG.	Non-compliant	Surrender of DA 85/1819 has not been finalised. Delays incurred associated with landowner consent.	Section 11
	Schedule 3 #12	All equipment and noise control measures must deliver sound power levels that are equal to or better than the sound power levels identified in the EA.	Non-compliant	Not all equipment has met the SPL of the EA. MCC has undertaken initial SPL tests and an ongoing twelve monthly campaign to retest. "A" weighted levels were generally compliant with the modelled EA SPL, however some equipment has not met "L" weighted test criteria.	Section 6 & Section 11
	Schedule 3 # 16	Noise Management Plan	Non-compliant	All requirements of the NMP were not fully implemented: • Plant Sound Power levels measured above criteria • Copy of annual review was not sent to the council within the required timeframe • Agencies were not notified within 7 days of an attended monitoring exceedence occurring • Was not reviewed and revised (if necessary) within a three month period following annual reviews, incident reports, audits or modification of the approval	Section 6 & Section 11
	Schedule 3 # 25	Blast Management Plan	Non-compliant	All requirements of the Blast MP were not fully implemented: • Measures to improve compliance were not detailed in the 2014 Annual Review • A copy of the annual review was not forwarded to DPI, OEH, Council and CCC within the required timeframe • Was not reviewed and revised (if necessary) within a three month period following annual reviews, incident reports, audits or modification of the approval	Section 6 & Section 11

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
	Schedule 3 #33 EA SOC #8	The MCC air quality management system must include predictive meteorological forecasting, and predictive air dispersion modelling.	Non-compliant	Predictive air dispersion modelling required as part of the air quality management system was not operational during the period, however predictive meteorological forecasting is utilised at the site. The predictive air dispersion modelling will be implemented as part of the BTM AQMS.	Section 6 & Section 11
	Schedule 3 # 34	Air Quality & Greenhouse Gas Management Plan	Non-compliant	All requirements of the AQGHGMP were not fully implemented: • Tenants were not fully advised of all their rights however this is being progressively addressed. • Review and revise (if necessary) within a three month period following annual reviews, incident reports, audits or modification of the approval •	Section 6 & Section 11
	Schedule 3 # 40	Water Management Plan	Non-compliant	All requirements of the WMP were not fully implemented: • Guidelines for groundwater sampling were not referenced in monitoring reports • Review and revise (if necessary) within a three month period following an annual reviews, incident reports, audits or modification of the approval	Section 11
	Schedule 3 Condition 52	Biodiversity Management Plan	Non-compliant	All requirements of the BMP were not fully implemented. DPE issued a PIN following an audit at the commencement of the reporting period. Some items remain outstanding as at the end of the reporting period as it was not seasonally feasible for MCC to implement all the requirements as they relate to clearing activities.	Section 6, Section 10 & Section 11
	Schedule 3 # 58	Heritage Management Plan	Non-compliant	The AACHMP was not reviewed and revised (if necessary) within a three month period following an annual reviews, incident reports, audits or modification of the approval.	Section 6, Section 10 & Section 11

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
	Schedule 3 # 63	MCC must ensure construction and operational employees are predominantly (90%) transported to the site by shuttle bus, consistent with the EA assumptions.	Non-compliant	Not quite 90 % of employees were transported to the site via shuttle bus. DP&E issued a PIN during 2015 relating to this condition.	Section 6 & Section 11
	Schedule 3 # 64	Traffic Management Plan	Non-compliant	All the requirements of the TMP not fully implemented: • Upgrade to the intersection of Rangari Road and the Kamilaroi Highway within the timing requirements of the TMP • not quite 90 % of employees were not transported by shuttle bus	Section 6 & Section 11
	Schedule 3 #66	Liaise with Gunnedah Shire Council regarding the road traffic impacts of increased rail transport following completion of the Gunnedah Traffic Study	Non-compliant	Liaison with GSC regarding rail transport did not occur within 12 months of the completion of the study.	Section 11
	Schedule 3 # 78	Social Impact Management Plan	Non-compliant	Performance against the SIMP was not reported in the 2014 Annual Review	Section 9 & Section 11
	Schedule 4 #2	Any tenants of land listed in Table 1 must be advised of their rights and potential impacts associated with the MCCM.	Non-compliant	No evidence could be obtained that MCC supplied all tenants list in table 1 with this information.	Section 11
	Schedule 5 # 5	Management Plans must be reviewed and revised within a three month period following annual reviews, incident reports, audits or modification of the approval.	Non-compliant	A review and (if necessary) revision of all Management Plans within the required time-frames was not undertaken.	Section 6 & Section 11
	Schedule 5 # 12	Complaints register to be updated on a monthly basis	Non-compliant	Instances of complaints register not updated within a month	Section 11
	SOC # 4	MCC would develop an Environmental Management Strategy and an environmental monitoring program	Non-compliant	Not all requirements in the EMS and EMP were implemented: • Training Matrix was not developed • Existing system and form does not consolidate environmental complaints and incidents	Section 6 & Section 11

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
				• Inspection programs is conducted, but not in the form of an "audit" • Document register does not include external consultants documents/reports • Agricultural Land Monitoring was not conducted during the period • The EMS and EMP were not reviewed and revised (if necessary) within a three month period following annual reviews, incident reports, audits or modification of the approval	
	SOC #22	Oral History reports completed for any landholders who are acquired in accordance with conditions of Project Approval.	Non-compliant	Oral history reports not completed for landholders acquired by the mine.	Section 11
MOP	Section 4.2.1	LDP was include a map and record the location of significant weed infestations.	Non-compliant	Past LDP's did not have a weed map attached.	Section 6, Section 10 & Section 11
	Section 11	2014 AEMR will include measures to be implemented in the following year	Non-compliant	2014 AEMR did not include measures to be implemented in the following year.	Section 6, Section 11 & Section 12
	Section 9.1.5	Internal annual rehabilitation audit.	Non-compliant	An annual rehabilitation audit has not been undertaken, however no mine rehabilitation has been completed this reporting period.	Section 8 & Section 11
CL375	# 1	Notify landowners of the grant/renewal of CL375 within three months.	Non-compliant	Landholders were not notified on renewal of CL within required timeframe.	Section 11
EL A346	# 56	The Local Aboriginal Land Council (LALC) was not informed of the renewal of the exploration license (A346) within 28 days of renewal.	Non-compliant	LALC was not notified on renewal of A346 within required timeframe.	Section 11
90WA801901		The approval holder must inform NSW Office of Water within seven (7) days if the device or devices used for measuring the volume of water taken from	Non-compliant	The water meter had a technical fault and was not reported to DPI - Water within the seven day time-period.	Section 11

Relevant Approval	Cond. #	Condition Description (Summary)	Compliance Status	Comment	Where addressed in Annual Review
		the approved work ceases to record water usage accurately.			
		Calibration certificates for water meters	Non-compliant	Calibration certificates could not be provided	Section 11

2 INTRODUCTION

This is the third Annual Review produced for the Maules Creek Coal Mine (MCCM) and has been prepared in accordance with the NSW Department of Planning and Environment's (DPE) Integrated Mining Policy – Annual Review Guideline, October 2015. This document has been prepared to satisfy the following requirements:

- the Annual Review requirements of the DPE under the Project Approval PA 10_0138 (Condition 4 Schedule 5);
- Environmental Management Report requirements of the Division of Resources & Energy (DRE) under the MCCM Mining Leases; and
- the routine reporting expectations of DPI Water.

Though primarily covering the period from 1 January 2015 to 31 December 2015 (the reporting period), where relevant the Annual Review provides information on historical aspects of the MCCM's, longer term trends in environmental monitoring results and provides relevant information on activities to be undertaken during the ensuing reporting period, or beyond.

2.1 PROJECT BACKGROUND

The Maules Creek Coal Mine (MCCM) is located on the north-west slopes and plains of New South Wales (NSW), approximately 18 kilometres (km) north-east of Boggabri within the Narrabri Local Government Area (LGA). The regional centres of Narrabri and Gunnedah are situated approximately 45 km to the north-west and 55 km to the south from the MCCM respectively. The MCCM's regional locality is illustrated in

Figure 1.

The ownership of the MCCM currently lies with Maules Creek Coal Joint Venture (MCCJV), which is a joint venture between Aston Coal 2 Pty Limited (a company 100% owned by Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ITOCHU Coal Resources Australia Maules Creek Pty Ltd (15%) and J-Power Australia Pty Limited (10%). The MCCM is managed by Maules Creek Coal Pty Ltd (MCC) (a wholly owned subsidiary of Whitehaven) on behalf of the MCCJV.

An Environmental Assessment for the Maules Creek Coal Project (referred to herein as the EA) was prepared by Hansen Bailey (2011) and was assessed under the NSW Environmental Planning and Assessment Act, 1979 (EP&A Act). The NSW Planning Assessment Commission (PAC), as a delegate for the NSW Minister for Planning and Infrastructure, issued the State environmental approval for the MCCM on 23 October 2012 (i.e. Project Approval PA 10_0138). The MCCM Commonwealth environmental approval (i.e. EPBC 2010/5566) was granted on 11 February 2013 by the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

2.2 PROJECT DESCRIPTION

Project Approval (PA 10_0138) was granted on 23 October 2012 for the construction and operation of an open cut coal mine with an approved maximum ROM coal production rate of 13 Mtpa until the end of December 2034. MCCM covers three mining leases CL 375, ML 1701 and ML1719. The Project Boundary (as defined by PA 10_0138) and mining authorities are shown on

Figure 1 and Biodiversity Offset areas on **Figure 2**.A modification to PA 10_0138 was lodged in April 2013 to allow minor adjustments to the alignment of the CHPP infrastructure and the construction and operation of a TransGrid switching yard and transmission line as well as a minor extension of an existing low voltage (11 kilovolt [kV]) transmission line. The modification was granted on 25 July 2013.

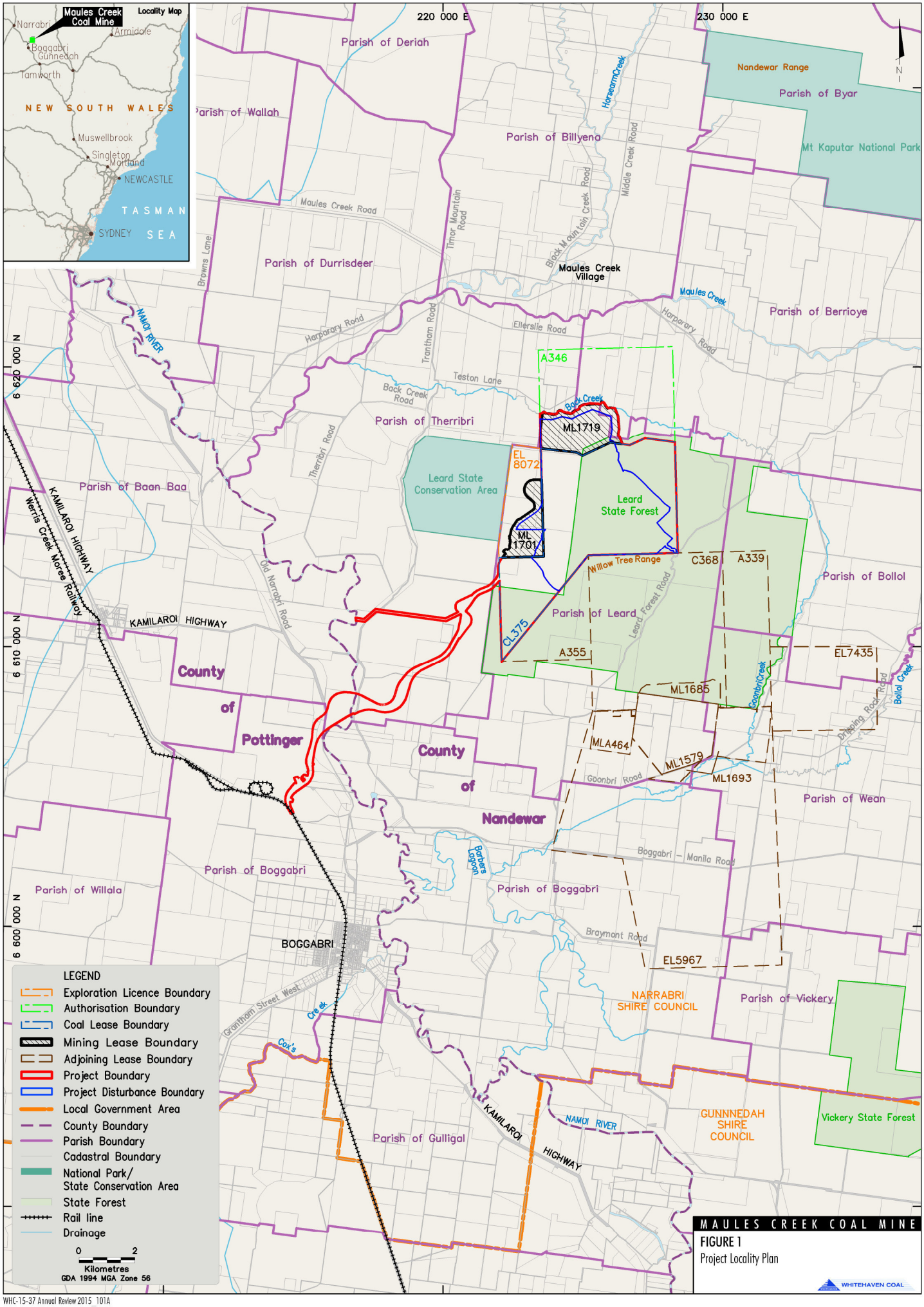
A second modification to PA 10_0138 was lodged in February 2014 to adjust the location of the raw water pipeline and associated pump station. The modification was granted on 10 March 2014.

Construction of the MCCM commenced in December 2013 and was substantially completed in 2015. The operations phase of the MCCM commenced in June 2014, and coal was first transported from the MCCM via the rail spur in December of 2014.

The key operational personnel responsible for environmental management at MCCM during the reporting period included:

Name	Craig Simmons
Title	Area Manager Services, Maules Creek
Address	Therribri Road, Boggabri, NSW 2382
Phone Number	02 6749 7800

Name	Peter Wilkinson
Title	General Manager, Maules Creek
Address	Therribri Road, Boggabri, NSW 2382
Phone Number	02 6749 7800


Maules Creek Coal Mine
Locality Map
Narrabri
Armidale
Boggabri
Gunnedah
Tamworth
NEW SOUTH WALES
Muswellbrook
Singleton
Maitland
NEWCASTLE
TASMAN SEA
SYDNEY
220 000 E
230 000 E
6 620 000 N
6 610 000 N
6 600 000 N
N
Parish of Deriah
Parish of Wallah
Parish of Billyena
Nandewar Range
Parish of Byar
Mt Kaputar National Park
Horsearm Creek
Middle Creek Road
Maules Creek Road
Timor Mountain Road
Black Mountain Creek Road
Browns Lane
Parish of Durrisdeer
Maules Creek Village
Maules Creek
Parish of Berrioye
Harparary Road
Ellerslie Road
Trantham Road
NAMOI RIVER
A346
Back Creek
Teston Lane
Back Creek Road
Parish of Therribri
ML1719
EL 8072
Therribri Road
Leard State Conservation Area
Leard State Forest
Parish of Baan Baa
ML 1701
Willow Tree Range
C368
A339
Parish of Bollol
Werris Creek Moree Railway
KAMILAROI HIGHWAY
Old Narrabri Road
Parish of Leard
Leard Forest Road
CL375
A355
EL7435
ML1685
Goonbri Creek
Bollol Creek
Dripping Rock Road
County of Pottinger
County of Nandewar
MLA464
ML1579
ML1693
Goonbri Road
Parish of Wean
Barbers Lagoon
Boggabri – Manila Road
Parish of Boggabri
Parish of Willala
BOGGABRI
Braymont Road
EL5967
NARRABRI SHIRE COUNCIL
Parish of Vickery
Grantham Street West
Cox's Creek
Parish of Gulligal
NAMOI RIVER
GUNNNEDAH SHIRE COUNCIL
Vickery State Forest
LEGEND
Exploration Licence Boundary
Authorisation Boundary
Coal Lease Boundary
Mining Lease Boundary
Adjoining Lease Boundary
Project Boundary
Project Disturbance Boundary
Local Government Area
County Boundary
Parish Boundary
Cadastral Boundary
National Park/ State Conservation Area
State Forest
Rail line
Drainage
0 2
Kilometres
GDA 1994 MGA Zone 56
MAULES CREEK COAL MINE
FIGURE 1
Project Locality Plan
WHITEHAVEN COAL

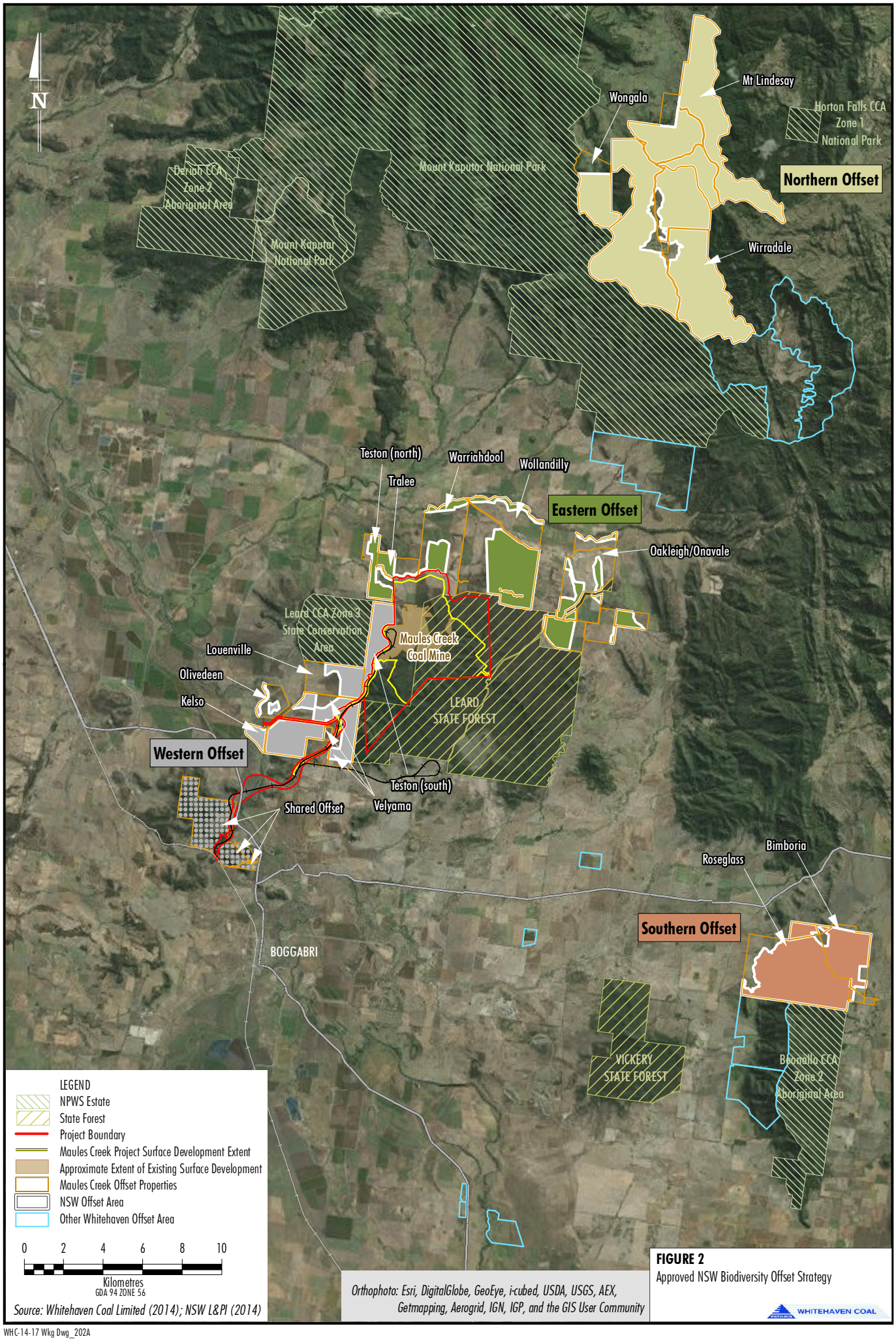


FIGURE 2
Approved NSW Biodiversity Offset Strategy

WHITEHAVEN COAL

WHC-14-17 Wkg Dwg_202A

3 APPROVALS

Table 4 provides a summary of the key licences, leases and approvals that have been obtained for the MCCM to enable the construction and operation of the mine.

Table 4
Licences, Leases and Approvals

Approval	Reference	Detail	Validity Dates
Project Approval	PA 10_0138	Pursuant to the EA, the PAC approval of the MCCM referred to in Schedule 1 subject to the conditions in Schedules 2 to 5.	23 October 2012 to December 2034
Project Approval Modification	PA 10_0138 (MOD1)	Pursuant to the Maules Creek Project Approval Modification Environmental Assessment, the Modification was granted to allow modifications to infrastructure requirements.	Granted on 25 July 2013
Project Approval Modification	PA 10_0138 (MOD2)	Pursuant to the Maules Creek Project Approval Modification Environmental Assessment, the Modification was granted to allow the design of key water related infrastructure to be optimised.	Granted on 10 March 2014
Coal Lease	CL 375	Covers an area of approximately 4,200 hectares (ha). The southern part of the lease covers rights to mine from the surface to 900m The northern part of the lease covers rights to mine from 20 metre (m) depths to 900m	4 June 1991 to 4 June 2033
Authorisation	A 346	Covers the area of the northern part of CL 375 from the surface to 20 m depth.	Expires 27 February 2016
Mining Lease	ML 1719	Covers the area to the north of the surface rights of CL 375, to accommodate part of the Northern Overburden Emplacement Area (OEA) for the MCCM.	Granted 11 November 2015 to 11 November 2036
Mining Lease	ML 1701	Covers the area to the west of CL 375 within the Project Boundary that will facilitate the extraction of some coal and accommodate some mine related infrastructure.	Granted 9 October 2014 to 9 October 2035
Exploration Lease	EL 8072	Covers the area to the west of CL 375.	Expires 12 March 2018
Environment Protection Licence	EPL 20221	Applies to activities associated with the MCCM.	Commenced 2 May 2013
Forest Corporation NSW Compensation	N/A	Agreement applies to part of Leard State Forest No. 420 that occurs within CL 375 and any mining lease pursuant to MLA 404 being ML1719.	From March 2014

Approval	Reference	Detail	Validity Dates
Emergency Tailings Emplacement	N/A	Notification of High Risk Activity – Emergency Tailings Emplacement	Notification provided April 2015.
Surface Water Licence	90SL101060	Water supply for mining and irrigation one Overshot dam and a 150 millimetre (mm) Centrifugal Pump.	Renewed November 2015
Water Supply Works Approval	90WA801901 DWE Ref no: 90AL801900	Allows construction of a 610 mm Axial Flow Pump located on the Namoi River.	1 July 1 2004 to 30 June 2017
Bore Licence	90WA809078	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source.	Commencement 1 November 2006
Bore Licence	90WA809079	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source.	Commencement 1 November 2006
Bore Licence	90WA809300	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Gins Leap to Narrabri) Groundwater Source.	Commencement 1 November 2006
Bore Licence	90WA809127	Bore constructed in the Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gins Leap) Groundwater Source.	Commencement 1 November 2006
Bore Water Licence	90BL255704	6 ML bore licence for industrial and mining purposes.	Granted 7 June 2010 to 6 June 2015
Bore Licence	90WA820120	Previously 90BL001144. Gunnedah – Oxley Basin Murray Darling Basin Groundwater Source.	Granted 28 February 1939 for perpetuity. Converted 16 January 2012.
Bore Licences	90BL255779 90BL255780 90BL255781 90BL255782 90BL255783 90BL255784 90BL255785 90BL255786 90BL255787 90BL255788 90BL255789 90BL255790	For the purpose of monitoring bores.	Granted 25 August 2010 for perpetuity.

Approval	Reference	Detail	Validity Dates
Water Access Licence	WAL12811	135 Units with works approval 90CA807230. Upper Namoi Zone 5 Namoi Valley (Gins Leap to Narrabri) Groundwater Source.	Transferred to Aston 16 November 2010 Tenure continuing.
Water Access Licence	WAL29467	6 ML water licence from porous rock water source for construction purposes.	Tenure continuing
Water Access Licence	WAL29588	300 ML water licence from porous rock water source under works approval 90CA826925.	Granted 21 June 2012 for perpetuity.
Water Access Licence	WAL 27385	38 ML water licence from Namoi Groundwater Zone 4.	Granted 24 April 2012 for perpetuity.
Water Access Licence	WAL12479	78 ML water licence from Namoi Groundwater Zone 11 under works approval 90CA807652.	Granted 2 November 2011 for perpetuity
Water Access Licence	WAL27383	0 ML water licence from Namoi Groundwater Zone 11.	Spare WAL. Granted 24 October 2011 for perpetuity.
Water Access Licence	WAL13050	3000 ML water licence from Lower Namoi Regulated River Water under works approval 90WA801901.	Granted 23 August 2011 for perpetuity.
Mining Operations Plan	MOP 2014-2016 Amendment A	Details mining and rehabilitation activities during the applicable period at MCCM.	1 March 2014 to 1 March 2016

4 OPERATIONS SUMMARY

4.1 EXPLORATION ACTIVITIES

Exploration drilling was undertaken during the reporting period in accordance with the approved Mining Operations Plan (MOP) to further assist production planning and assess coal reserves within CL 375. A program of twenty exploration holes was commenced in November 2015 including:

- six core holes for additional coal quality, geotechnical and structurally information; and
- fourteen open chip holes for additional structural information.

All exploration drilling was completed within previously cleared areas to minimise disturbance.

4.2 CONSTRUCTION

Construction of MCCM infrastructure commenced in December 2013, with operations commencing in August 2014. At the end of June 2014, rail and access road work had been completed and grid based power was connected to the MCCM.

During the initial construction phase of the MCCM, some facilities were installed in a temporary location to enable the commencement and initial ramp up of the MCCM. Progressive relocation of these temporary facilities to the MIA occurred during the second half of 2015.

4.3 MINING OPERATIONS

MCCM is an open cut coal mine with an approved maximum ROM coal production rate of 13 Mtpa to December 2034. The 2015 vegetation clearing activities were completed during the annual clearing window (15th February to the 30th April each year). Pre-mining clearance activities are undertaken in accordance with internal and external approvals including MCC's Land Disturbance Protocol process, within Project Approval and Project Disturbance Boundaries detailed in the Mining Operations Plan (MOP) and Project Approval and in line with the MCC Biodiversity Management Plan. Pre-clearance due diligence activities and various other measures are employed to minimise potential impacts on fauna and heritage during clearing in accordance with the current Biodiversity Management Plan (BMP) and the Aboriginal Archaeology and Cultural Heritage Management Plan (AACHMP).

Topsoil was then stripped from the mining area and stockpiled for later use on rehabilitation areas. Overburden was blasted prior to being removed by loader and / or excavator and trucks before proceeding with coal extraction. The mining fleet is then used to uncover each coal seam to be extracted. **Table 5** presents the production summary for the previous and current reporting periods and the anticipated production schedule for the next reporting period.

Table 5
Production Summary

Material	Approved limit	Previous reporting period (actual)	This reporting period (actual)	Next Reporting period (forecast)
Waste Rock / Overburden	40,195,000 m^3 (MOP Year 2, 2015, Table 7)	4,986,697	33,999,071	55,000,000
ROM Coal	13 Million Tonnes (PA 10_0138 Sch. 2 Cond.6) > 5 Million Tonnes handled (EPL 20221)	0.09	5.82	9.0

Material	Approved limit	Previous reporting period (actual)	This reporting period (actual)	Next Reporting period (forecast)
Reject Material*	NA	0	0.4	0.7
Saleable Product	12.4 Million Tonnes (PA 10_0138 Sch.2 Cond.9) > 5 Million Tonnes produced (EPL 20221)	0.05	5.34	8.2

** Coarse and Fine Reject Materials have been combined for reporting purposes as the rejects streams are blended at the CHPP to form a combined reject and tailings material prior to disposal.*

The equipment list at the end of 2015 is contained in **Table 6**.

Table 6
Total Plant Equipment at the end of 2015

Equipment	2015
800 t Excavator	3
350 t Excavator	3
350 t Truck	19
180 t Truck	13
Bulldozer	13
Front End Loader	3
Grader	5
Water Cart	7
Drill Rig	6

4.4 COAL HANDLING AND PROCESSING

Construction and commissioning of the CHPP was completed in the first half of 2015. Product coal generated by the MCCM includes bypass coal (i.e. ROM coal that is crushed and screened but not washed in the CHPP) and washed coal that is processed in the CHPP. The Product coal is stockpiled and then reclaimed and fed via conveyors to the Train Loading Facility. Once loaded, trains travel from the MCCM via the Maules Creek Rail Spur, Shared Rail Spur and the Werris Creek to Mungindi Railway Line to the Port of Newcastle for export.

4.5 OTHER OPERATIONS

4.5.1 Hours of Operation

Mining operations are conducted up to 24 hours per day, seven days per week.

4.5.2 Transport Rates

Coal is only transported from the MCCM via the Maules Creek rail spur and the shared portion of the Boggabri Coal rail spur.

The number of laden trains and amount of coal transported from MCCM (**Table 7**) has been recorded in accordance with:

- Schedule 2 Condition 8 and 9 of PA 10_0138, 'Coal Transport'; and
- Schedule 3 Condition 65 of PA 10_0138, 'Monitoring of Coal Transport'.

Table 7
Coal Transport

Parameter	Criteria	Total
Maximum number of laden trains from the site in any one day	10	6
Maximum number of laden trains from the site in a day when averaged over a calendar year	7	1.9
Maximum Tonnes of product coal transported from the site (Mt)	12.4	5.1

Appendix A details the coal transport records in accordance with the reporting requirements under Condition 65 (a) and (b) of PA 10_0138.

4.6 NEXT REPORTING PERIOD

4.6.1 Exploration

Exploration drilling will continue to be undertaken at the MCCM to further assess the coal reserves within the tenements. The focus of the ongoing exploration drilling is likely to involve the following:

- investigation of the JORC resource status within A346, in accordance with the DRE requirements for exploration leaseholders;
- further exploration within CL 375; and
- further delineation of outlying coal prospective areas.

Further details of the proposed drilling program are provided in the approved MOP.

4.6.2 Remaining Construction Activities

The remaining construction activities that are scheduled to progressively be undertaken will occur in the MIA and include conceptual plans for installation of the following:

- heavy and light vehicle workshops, including hot work and hardstand areas;
- potable water storage;
- underground electrical installation;
- tyre change area and associated storage areas;
- stores building and associated laydown areas; and
- vehicle wash-down facilities.

4.6.3 Mine Operations

The mine production rates are planned to ramp up to approximately 9 Mtpa of ROM coal and approximately 55 million bank cubic metres (Mbcm) of overburden during 2016.

Vegetation clearing activities in mining areas over the next reporting period will be conducted in accordance with relevant Environmental Management Plans including the approved Biodiversity

Management Plan and MOP. The clearing program will be undertaken during the annual ten week clearing campaign from the 15 February to the 30 April, except under exceptional circumstances and with the approval of the Secretary of the DP&E.

4.6.4 Overburden Emplacements

The OEA will continue to develop generally in accordance with Project Approval PA 10_0138 and the Mining Operations Plan 2016-18 which is available on the Whitehaven Coal website.

4.6.5 Mining Fleet Upgrades

Additional mining fleet will be subject to mine planning requirements during 2016.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The 2014 Annual Review and subsequent regulatory site inspection identified the following actions. These are addressed within this document and also summarised in **Table 8**.

Table 8
Actions from the Previous Annual Review (2014)

Action required from Previous Annual Review	Requested By	Action Taken by the Operator	Where discussed in Annual Review
1. Section 2 should include a comparison between significant onsite activities and activities documented in the MOP.	DP&E	Included in 2015 Annual Review	Throughout this Annual Review
2. Section 3 should include a statement of compliance for each environmental issue.	DP&E	Included in 2015 Annual Review	Section 6
3. Section 3.5, Table 3.5.2 requires confirmation of which wells have been replaced	DP&E	Included in 2015 Annual Review	Section 7.3
4. Section 3.1.4 requires details of transportation of product coal, number of laden trains dispatched from site / day averaged over a calendar year and per day to be provided.	DP&E	Included in 2015 Annual Review	Section 4.5.2 Appendix B
5. Please document key activities planned for the next reporting period	DP&E	Included in 2015 Annual Review	Section 4.6 & 12
6. In accordance with Schedule 5, Condition 4(b), please ensure next year's Annual Review includes thorough comparison of the results against relevant statutory requests, monitoring results of the previous year, Environmental Assessment predictions and trends for the following environmental issues: • Surface Water • Groundwater • Offset Monitoring • Noise • Meteorological Monitoring • Heritage • Traffic	DP&E	Included in 2015 Annual Review	Section 7.2 Section 7.3 Section 6.4 Section 6.1 Section 6.8 Section 6.9
1. Topsoil Balance: Compare topsoil stockpiled with topsoil volume required to complete all rehabilitation. Report in future AEMRs	DRE	Included in 2015 Annual Review	Section 8.1.9
2. Clearance of Vegetation: Provide DRE with an area estimate (hectares) and figure showing vegetation cleared at 28 February 2015. Also provide an estimate for area (and figure) of vegetation cleared at 30 April 2015	DRE	Completed and provided to DRE in 2015.	N/A

6 ENVIRONMENTAL PERFORMANCE

The following sub-sections report on the environmental performance achieved during the 2015 reporting period and provides a summary of the environmental monitoring data compared to data predictions, trends and management measures.

6.1 METEOROLOGICAL MONITORING

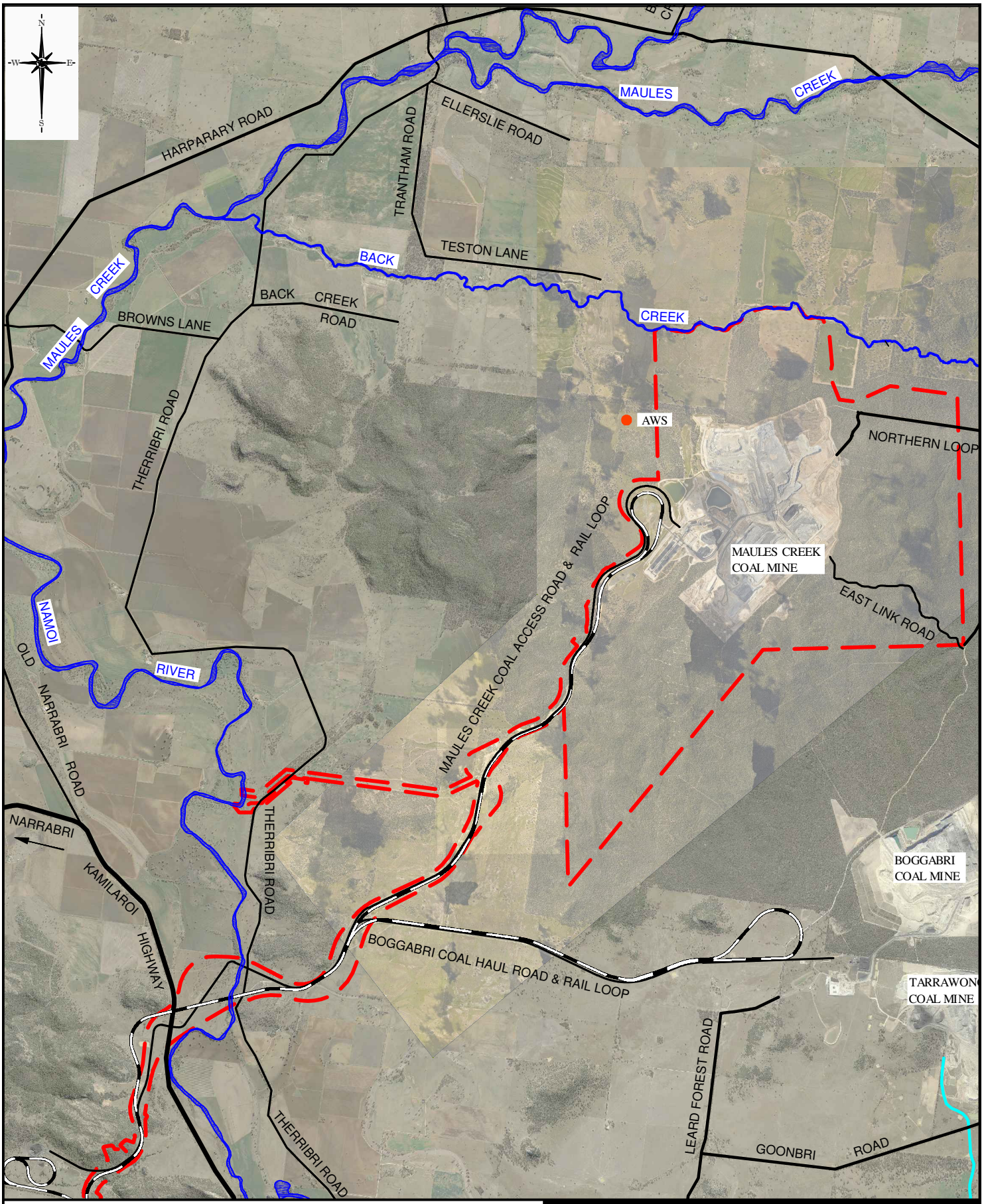
Meteorological monitoring is conducted onsite in accordance with Schedule 3 Condition 35 of the PA 10_0138 at the MCC Automatic Weather Station (AWS). Additional weather data is available from other monitoring locations for reference purposes. The location of the MCCM AWS is illustrated on **Figure 3** below summarises the monthly meteorological conditions at the MCC AWS for 2015. The total annual rainfall for the year was 576 millimetres (mm). The annual rainfall total is slightly less than the average rainfall recorded in the EA. The maximum rainfall was recorded during April (112.6 mm), which is significantly higher than the historical average. The months of February, September and October were relatively dry in comparison to monthly averages recorded in the EA. However the recordings are consistent with the long term seasonal trends of summer dominant rainfall reducing significantly throughout winter.

In the 2015 reporting period there was an average temperature of 18.3°C, a minimum temperature of -3.3°C recorded in August and a maximum temperature of 40.8°C in November. The temperature records and wind patterns are consistent with the long term climatic data recorded at nearby BOM sites and the predictions from the EA.

Measured winds were predominantly from the SE / SSE throughout most of the year apart from July where SE and WNW winds are of equal distribution and August where winds are primarily from the WNW quadrant. Comparison of 2015 wind rosettes with data from the 2014 reporting period indicate similar patterns which are broadly comparable to patterns observed from previous years.

Table 9
Summary of Weather recorded at the MCC AWS

Month	Measured Rain (mm)	Cumulative Rainfall (mm)	Rainfall Days	2m Temperature (°C)			10m Temperature (°C)			Sigma Theta			10 m Wind	
				Min	Mean	Max.	Min	Mean	Max	Min	Mean	Max	Av. Speed (m/s)	Predominant Direction
January	91.6	91.6	13	11.1	25.26	37.6	12.0	25.6	37.0	1.5	23.2	124.7	2.31	SE
February	11.6	103.2	3	11.2	25.55	36.6	12.0	25.7	36.0	1.6	20.4	116.7	2.65	SSE
March	44.6	147.8	9	6.12	23.21	38.86	7.0	23.6	38.2	0.0	26.1	124.3	2.12	SE
April	112.6	260.4	12	2.11	17.04	29.57	3.3	17.5	29.2	0.0	23.2	128.3	1.81	SE
May	24.4	302.2	9	-2.45	13.6	26	-0.5	14.3	26.0	0.0	24.1	121.9	1.65	SE
June	40.8	343	9	-2.31	10.67	21.89	-1.3	11.6	21.9	-1.0	24.8	120.9	1.38	SE
July	18	361	10	-3.34	8.93	19.77	-2.2	9.7	19.6	0.0	23.7	124.4	1.81	SE, WNW
August	52	413	5	-2.95	10.36	25.47	-1.7	11.2	25.1	0.0	27.9	123.9	1.62	WNW
September	16.8	429.8	2	0.66	13.95	27.57	2.3	14.7	27.0	0.0	25.9	122.9	1.93	SE
October	21.8	451.6	4	7.84	21.84	36.16	9.5	22.4	34.6	0.0	25.3	137.5	2.26	SE
November	79.2	530.8	6	10.17	24.02	40.82	11.8	24.3	40.1	0.0	23.7	131.4	2.47	SE
December	45.4	576.2	6	11.77	25.24	36.99	13.7	25.3	36.4	0.0	22.1	118.7	2.81	SE



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Meteorological Monitoring Locations (AWS)

MAULES CREEK COAL PROJECT

MCC AWS Monitoring Location

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 3

0 2000 4000 Meters

SCALE. 1:80000 at A4

6.2 AIR QUALITY

6.2.1 Environmental Management

Potential impacts to air quality at MCCM include airborne dust and odour. These impacts are managed in accordance with the:

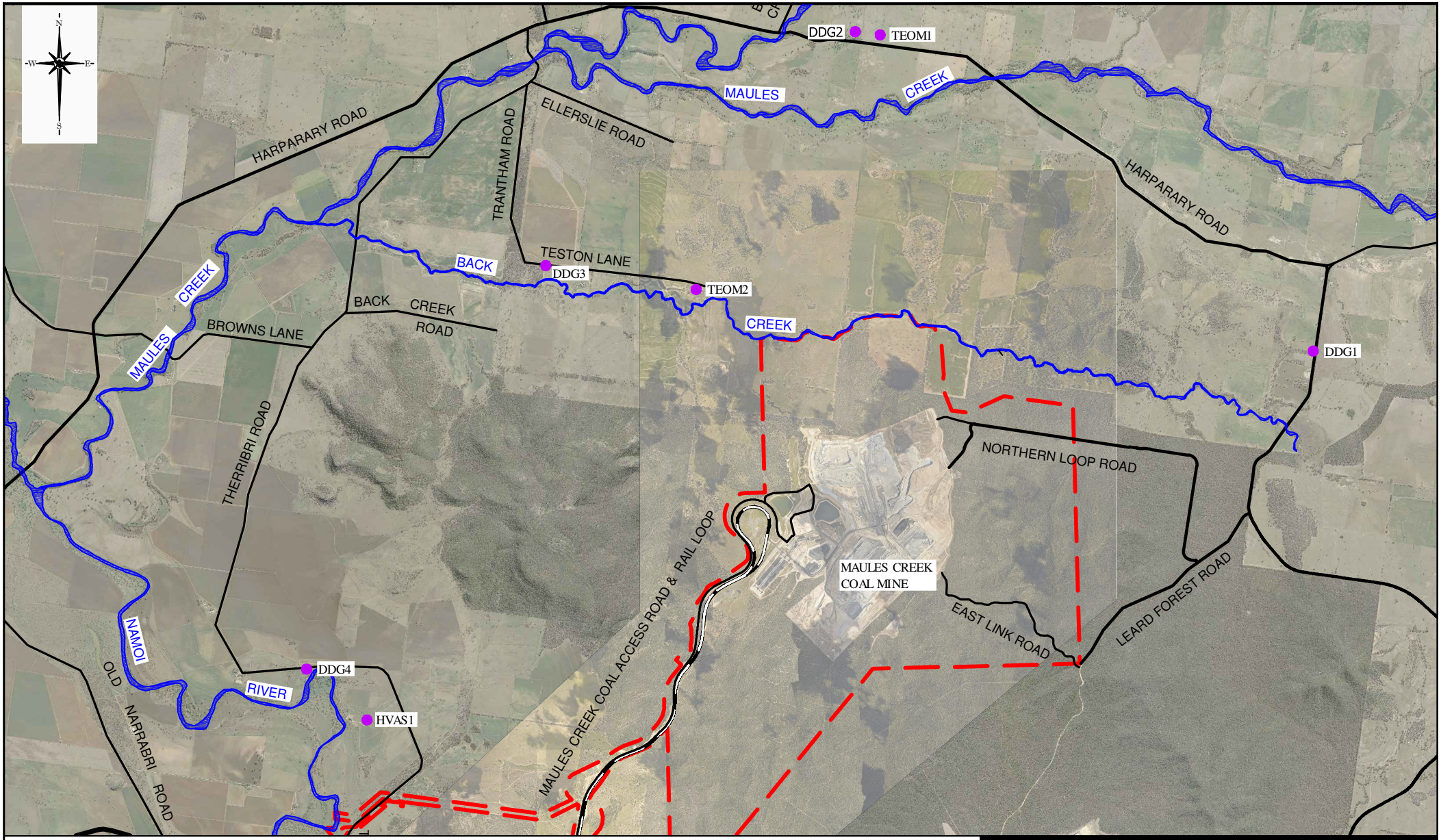
- Air quality criteria prescribed under schedule 3 condition 29 of the PA 10_0138;
- EPL 20221 Conditions O3, M2, M3, E1 and E2; and
- the MCC Air Quality and Greenhouse Gas Management Plan (AQGGMP) prepared to satisfy the requirements of the EPL and PA 10_0138.

During the reporting period various controls were implemented to manage dust including:

- use of water carts across the site with water fill points appropriately positioned. Additional contractors water carts are also utilised during clearing, mulching and topsoil stripping activities;
- utilisation of a dust suppressant additive that is used on targeted haul roads;
- modification of work practices where required including changing dumping strategies to lower levels and minimising tipping into strong headwinds;
- temporary cessation of operational equipment;
- predictive controls have been identified in the Air Quality Trigger Action Response Plan (TARP) and the daily risk response report presented at morning planning meetings to key operational personnel;
- mulch cover used on cleared areas ahead of mining activities were possible;
- maintaining a real time SMS alarming system to key operational personnel;
- site vehicles restricted to designated routes, with speed limits enforced;
- irrigation in advance of operational digging areas;
- use of canons/water cart sprays at the loading operations
- blasting activities restricted to suitable weather conditions and include a 24 hour notification to key stakeholders and residents; and
- water suppression on conveyors and stockpiles at the CHPP.

The MCC Air Quality Monitoring network is illustrated on **Figure 4** and includes:

- continuous monitoring of PM_{10} levels at the MCC TEOM (TEOM 1). It is noted that monitoring results from location MCC TEOM 2 shown on **Figure 4** which is located on mine owned land are used by MCC for internal management purposes only. As noted in section 6.2.3 below, finalisation of the Leard Forest Mining Precinct Air Quality Management Strategy (AQMS) is anticipated to occur in the 2016 reporting period. ;
- PM_{10} levels are measured at the High Volume Air Sampler (HVAS) on a twenty-four hour basis and collected every six days. Total Suspended Particulate Matter (TSP) is inferred from the measured PM_{10} data; and
- a network of four dust deposition gauges (DDGs), measuring deposited dust and particulates collected monthly.



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Dust Monitoring Locations

0 2000 4000 Meters

SCALE. 1:80000 at A4

MAULES CREEK COAL PROJECT

MCC Air Quality Monitoring Locations

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 4

6.2.2 Environmental Performance

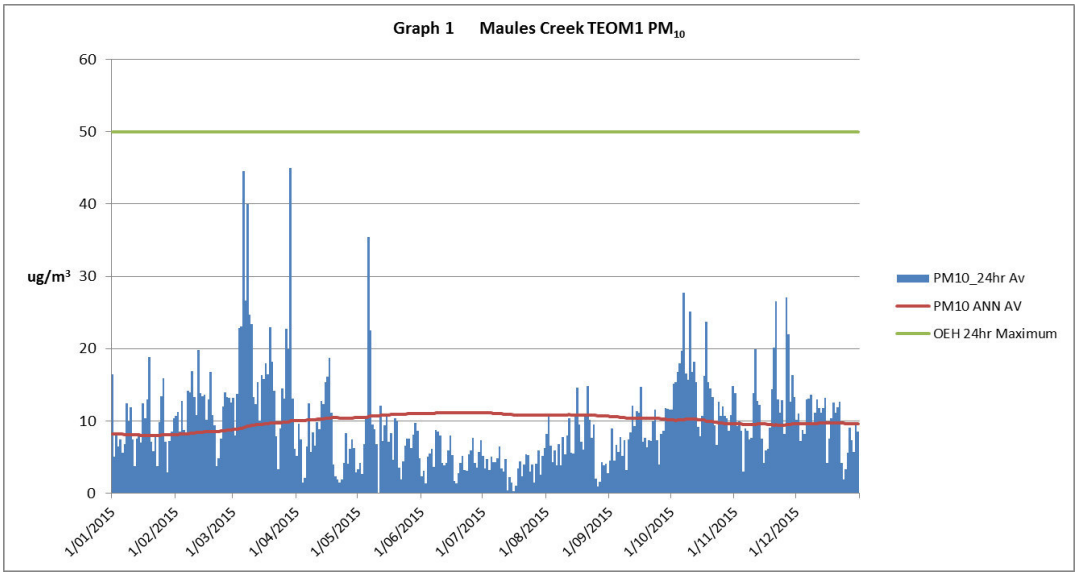
A summary of the air quality monitoring results at MCCM for the 2015 reporting period is provided below.

Table 10
Deposited Dust Monitoring Results

Month	MC1	MC2	MC3	MC4
Jan-15	3.4	2.4	3.2	1.8
Feb-15	1.3	0.7	0.9	1.5
Mar-15	1.9	*	3.2	1.7
Apr-15	1.8	14.9	2.6	2.0
May-15	0.8	2.1	1.3	0.7
Jun-15	0.7	0.9	0.5	1.2
Jul-15	*	1.0	0.8	0.8
Aug-15	1.3	0.5	0.5	0.4
Sep-15	2.4	0.6	0.5	0.7
Oct-15	1.6	1.7	0.3	0.4
Nov-15	3.7	3.7	1.4	3.1
Dec-15	2.6	2.0	1.4	2.0
Annual Average	**2.10**	**2.77**	**1.38**	**1.36**

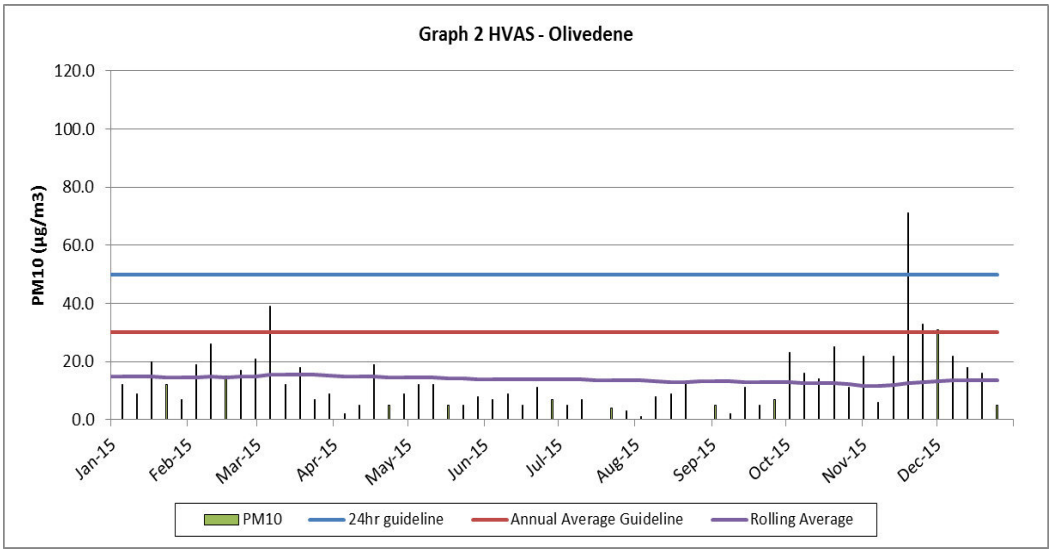
** Results have been removed as they were contaminated by bird droppings or decomposed insects and vegetable matter.*

Monitoring conducted at the MCC TEOM 1 indicated the PM_{10} annual average remained well below the applicable criteria of 30 µg/m3. The PM_{10} 24 hour average, remained below the applicable criteria of 50 µg/m3. The PM_{10} monitoring results from TEOM 1 are illustrated in the **Graph 1** below.



Monitoring conducted at the MCC HVAS indicated the PM_{10} rolling average remained well below the applicable criteria of 30 µg/m^3. On the 19 November 2015, the HVAS recorded a PM_{10} result of 71µg/m^3 which is above the 24 hour criteria of 50 µg/m^3. However the annual average remained within the relevant criteria. An investigation into MCC's records revealed numerous dust plumes observed around the Namoi/ MCCM valley associated with agricultural activities in particular ploughing of paddocks, at the time of sampling. Furthermore strong gusty westerly winds overnight indicate the result was unlikely to be a result of MCC associated activities. It was concluded that the elevated result was caused by a

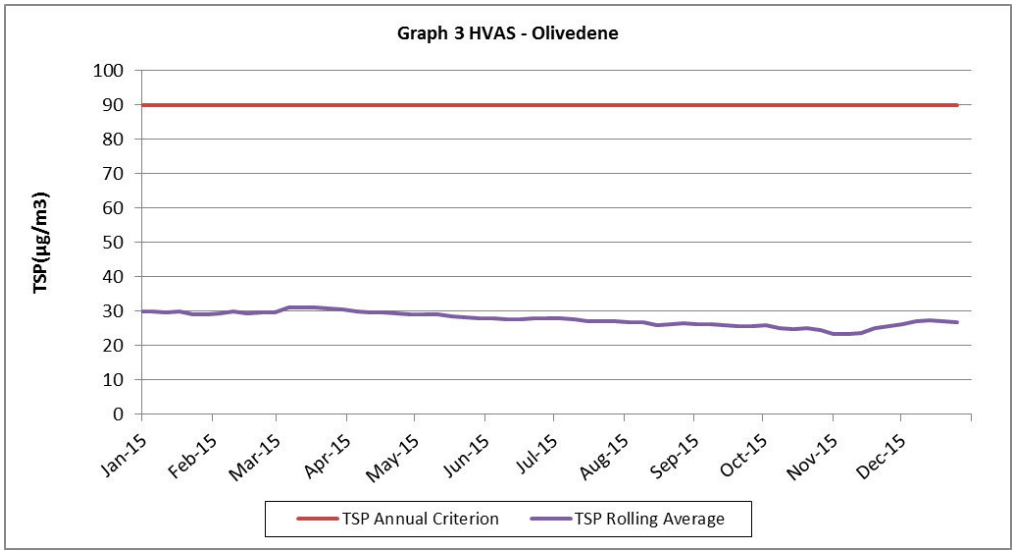
regional event and was not be attributed to the MCCM operations. The HVAS PM_{10} monitoring results are illustrated in the **Graph 2** below.



The air quality monitoring results are consistent with previous reporting periods and are in concurrence with the EA predictions.

MCC submitted a report to the EPA by the 22 November 2015 in accordance with EPL 20221 Special Condition E2 on Disturbing and Handling Overburden under Adverse Weather Conditions. The investigation determined that based on the recorded PM_{10} concentrations during adverse weather conditions, the actions taken by MCCM were considered appropriate. It was concluded that during adverse weather conditions there may be some short term peaks in PM_{10} concentration however the 24-hour average remains well below the NSW Department Environment and Conservation (DEC) criterion. Additionally the peaks are generally not related to MCCM operations and are instead influenced by external factors.

Total Suspended TSP is inferred from the measured PM_{10} data. Monitoring conducted at the MCC HVAS1 indicated the TSP rolling annual average remained well below the applicable criteria provided in Schedule 3 Condition 29 of PA10_0138 of 90 µg/m^3. The TSP monitoring results are illustrated in **Graph 3** below.



6.2.3 Proposed Improvement Measures

Finalisation of the Leard Forest Mining Precinct Air Quality Management Strategy (AQMS) is anticipated to occur in the 2016 reporting period. Following approval by relevant regulators, the predictive component of the air quality modelling system will be implemented to support operational planning to manage dust generation. The system will also include additional real time sampling units and a meteorological component which will be used to inform planning for daily blasts under acceptable meteorological conditions.

MCCM is conducting an assessment of wheel generated dust in early 2016 to measure uncontrolled and controlled haul road emissions in accordance with EPL Special Condition E1. A report will be submitted to the EPA by 31 March 2016.

6.3 GREENHOUSE GAS

6.3.1 Environmental Management

Greenhouse Gas (GHG) emissions at MCCM are managed in accordance with Schedule 3 Condition 27 of PA 10_0138 and the AQGGMP. The main sources of GHG emissions considered in the AQGHGMP are:

- fuel consumption (diesel) during mining operations – Scope 1;
- release of fugitive methane (CH4) from the fracturing of coal seams – Scope 1; and
- indirect emissions resulting from the MCCM's consumption and use of purchased electricity - Scope 2.

Electricity

A number of controls were applied to reduce the electricity consumption from the MCCM during the 2015 reporting period including:

- the energy efficiency of new electrical equipment has been considered during procurement;
- use of variable speed drives on pumps and conveyors in the CHPP;
- avoiding idle running of conveyors in the CHPP; and
- turning off unnecessary lighting around the mine site consistent with safety requirements.

Diesel Consumption

A number of controls were applied to reduce diesel consumption at the MCCM during the 2015 reporting period including:

- the fuel efficiency of all mobile and fixed equipment has been considered during procurement;
- ensuring dump trucks are fully loaded prior to hauling to maximise productivity and efficiency i.e. fuel used per unit of material moved;
- maximise efficiency from the mining fleet through regular maintenance scheduling and, where possible, minimising the gradient and length and height of loaded haul runs for the operating dump trucks; and
- computer based maintenance and monitoring system for all heavy vehicle use and fuel burn. System also determines individual equipment utilisation which assists in minimising fleet size and associated wastage.

6.3.2 Environmental Performance

GHG emissions associated with the MCCM are reported through participation in the National Pollutant Inventory (NPI) and as part of the Whitehaven Group in the National Greenhouse and Energy Report Scheme (NGERS). NPI data is publically available on the Commonwealth Department of the Environment website (http://www.npi.gov.au/npidata/action/load/browse-search). The total GHG Emissions attributed to the MCCM reported for the NGERS 2015 Financial Year (FY) reporting period was 177,822 tCO_2-e. The following sections detail the three key GHG contributors calculated for the 2015 NGER reporting period.

Diesel Usage

Approximately 18,300,000L of Diesel (Stationary and Transport) was consumed equating to 56,467 tCO_2-e GHG Emissions. This is less than the scope 1 emissions of 136,835 tCO_2-e GHG Emissions predicted in the EA.

Fugitive Emissions

There was an estimated total of 117,618 t CO_2-e fugitive emissions from MCCM in the 2015 FY. This is higher than the EA estimate of 3,688 t CO_2-e. This discrepancy is as a result of the emissions calculation methods used. Fugitive gas emissions for MCCM in the 2015 FY were estimated using Method 1 whereby the approximate emissions are determined by the annual ROM coal, multiplied by the default emissions factor for NSW. The EA used a site specific emission factor derived from measurements of gas content for boreholes samples taken for each coal seam.

Electricity Consumption

Approximately 43,506kWh power equating to 37 tCO_2-e was consumed by MCCM. This is less than the predicted consumption from the EA of scope 2 emissions of 27,475 tCO_2-e, however the CHPP was only commissioned at the end of the NGER's reporting period and a number of operational areas rely on diesel powered generators rather than purchased electricity.

6.3.3 Proposed Improvement Measures

Management measures described above will continue to be implemented during the next reporting period however emissions will increase as production rates increase. Any additional mining fleet equipment will also include preventative and regular maintenance.

6.4 NOISE

6.4.1 Environmental Management

Potential noise impacts associated with the MCCM are managed in accordance with the:

- Noise Criteria and Operating Conditions prescribed under schedule 3 conditions 7 and 15 of PA 10_0138 respectively;
- EPL 20221 Conditions L3 and M7; and
- the MCC Noise Management Plan (NMP) approved by DP&E prepared to satisfy the requirements of the EPL and PA 10_0138.

During the reporting period various controls were implemented to manage noise including:

- adoption of a TARP trigger level and dissemination of trigger alerts to MCCM personnel via SMS;

- a manned dispatch hut that overlooks the operations has the ability to monitor real time noise data and advise of any modification of work practices where required including changing dumping strategies, reducing number of machines operating or ceasing operations entirely as required;
- roaming inspections by personnel during evening and night time periods at offsite locations to identify any mine related noise;
- daily risk report and forecast weather patterns identifying potential times of day where noise impacts may occur are discussed with production supervisors and dispatch personnel;
- installation of additional real time audio devices;
- design of the overburden emplacement areas to include various options for day to day waste rock dump locations (i.e. levels/ heights and aspect/orientation) depending on wind strength and direction. Less acoustically prominent/exposed locations can be utilised during periods of noise-enhancing meteorological conditions;
- operator awareness to reduce truck noise while tipping loads at the overburden dumps, reversing under the excavators correctly to reduce repositioning horn signals, and 'low-loading' height from excavator buckets to reduce truck loading noise;
- investigation into a custom designed silent horn and signaling system;
- excavators asked to flash their lights where possible instead of using their horn signals, prior to implementing a silent horn system;
- dozer operators informed to limit any unnecessary tracking;
- ongoing maintenance of the MCC mining fleet including any noise suppression equipment;
- investigating options with equipment manufactures to reduce engine exhaust noise from haul trucks; and
- installation of an additional real time monitoring unit to increase to a suite of four units.

The MCCM Noise Monitoring network is illustrated on **Figure 5** and includes:

- continuous monitoring at four real-time monitoring units for management purposes (RT1, RT2, RT3 & RT4 (RT4 installed October 2015)); and
- monthly attended monitoring at six locations as described in the EPL (NM1 to NM6).

6.4.2 Environmental Performance

Attended Monitoring

Attended monitoring is completed on a monthly basis by an independent consultant and is used to assess compliance with licence and approval limits for mine contributed noise. A summary of the noise monitoring results above criteria at MCCM for the 2015 reporting period are provided below. Monthly noise survey results are also available on the MCCM website within EPL monitoring data (http://www.whitehavencoal.com.au/environment).

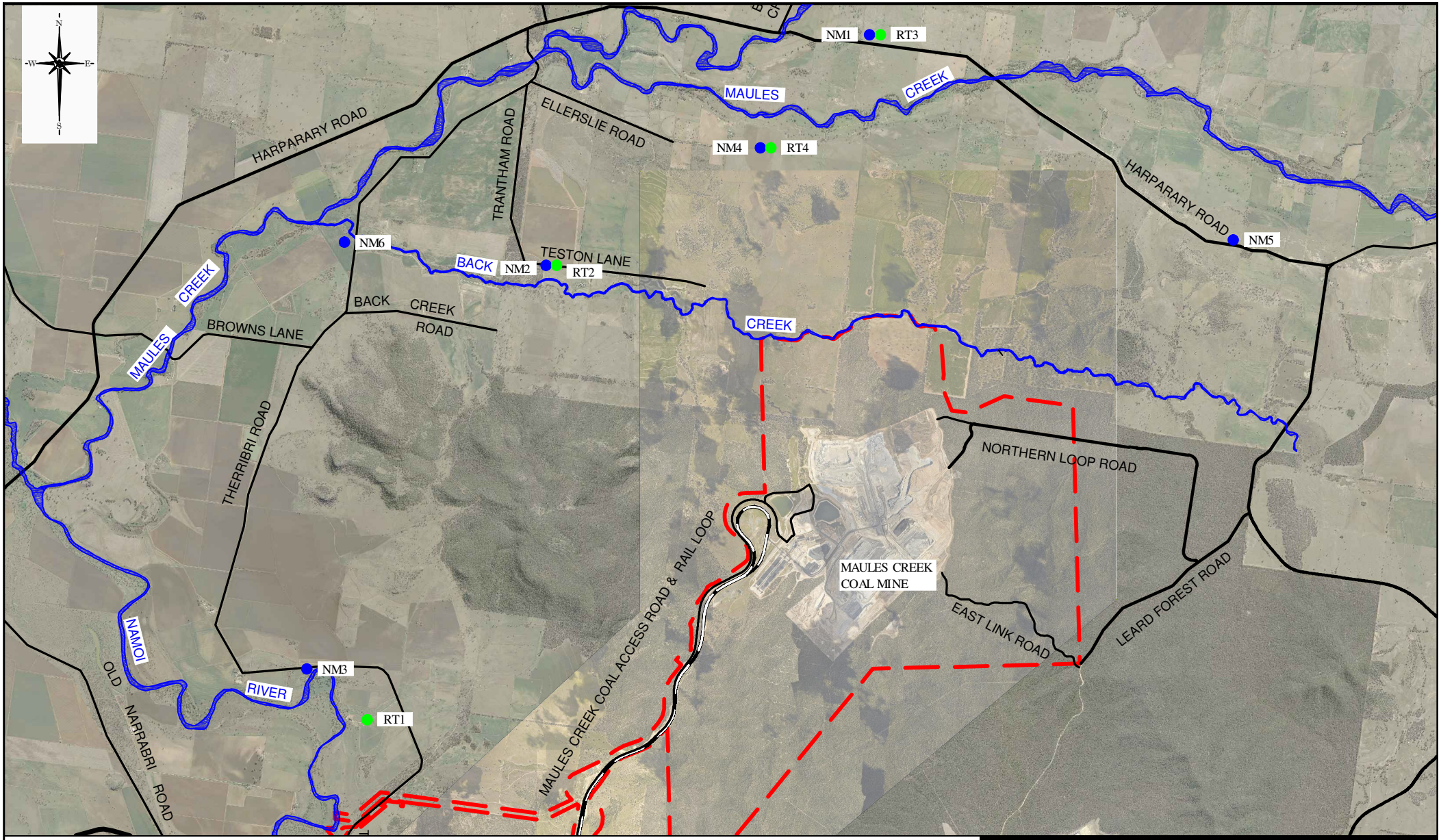
During the reporting period there were only two noise results which were recorded above the relevant criteria. Both results were 1dB above the relevant criteria. An exceedence of up to 2 dB is not considered significant in accordance with Chapter 11 of the NSW Industrial Noise Policy, which states that a development is only deemed to be in non-compliance when "*the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition*." Notwithstanding, both results were reported to DPE and the EPA.

On the 22 April 2015 there was a 1dB exceedence of the LAeq (15minute) criterion at NM1. An investigation revealed a continuum, exhaust and engine noise from MCC was responsible for the 'site only' elevated result. There was also a 1 dB exceedence of the LA1 (1minute) criterion at NM4 on 19

June 2015. Investigations revealed engine continuum was audible throughout this measurement, along with engine surges, horns, dozer tracks, and impact noise caused by bucket loads into empty truck bodies. The resulting LAeq (15minute) complied with the impact assessment criterion.

Attended noise monitoring results were also assessed against the low frequency noise criteria. A 5dB modifying factor correction was applied to five measurements on 19 June 2015 as the results were greater than the applicable 'Industrial Noise Policy' (INP), or 'Broner' low frequency modifying factor triggers. This resulted in four 1dB and one 2dB exceedence of the relevant MCC criterion. These results were reported to the regulatory agency. MCCM understands the NSW EPA is currently reviewing the Draft Industrial Noise Guideline to determine suitability of LFN assessment where receptors are a large distance from the mine site.

There were no exceedences of the cumulative noise criteria detailed in PA10_0138. In most instances there was no audible noise generated by other mines recorded during the 2015 attended monitoring program, therefore no cumulative noise assessment was required.



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Noise Monitoring Locations
- Real Time Noise Monitoring Locations

0 2000 4000 Meters

SCALE. 1:80000 at A4

MAULES CREEK COAL PROJECT

MCC Noise Monitoring Network Locations

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 5

Annual Sound Power Testing

Sound power level testing of fixed and mobile plant has been undertaken and are provided in Appendix C. Further SPL testing is scheduled for the first half of 2016 on both mobile and fixed plant.

Whilst some plant may not have met the SPL target specified, performance measures by monthly attended monitoring results show that MCCM is operating generally in accordance with the project approval criteria.

Mining trucks and water carts have been commissioned as sound suppressed (attenuated) units, in addition excavators, graders and dozers have also had sound suppression equipment fitted which is additional to approval requirements.

MCCM is working with the Original Equipment Manufacturer (OEM) to further develop solutions and reduce SPL including measures specific to exhaust systems and optimum engine power for material tipping. MCC has also met with the DPE and other relevant regulators and outlined the improvement measures being undertaken to address the SPL of some of the equipment.

The CHPP was commissioned during July to September within this reporting period. Additional works in relation to SPL for fixed CHPP plant infrastructure is also under investigation with implementation and technical analysis scheduled to occur during 2016. This will consist of design and implementation of acoustic screening walls near targeted pieces of fixed infrastructure, for instance the train loadout.

Annual Validation

Global Acoustics was engaged by Maules Creek Coal (MCC) to undertake a validation assessment of the site noise model to fulfil the requirements of the MCC Noise Management Plan (NMP) and Schedule 3 Condition 16(f). The assessment aimed to review real-time and attended monitoring data for 2015, and validate the results against the model predictions from EA Acoustics Impact Assessment (NIA), prepared by Bridges Acoustics in July 2011.

Real-time monitoring data from the three unattended monitoring locations were analysed to determine an estimate of mining noise levels generated during weather conditions corresponding to the prevailing conditions used for the modelling assessment. The validation concluded:

- The model prediction for location RT1 is considered to provide a good indication of the upper range of received noise levels for the specific meteorological conditions modelled.
- The results for RT2 indicate that during periods of strong meteorological enhancement from the mine (source to receiver wind component, stability class F), the EIS model prediction was not exceeded at any stage. On this basis, it is likely the model over predicted for the specific meteorological conditions modelled.
- The model prediction for RT3 is considered high, and the model likely over predicted for the specific meteorological conditions assessed (GA Validation Report, 2016).

The attended monitoring results indicate noise levels are generally consistent with the modelled noise predictions for the project.

6.4.3 Proposed Improvement Measures

A number of improvement measures are proposed for the next reporting period including:

- Finalisation of the Leard Forest Precinct Noise Management Strategy (NMS) is anticipated to occur in the 2016 reporting period;

- Undertake trials of the rail spur line to determine the optimal train speed in accordance with the requirements of Condition 14 of PA 10_0138;
- Finalise implementation of new exhaust systems on Hitachi EH5000 class trucks;
- Implementation of the 'silent horn' system on targeted mobile fleet units; and
- Maintaining equipment exhausts and conducting noise testing of plant.

6.5 BLAST

6.5.1 Environmental Management

Best practice blast management measures are implemented at MCCM to achieve acceptable outcomes in terms of fume generation, dust impacts, rock fragmentation, blast overpressure and ground vibration. Blasting impacts associated with the MCCM are managed in accordance with the:

- blasting criteria prescribed under Schedule 3 Conditions 18 to 20 of PA 10_0138; and
- Blast Management Plan (BLMP), MCC Blast Procedures and the Leard Forest Precinct Blast Management Strategy (BLMS) have been prepared to satisfy the requirements of the EPL and PA 10_0138.

During the reporting period a number of controls were applied to reduce the potential for impacts associated with blasting at the MCCM. The key controls implemented during the 2015 reporting period, which will also continue to be applied in 2016, include:

- best practice blast design and drill practices in accordance with the relevant Australian Standards;
- blast scheduling considers meteorological conditions including wind speed;
- pre-blast assessment for each blast to determine blast exclusion zones, potential fume generation risks and appropriate controls measures to minimize potential risks;
- coordination of blasts to avoid cumulative impacts in accordance with the BLMS; and
- the likelihood of fume generation is reduced through consideration of explosive product, geological conditions, best practice loading procedures, blast scheduling, sleep-time and meteorological conditions.

Air blast overpressure and ground vibration monitoring are undertaken at four monitoring locations illustrated on **Figure 6**.

6.5.2 Environmental Performance

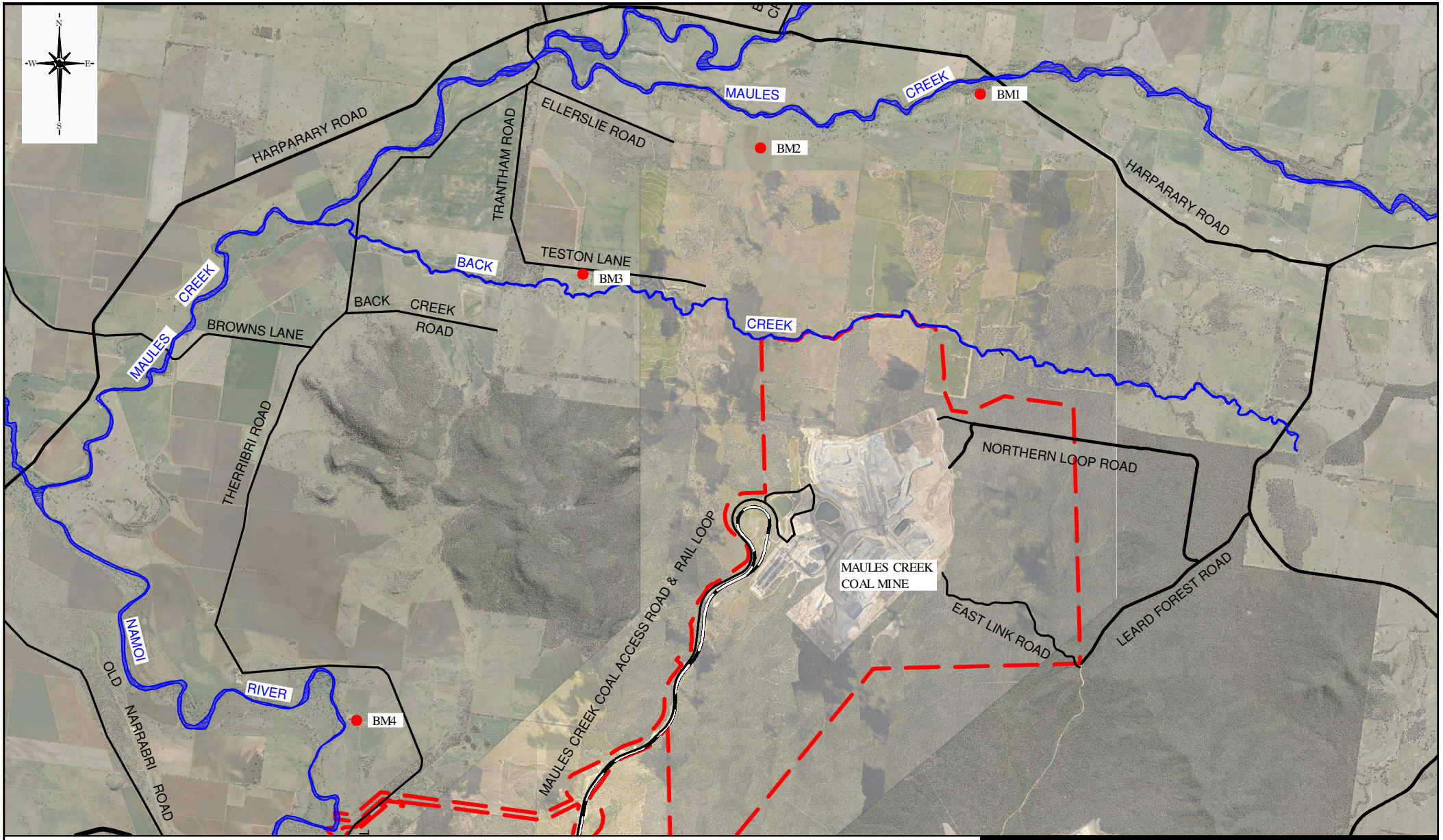
There have been 92 blasts in the 2015 reporting period. All blast events have been within the applicable Noise and Ground Vibration limits set out in PA 10_0138 and the MCC EPL 20221 limits. A mechanical failure at BM2 resulted in no blast data being recorded for six blasts occurring from 14 December to 23 December 2015. All other blast monitors were fully operational during this period and indicated all blast events remained well within the applicable criteria at these locations. **Table 11** summarises the blasting monitoring results during the period

Table 11
Summary of Blasting Results

Location	Parameter	Average	Maximum	100% Limit	Exceedence
BM1	Air blast overpressure (dB(Lin Peak))	98.02	113.60	120	No

Location	Parameter	Average	Maximum	100% Limit	Exceedence
	Vibration (mm/s)	0.19	0.60	10	No
BM2	Air blast overpressure (dB(Lin Peak))	99.31	110.20	120	No
	Vibration (mm/s)	0.14	0.87	10	No
BM3	Air blast overpressure (dB(Lin Peak))	99.19	111.40	120	No
	Vibration (mm/s)	0.23	0.49	10	No
BM4	Air blast overpressure (dB(Lin Peak))	96.64	111.60	120	No
	Vibration (mm/s)	0.29	0.76	10	No

Both overpressure and ground vibration monitoring results are consistent with the findings of the EA predicting they would remain below the relevant amenity criteria at all privately owned residences in the absence of noise enhancing weather conditions.



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Blast Monitoring Locations

0 2000 4000 Meters

SCALE. 1:80000 at A4

MAULES CREEK COAL PROJECT

MCC Blasting Monitoring Network Locations

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 6

Blast fume generation, including visible NOx fume appears, as a cloud with colour varying from yellow to orange to dark red depending on the concentration of NO_2 in the post-blast gases. There were no significant fume events (i.e. Level 3C or above against the Australia Explosives Industry & Safety Group guideline) during the reporting period. There were a total of thirteen blast events classed as Level 1A, five classed as Level 1B, one classed as Level 2A, four classed as Level 2B and one classed as Level 2C. All blasts were video recorded and categorised in line with the Blast Management Plan and relevant industry guidelines.

6.5.3 Proposed Improvement Measures

MCC will be developing the predictive forecast meteorological system to assist with informing blast scheduling in conjunction with the implementation of the AQMS.

6.6 BIODIVERSITY

6.6.1 Environmental Management

Biodiversity was managed in accordance with:

- Schedule 3 Conditions 52 of the PA 10_0138;
- the MCC Biodiversity Management Plan (BMP – October 2014) and Biodiversity Offset Strategy (BOS) prepared to satisfy the requirements of PA 10_0138.

Various treatments were implemented during the reporting period to mitigate impacts of the MCCM including (but not limited to):

- Weed monitoring and inspections
- Feral animal monitoring and inspections
- Seed collection
- Flora and Fauna monitoring
- Fuel load assessment

The revised BMP has been prepared and provided to stakeholders for consultation during 2015 and is currently being updated for submission to DPE. The revised BOS was approved by DPE in October 2015.

An Aboriginal cultural heritage and biodiversity management audit by DPE was also conducted in the reporting period and is discussed further in Section 10.1 of this report.

6.6.2 Environmental Performance

Weed Management

Weed monitoring was undertaken across offset areas during the period providing a baseline of weed infestations. Weed inspections were also conducted prior to clearing activities being undertaken with removal of significant weed infestations occurring as required during the clearing program.

Treatment of Box Thorn occurred on MCCM owned lands associated with the mine and offset properties. Additionally, a comprehensive Green Cestrum control program occurred on Whitehaven owned lands including the MCCM Eastern Offset Area of Teston North/Tralee, Warriahdool, Wollandilly and Oakleigh/Onavale along Maules Creek and Back Creek also occurred during the period. Appropriately qualified and experienced weed contractors (AQF3 accreditation or higher for use of herbicide) were engaged to undertake the following Green Cestrum control works:

1. Basal barking of isolated or low density Green Cestrum infestations to minimise disturbance and off-target impacts; and
2. Foliar spraying of large infestation with a riparian sensitive herbicide and surfactant.

Feral Animals

Monitoring of the presence of feral animals was undertaken on lands adjacent to the mine and on offset areas during the period. The adoption of a "monitor, measure and manage" approach to feral animal management will allow MCCM to implement adaptive management in response to changes being measured through monitoring in feral animal populations specific to the different geographical regions of the MCCM and Biodiversity Offset Areas. Feral animal monitoring utilises the relevant methodologies for specific feral animals generally in accordance with the NSW DPI Monitoring Techniques for Vertebrate Pests so that a range of methods can be used such as transects/spotlighting, sandpads, cameras traps where practicable and relevant to specific offset areas/properties.

A targeted monitoring program for feral pigs was undertaken in Spring 2015 which determined that there was a high abundance of pigs in the MCCM Eastern Offset Area. This triggered the engagement of an experienced and accredited feral animal contractor coordinating with the North West Local Land Services to implement a poisoned (1080) grain baiting program prior to harvest resulting in 31 confirmed pig fatalities.

An annual feral animal monitoring program was undertaken in December 2015 using multiple methodologies (i.e. sand plot, transect, baited stations and camera traps) to better target for specific feral animal species to improve total population records and refine estimates. The DECCW/CSIRO "The Sand Plot Technique" was used to rate abundance from sand pad results and determine a population level rank (scare, low, medium and high) for particular species in comparison to standards across NSW eucalypt forests. This identified a high abundance of kangaroos (across all offset areas) and goats (specific to northern and southern offset) as well as medium abundance of foxes and pigs (all offset areas). This information will be used to develop a feral animal management program to be implemented in 2016.

Seed Collection

Seed inspections occurred in the second half to the reporting period to inform a seed collection program within the 2016 mine clearing area, a seed inspection program was also designed and introduced during the period to identify on a seasonal basis the life cycle stage and development of native plants across the mine and Biodiversity Offset Area to identify what, where, when and how to target appropriate resources to collect seed for future revegetation programs.

Viable seed collection occurred prior to the end of the reporting period within the immediate area of the proposed clearing in early 2016 with an additional seed collection program scheduled during the clearing program and ongoing throughout 2016 as discussed above. A summary of the seed collected during 2015 is presented in **Table 12**.

Table 12
Summary of Seed Collected

MCCM Onsite (species x grams)		MCCM Eastern Offset (species x grams)	
Acacia deanii	264	Casuarina cunninghamiana	226
Acacia cheelii	478	Melale*uca bracteata*	37

MCCM Onsite (species x grams)		MCCM Eastern Offset (species x grams)	
Dodonaea sinuolota	34	*Acacia salicina*	49
Dodonaea heteromorpha	8	*Casuarina cristata*	61
Chrysocephalum semipapposum	19	*Calotis lappulacea*	194
Beyeria viscosa	299	*Xerochrysum bracteata*	23
Breynia oblongifolia	11	*Lomandra confertifolia*	17
Senna aciphylla	3	*Lomandra longifolia*	113
Casuarina cristata	19	*Eremophila debilis*	7
Melalueca brachteata	55	*Chrysocephalum apiculatum*	84
Eucalyptus crebra	0	*Eucalyptus blakelyi*	25
Austrostipa aristiglumis	4020	*Dichopogon fimbriatus*	14
		Vittadenia muelleri	10

Pre-Clearing and Clearing Surveys

The 2015 clearing program occurred between February 2015 and April 2015 and consisted of the clearance of a total of approx. 334 ha to facilitate the expansion of the mining pit area (PIT) and the outer pit and overburden area (OOP).

The ecological works for the clearing program consisted of the following activities;

- Weed Mapping;
- Threatened Flora Surveys;
- Fauna Pre-clearing Surveys;
- Clearance Supervision; and
- Post-felling Re-inspections.

Prior to the commencement of any clearing activities the limits of clearing are physically marked using surveyed and marked with flagging tape.

The pre-clearance and clearance flora and fauna surveys are conducted in several stages, some of which were ongoing throughout the entire period of works and others were conducted in discrete phases.

Targeted threatened flora surveys were conducted prior to clearing activities commencing in conjunction with weed mapping surveys, all threatened flora identified during these surveys were recorded and their locations mapped using hand held GPS units.

Fauna pre-clearance surveys were also carried out and commenced six days prior to the beginning of clearance works to ensure that the areas were surveyed within one week of the clearance minimise the risk of birds nesting between the time of the fauna habitat survey and the commencement of clearance works and ensure the maximum possible wellbeing of the native fauna within the clearance areas as outlined in the BMP. Fauna pre-clearance surveys consisted of identifying, marking and documenting suitable fauna habitat features. These features include significant rock outcrops and crevices, large boulders, nests and, in particular, trees bearing hollows which have the potential to support species such as bats, gliders, possums, reptiles and birds. All fauna pre-clearing teams were equipped with

endoscopic cameras to enable the examination of hollows considered likely to contain fauna. Features identified as likely to support resident fauna were marked with a large "H" using fluorescent spray paint as well as with flagging tape and the habitat feature details were recorded using a hand-held GPS unit

In addition to the identification and marking of likely habitat features, nocturnal spotlight surveys were also conducted throughout the clearing footprint area to identify hollows in use by resident fauna such as the Squirrel Glider (*Petaurus norfolcensis*) as well as potential microbat roosting trees. These surveys were typically conducted through the area surveyed diurnally on that date by the same field team. These surveys were conducted from dusk until approximately two hours after sunset.

Vegetation clearance was conducted following a two stage process, as follows:

- Stage 1 - After an area has been suitably surveyed for fauna habitat features grubbing, dozers then remove all understory vegetation leaving the marked habitat features isolated. Following grubbing works habitat items were allowed to stand overnight. This was to allow resident fauna the opportunity to self-relocate to adjacent undisturbed vegetation; and
- Stage 2 - In the following days, felling machinery conducted the removal of the isolated habitat items under the supervision of an ecology team. Habitat trees were shaken by the clearing machinery prior to felling to encourage fauna which had not already vacated the tree to now do so. After the shaking of the tree and following approval from the ecological team the habitat tree was felled as softly as possible. Following felling the supervising ecology team inspected hollows and loose bark for resident fauna which had not self-relocated and rescued any present fauna.

Fauna was encountered during all work tasks on the 2015 clearance works, including species of frogs, birds, mammals and reptiles. Threatened species (under the Threatened Species Conservation (TSC) Act 1995 and/or Environment Protection and Biodiversity Conservation (EPBC) Act 1999) were also encountered.

The following threatened fauna species were encountered during 2015 clearing works:

- Brown Treecreeper (Eastern Subspecies) (*Climacteris picumnus victoriae*) – listed as Vulnerable under the TSC Act
- Grey-crowned Babbler (Eastern Subspecies) (*Pomatostomus temporalis temporalis*) – listed as Vulnerable under the TSC Act.
- Pale Headed Snake (*Hoplocephalus bitorquatus*) – listed as Vulnerable under the TSC Act.
- Speckled Warbler (*Chthonicola sagittatus*) – listed as Vulnerable under the TSC Act.
- Turquoise Parrot (*Neophema pulchella*) – listed as Vulnerable under the TSC Act.
- Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris*) – listed as Vulnerable under the TSC Act.
- Squirrel Glider (*Petaurus norfolcensis*) – listed as Vulnerable under the TSC Act; and
- Little Lorikeet (Glossopsitta pusilla) - listed as Vulnerable under the TSC Act.

Tylophora linearis

The MCCM Biodiversity Management Plan specifies a propagation and translocation program for *Tylophora linearis* including: a root architecture investigation, seed collection, germination and tissue culture steps towards translocation trials. All of these steps (except translocation) were completed during the 2014-2015 reporting period.

A translocation site was selected in the MCCM offset area (just north of Leard State Forest) in October 2015. Seven enclosures were constructed with a mesh wire fence overlaid on the outside with woven shade cloth.

Translocation of 77 tube stock occurred on 3 December 2015 and the plants have since been monitored approximately weekly. At the time of planting, the tube stock plants were between 2 and 62 centimetres (cm) in height.

Between December 2015 and February 2016, some plants died back and others flourished.

The first key finding to date is the fast rate at which the plant can grow. A particularly successful plant grew from 48 cm (when it was planted) to 89 cm in the first month (almost double the size of the tubestock) then 120 cm in the second month (2.5 times the size of the tubestock).

A second key finding to date is the young age at which the plant can produce flower buds. The plant referred to above, was budding at the time of this report. This is a significant finding since the plant was grown from seed which was germinated in November 2014 (only 14 months prior).

A third key finding to date is the ability of the plant to regrow after dieback. Several plants that had apparently died then resprouted. The root architecture investigation completed during the 2014-2015 reporting period showed that *Tylophora linearis* has an extensive rhizomatous root structure.

The survival rate of the plants is currently uncertain (given the ability of the plant to resprout), however, as of the most recent monitoring on 4 February 2016 there was an apparent survival rate of 17 percent (13 plants) with extant plants being unevenly distributed among the seven enclosures. There was a general decline after the tubestock were planted but the numbers have remained relatively stable since.

Overall, the results of the translocation are positive given that this is the first ever attempt at translocating *Tylophora linearis*.

Pomaderris queenslandica

Pomaderris queenslandica is woody shrub listed as Endangered under the New South Wales Threatened Species Conservation Act 1995 and was found to be present at Maules Creek Coal Mine (MCCM) during pre-clearance surveys in early 2015.

The MCCM Biodiversity Management Plan (addendum) specifies a propagation and translocation program for Pomaderris queenslandica including: a root architecture investigation, seed collection, germination and tissue culture steps towards translocation trials. All of these steps (except translocation) have commenced during the reporting period.

A root architecture study was undertaken in March 2015 which revealed that the species has a shallow root system. Although growing in close proximity, the study determined that there was no evidence of root suckering or clonality.

Several *Pomaderris queenslandica* plants were monitored for developing fruit and fruit bagged for seed collection in two separate rounds. While the first round of bagging in 2015 did not capture any seeds, the second round of bagging in 2016 resulted in the collection of over 10,000 seeds for germination trials.

The availability of seed within the soil seed bank was also investigated. Soil from around the plants within the 2015 clearance area was sampled and sieved. This resulted in the collection of 40 seeds. In addition, topsoil from the area around the plants within the 2015 clearance area was stockpiled separately for later transfer to a site suitable for in situ germination.

Germination trials were undertaken on the 40 seeds collected from the soil. Nine individuals of *Pomaderris queenslandica* were successful germinated.

The *Pomaderris queenslandica* cuttings propagation component began with the collection of 100 cuttings followed by a larger collection of 400 cuttings, of which three cuttings have successfully propagated to date.

Germination trials on the larger collection of seeds (over 10,000 seeds) will commence in 2016. Translocation trials will commence once an ex situ supply of seedlings and propagated cuttings suitable for translocation is established.

Stygofauna Assessment

The MCCM Development Approval 10_0138 and the approved Water Management Plan (2015) requires a single round of monitoring for Stygofauna & Groundwater Dependent Ecosystems assessments under its environmental monitoring program. Stygofauna (biological) monitoring of the groundwaters near the mine including portions of the Maules Creek and Namoi River alluviums was undertaken during the reporting period,

A total of eight sites were sampled for the spring survey for stygofauna and water quality using rapid assessment techniques. The sites included six sites to the north of the mine within the Maules Creek catchment and two sites to the south of the mine within the eastern Namoi Alluvium. The sites in the Maules Creek catchment include three sites along Back Creek and three sites along Maules Creek. The sites were selected to cover as broad a coverage of the Project Area as possible, with sites located both within and outside (controls) the potential area of impact, as well the broadest range of habitat types. The bore types were all shallow monitoring piezometers accessing groundwater situated in unconsolidated alluvial/colluvial sediments extending from 5-70m with most bores reaching approximately 10-12m.

A total of nine families of aquatic invertebrates were recorded from the three sites on Maules Creek whereas the sites on Back Creek were dry and the other two sites did not record any fauna. The community composition included four orders of crustaceans and three families of aquatic beetles. The biological and water quality data indicates that the fauna is associated with the alluvial aquifers. These aquifers are composed of coarse sediments with low electrical conductivity and relatively neutral pH water quality. The fine sediments and high electrical conductivity of the Boggabri Volcanics is suggested as the reason for the lack fauna in the other sites.

The results of the current survey indicate that the ecosystem condition along Maules Creek Alluvium is stable along this sub-catchment as indicated by the relatively consistent invertebrate community composition. There appears at this stage to have been no adverse effects on at the Maules Creek subterranean aquatic ecosystem as a result of the mine's operations.

Agricultural Production

MCCM own two properties that are not subject to Biodiversity Offset Areas, Green Gully and Ferndale. These two properties are currently leased with the lessees responsible for utilising those properties for agriculture production. Where properties owned by MCCM are not fully incorporated as part of the Biodiversity Offset Strategy, those portions are licenced with the licensees responsible for maintaining agricultural activities on those areas outside of the Biodiversity Offset Area.

6.6.3 Proposed Improvement Measures

- Follow up monitoring of the success of the Green Cestrum control works, Box Thorns and other weeds will be undertaken through continuation of the weed inspection programs. The format of

the weed inspections will be revised in 2016 to ensure that timely and prioritised weed control is implemented across the mine and associated offset areas.

- Quarterly weed inspections that will identify the spatial location of weeds, determine status (Weeds of National Significance, noxious and /or environmental), size of infestation and priority for control
- Quarterly seed inspection programs by an experienced Restoration Ecologist of both onsite and offset areas including groundcover, shrub and canopy species to reflect seasonal conditions and growth stages of plants with seed collection also occurring at these times if available
- Quarterly feral animal monitoring program will be modified in 2016 into a quarterly feral animal control program as required with monitoring continued to be undertaken but focusing on reviewing the success and outcomes of the works undertaken. Feral animal monitoring will be reviewed annually to inform the resourcing and control program to be implemented.
- Continuation of propagation and translocation programs for *Tylophora linearis* and *Pomaderris queenslandica*

6.7 ABORIGINAL CULTURAL HERITAGE

6.7.1 Environmental Management

Aboriginal cultural heritage is managed in accordance with the Aboriginal Archaeology and Cultural Heritage Management Plan (AACHMP) which was prepared to satisfy Schedule 3 Condition 58 and the SOC detailed in the PA 10_0138. The AACHMP was revised during 2015 and approved by the DPE in August 2015. An Aboriginal cultural heritage and biodiversity management audit was conducted in the reporting period and is discussed further in Section 10.1 of this report.

6.7.2 Environmental Performance

Annual Monitoring Program

An annual monitoring program was undertaken at MCCM in accordance with the requirements of section 6.4.1 of the AACHMP. The annual monitoring program including an Annual Site Audit and the Annual Compliance audit of salvaged objects, undertaken in July 2015 by Registered Aboriginal Parties (RAPs) accompanied by specialists Archaeologists from University Queensland Culture & Heritage Unit (UQCHU).

The Annual Site Audit included an inspection of all extant previously identified Aboriginal cultural heritage sites within the MCCM boundary. The inspection assessed the condition of 40 sites including fencing, potential nearby disturbance and photographic records. Any fence maintenance identified during the audit was carried out immediately during the inspection.

An Annual Compliance Audit of cultural objects collected during previous salvage campaigns was undertaken at the same time as the Annual Site Audit. The audit aimed to confirm the objects are stored appropriately and determine the status of any post-salvage analysis required for individual objects. The audit confirmed during the interim period the objects are currently temporarily stored securely at the Whitehaven Coal Limited offices in Gunnedah. Consultation with RAPs to identify a culturally appropriate keeping place for all salvaged material for the MCCM is ongoing.

Additional Monitoring / Inspection of Sensitive Heritage Areas

Monitoring inspections are undertaken prior to or during topsoil clearance with RAP representatives accompanied by specialist archaeologists. Archaeological monitoring of Cultural Heritage Sensitive

Areas was undertaken in March 2015 during the clearing program. Monitoring included visual inspections of 316 scrapes totalling 60 km of ground surface inspection.

Archaeological monitoring identified 4 artefacts and 3 new sites were created. There remains low potential for finding significant archaeological sites during the archaeological monitoring process. This is consistent with the findings of the Aboriginal Archaeology Heritage Assessment undertaken as part of the EA.

Archaeological Salvage Program

The majority of identified artefact scatters within the MCCM Boundary have been salvaged in previous reporting periods through surface collection and excavation. No salvage of extant Aboriginal heritage sites was required during the 2015 reporting period.

Ongoing Consultation

Following the approval of the revised AACHMP in accordance with section 4.4 a meeting was convened on December 2015, which was open to all RAPs to provide a forum for any issues to be raised and for MCC to provide an update on the progress of the MCCM. Ongoing consultation meetings will continue to be held on a six monthly basis.

The established MCC CCC includes one member from the RAP group. These meeting minutes are made publically available on the WHC website

Management of Quinine Bush

Quinine Bush continues to be mapped across the project as part of the pre-clearing surveys. A program of plant and seed collection and propagation has been undertaken. Propagation of the seed species is ongoing.

Previously Unidentified Site

As part of the MCC monitoring program, a patch of potential grinding grooves were located within land owned by MCC. Specialists Archaeologists from UQCHU conducted a detailed site investigation which concluded the site is of Aboriginal Cultural Heritage origin. The grooves are located outside the MCCM disturbance boundary and will be managed in accordance with the provisions of the AACHMP.

6.7.3 Proposed Improvement Measures

In 2016, several aspects of cultural heritage work will continue, including the annual monitoring program and archaeological monitoring of Cultural Heritage Sensitive Areas during clearing works proposed for February. Ongoing consultation with RAPs will continue to identify a culturally appropriate keeping place for all Aboriginal cultural heritage objects salvaged from the MCCM.

The Aboriginal Heritage Conservation Strategy was submitted to the DP&E for consultation in October 2014. Comments were received from DP&E and OEH in June 2015, a subsequent meeting was held with OEH to review comments and these are currently being incorporated into the AHCS. It is anticipated that the AHCS will be finalised and implemented in the 2016 reporting period.

6.8 HISTORIC HERITAGE

6.8.1 Environmental Management

Historic heritage will be managed in accordance with Schedule 3 Condition 58 of PA 10_0138 and the Statement of Commitments included in Appendix 5 of PA 10_0138. No development works has occurred that may impact of historic heritage items in the EA. and a Historic Heritage Management Plan (HHMP)

is being prepared for approval by the DPE. The historic heritage values of the MCCM lie principally in the presence of relics, structures and archaeological evidence outside the MCCM Disturbance Boundary on MCC owned land. The EA identified a total of five historic sites, three of which were assessed as being part of one heritage complex site and were all assessed to be of local heritage significance.

6.8.2 Environmental Performance

Inspections of the identified historic heritage sites have been undertaken to assess condition and record any evidence of impacts. These inspections assist in determining ongoing maintenance requirements such as weed control and fence integrity. Photographic records are also recorded at each inspection.

Since Historic Heritage Assessment was undertaken as part of the EA there have been no additional sites identified within MCC owned land. As predicted in the EA, there have been no direct impacts to historic heritage items.

6.8.3 Proposed Improvement Measures

Annual monitoring of historic heritage sites will continue in 2016 and any maintenance and weed control will be undertaken as required.

Requests to participate in oral history reports for interested landowners of property that has been acquired by Maules Creek Coal Mine will occur during the next reporting period.

6.9 TRAFFIC

6.9.1 Environmental Management

Traffic impacts associated with the MCCM are managed in accordance with Schedule 3 Condition 59 to 66 of the PA 10_0138 and the Traffic Management Plan (TMP). Various onsite treatments were implemented during the reporting period to mitigate the traffic impacts of the MCCM including:

- a code of conduct for drivers of heavy and light vehicles;
- notification to contractors and staff regarding the driver code of conduct and to advise of any updated access arrangements;
- nominated access routes for all vehicles travelling to and from the MCCM, reinforced by approved signage and quarterly audits;
- continuation of the shuttle bus service;
- consideration of school bus pick up and drop off times when scheduling shift changeovers; and
- monitoring of traffic volumes, road safety inspections, quarterly auditing of approved access routes.

During the reporting period the Narrabri Shire Council (NSC) completed the upgrade and sealing works on Therribri Road between Rangari Road and the Mine Access Road. MCC has previously contributed funds under its Voluntary Planning Agreement (VPA) for NSC to complete the works on Therribri Road.

6.9.2 Environmental Performance

MCC has conducted quarterly audits (i.e. for two days every three months) to check for non-compliance with regard to access prohibitions as described in the TMP. There was only one occurrence of MCCM related traffic utilising a restricted route to access the site. MCC re-communicated the appropriate access routes with the contractor involved and their supervisor.

There were no complaints regarding traffic generated by the MCCM received during the 2015 reporting period. This is a significant reduction to the seven logged in the 2014 reporting period.

A review of the traffic volumes on associated roads has been completed to understand the current traffic impacts associated with the MCCM. This review has been provided to the DP&E regarding status of current traffic flows.

DPE issued a Penalty Infringement Notice (PIN) to MCCM during April 2015 following a traffic survey that indicated 90% of employees were not transported to the site via shuttle busses, MCCM responded to DPE advising of the intend to submit a modification to the Project Approval to address the transport issue.

6.9.3 Proposed Improvement Measures

Quarterly audits of restricted roads, monitoring on traffic volumes to the site, responses to any community complaints will continue to be implemented during the next reporting period.

A project approval modification will be submitted in 2016 to address the transport issue related to shuttle busses.

6.10 WASTE MANAGEMENT

MCC aims to implement all reasonable and feasible measures to minimise waste and ensure it is appropriately stored, handled and disposed of. Waste Materials at MCCM are managed in accordance with:

- Schedule 3 Condition 70 of PA 10_0138;
- Condition A1 & A3 of the EPL;
- the Materials Safety Management Plan (MSMP) & Pollution Incident Response Management Plan (PIRMP); and
- the legal and strategic framework for managing wastes in NSW.

MCCM waste streams include general waste, hazardous waste and sewage and is collected and disposed of at authorised waste disposal sites by a licenced contractor.

Any mine waste material that is determined to be PAF as a result of additional testing will be placed (buried) in the OEA or within mined-out sections of the open cut once they become available and covered with at least 5 meters of NAF. PAF material will be disposed in accordance with the MOP in a location to minimise further oxidation and leaching into the surrounding environment. Additional management measures are detailed in the approved MOP.

6.10.1 Environmental Performance

Waste Streams

Inspections of waste management practices are carried out to ensure general, hydrocarbon and recyclable waste is segregated.

Data on waste streams are collated using information provided by the licenced contractors. During the 2015 reporting period waste output increased with operational hours, workforce and mining fleet.

A total of approximately 275 tonnes (t) of general waste and 1,122,350 Litres of septic was removed in the 2015 reporting period. Approximately 75 tonnes of solid recyclable material and 296,700 L of used oils were collected to be recycled by a third party authorised contractor.

No incidents relating to waste management practices occurred during the 2015 reporting period.

6.10.2 Proposed Improvement Measures

MCC will continue to monitor, remove, track and report wastes on a regular basis to effectively manage waste generated by the operation of the MCCM and maximise recycling efficiencies.

MCC will continue to manage and test for potential PAF material and dispose of this material as per the requirements of the MOP.

6.11 HAZARDOUS MATERIALS

6.11.1 Environmental Management

Hazardous materials at the MCCM are managed and disposed of in accordance with the MSPM, PIRMP and the relevant Australian standards.

Any spillages of potentially hazardous materials are required to be reported immediately to determine the appropriate response.

6.11.2 Environmental Performance

Hydrocarbons

No reportable or significant incidents involving fuel storage, handling or delivery occurred during the 2015 reporting period. Minor leaks and spills associated with plant maintenance and operation were managed on site. The PIRMP was not required to be activated for any significant reportable incidents.

Explosives

No environmental incidents involving explosives handling or storage occurred during the 2015 reporting period.

Other Materials

Soil material from temporary maintenance area and material impacted by minor spills in the operational areas were removed and are stored in the Soil Reclamation Area prior to treatment. No reportable incidents involving the handling or storage of other potentially hazardous materials occurred during the 2015 reporting period.

6.11.3 Proposed Improvement Measures

Planned additional construction activities in the MIA will further assist in improving the management of hazardous substances. These will be undertaken over the next two reporting periods (2016 and 2017).

6.12 VISUAL & LIGHTING

6.12.1 Environmental Management

Visual amenity and lighting impacts associated with the MCCM are managed in accordance with Schedule 3 Condition 67 and 68 of the PA 10_0138. Various onsite treatments were implemented during the reporting period to mitigate visual impacts of the MCCM including (but not limited to):

- use of directional lighting in lieu of general area lighting;
- consideration of fixed versus mobile lighting, locations and orientation;

- fixed lighting designed and procured in accordance with Australian Standard *AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting* (AS4282);
- visual lighting inspections as required; and
- mine infrastructure designed and managed to blend with the surrounding landscape as far as practicable.

6.12.2 Environmental Performance

Following the 2015 Independent Environmental Audit recommendation a visual inspection was undertaken on the 16th October 2015 between the hours of 7pm and 12am to assess the lighting levels at nearby receptors and roads. It was determined that there was no direct line of sight exposure for the closest sensitive residences located to the north west of the MCCM. No significant discrepancies have yet been identified between the EA predictions and actual visual impacts of the MCCM. There were no community complaints received during the 2015 reporting period, relating to visual or lighting impacts.

6.12.3 Proposed Improvement Measures

Management measures described above will continue to be implemented during the next reporting period.

6.13 BUSHFIRE

6.13.1 Environmental Management

Bushfire hazards and risks associated with the MCCM are managed in accordance with Schedule 3 Condition 69 of the PA 10_0138, the MCC Bushfire Management Plan and the BMP. Various treatments were implemented during the reporting period to manage and control potential bushfire risks including:

- the addition of a 1000L fire trailer onsite which can be utilised to control any firebreaks if required;
- participation by MCC in the Narrabri Rural Bushfire Brigade meetings;
- implementation of various bushfire hazard controls. Key control measures during the reporting period included Hot Work areas and permits, maintenance of equipment and infrastructure, establishing Asset Protection Zones and assessment of fuel loads;
- monitoring of fuel loads occurred in the MCC offset areas prior to the bushfire season; and
- maintenance of the roads and tracks within the MCCM was undertaken prior to the bushfire season. Roads and tracks can act as firebreaks and help to facilitate access across the site.

6.13.2 Environmental Performance

No bushfires occurred adjacent to or within the MCCM boundary during the reporting period. No significant discrepancies have yet been identified from the EA predictions.

Following the recommendations from the 2015 DP&E Biodiversity and Aboriginal Cultural Heritage Audit, the Bushfire Management Plan was revised to incorporate the bushfire provisions described in the BMP and submitted to DP&E during October 2015.

6.13.3 Proposed Improvement Measures

Management measures described above will continue to be implemented during the next reporting period being fuel load assessment, maintenance of access tracks, hot work permits and asset protection zones.

6.14 PUBLIC SAFETY

The mine is located on land owned by Whitehaven and also on State Forest land in a relatively remote rural area, generally in excess of 1 km from any public road. The site is predominately fenced and appropriate gates and warning signs are installed at all vehicle access points. Security personnel are employed by MCCM to ensure that members of the public do not inadvertently enter the mine property.

MCC has installed security gates and warning signs at all vehicle access points to the MCCM. Security personnel conduct roaming patrols and are also positioned at vehicle checkpoints to ensure that members of the public do not inadvertently enter the mine property. Any visitors are required to be escorted and report to the mine office and unauthorised personnel are not permitted to move around the mine area unaccompanied. During blasting, procedures are in place to ensure that the area around each blast site is clear of personnel and relevant residents are advised in advance of blast scheduling.

6.14.1 Performance

The procedures in place have been effective throughout the reporting period to prevent unauthorised access to the mine site by the general public. However, anti-coal activists have bypassed locked gates, security guards, fences and ignored mine area safety signage to access areas of the MCCM.

7 WATER MANAGEMENT

7.1 WATER SUPPLY

A pipeline from the Namoi River is the main source of raw water supply for the MCCM. **Table 13** summarises the water taken by MCC in the previous water year (1 July 2014 – 30 June 2015).

Table 13
Water Take

Water Licence #	Water Sharing Plan	Water Source and Management Zone	Entitlement	Passive Take / Inflows	Active Pumping by MCCM	Total
WAL 27385	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 4 Namoi Valley (Keepit Dam to Gin's Leap) Groundwater Source	38	0	0	0
WAL 12811	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 5 Namoi Valley (Gin's Leap to Narrabri) Groundwater Source	135	0	0	0
WAL 12491	Upper and Lower Namoi Groundwater Sources	Upper Namoi Zone 11 Maules Creek Groundwater Source	77	0	0	0
WAL 12479	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 11 Maules Creek Groundwater Source	78	0	0	0
WAL 27383	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 11 Maules Creek Groundwater Source	0	0	0	0
WAL 12480	Upper and Lower Namoi Groundwater Sources 2003	Upper Namoi Zone 11 Maules Creek Groundwater Source	215	0	0	0
WAL 29467	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	6	0	0	0
WAL 29588	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	300	0	0	0
*90SL101060	-	Catchment: Unnamed Water Source	30	0	0	0
WAL 36641	NSW Murray Darling Basin Porous Rock Groundwater Sources	Gunnedah - Oxley Basin Mdb Groundwater Source	800	<5	0	<5
WAL 13050	Upper Namoi and Lower Namoi Regulated River Water Sources	Lower Namoi Regulated River Water Source	3,000	0	1,304 ML	1,304 ML

** Water Licence 90SL101060 is currently being converted to an approval under the Water Management Act 2000*

***Note: In addition to the 1,304 ML utilised by the MCCM, during June 2015 1500ML of MCCM water allocation was transferred to an alternate water user downstream of the MCCM.*

7.2 SURFACE WATER MANAGEMENT

7.2.1 Environmental Management

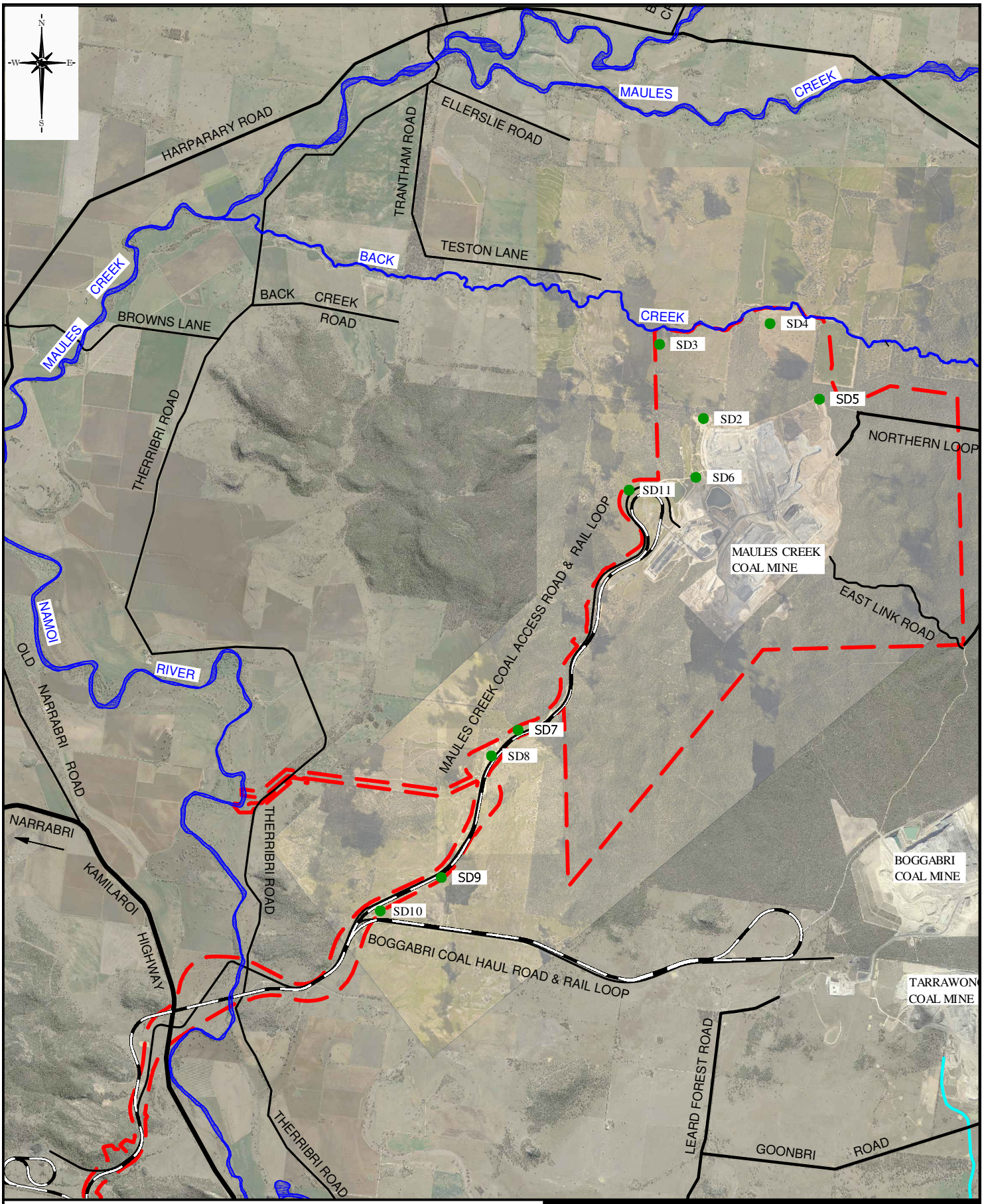
The MCCM water management system aims to ensure there are no adverse impacts on receiving water quality, to allow for early detection of any potential impacts and develop appropriate corrective actions. Potential impacts to surface water quality are managed in accordance with:

- the surface water criteria prescribed under schedule 3 condition 36 to 40 of the PA 10_0138;
- EPL 20221 Conditions P1, L1, L2, L3 and M2; and
- the MCC Water Management Plan (WMP) prepared to satisfy the requirements of the EPL and PA 10_0138.

During the reporting period various controls strategies were implemented to manage surface water quality including:

- prior to disturbance of land, appropriate erosion and sediment controls were established;
- a number of sediment dams have been constructed to collect runoff from disturbed areas, which is then used for dust suppression or pumped to the mine water dam for re-use on site;
- a combination of temporary and permanent clean and dirty water drains have been established to divert runoff from undisturbed areas and collect runoff from disturbed areas;
- additional erosion and sediment control measures have been used for other small disturbance areas including silt fences, rock checks and other measures as required;
- any water collected within the open cut pits is contained and reused on-site;
- no uncontrolled discharge of mine water off-site;
- maintaining an up-to-date water balance to ensure on-site water demands are satisfied whilst minimising offsite water impacts;
- validation of the site water balance model; and
- regular sampling and inspections of the onsite and surrounding surface water system.

Surface water monitoring locations are illustrated on **Figure 7** and **Figure 8**. A summary of the surface water quality findings from the reporting period is provided below.



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Discharge Point Monitoring Locations

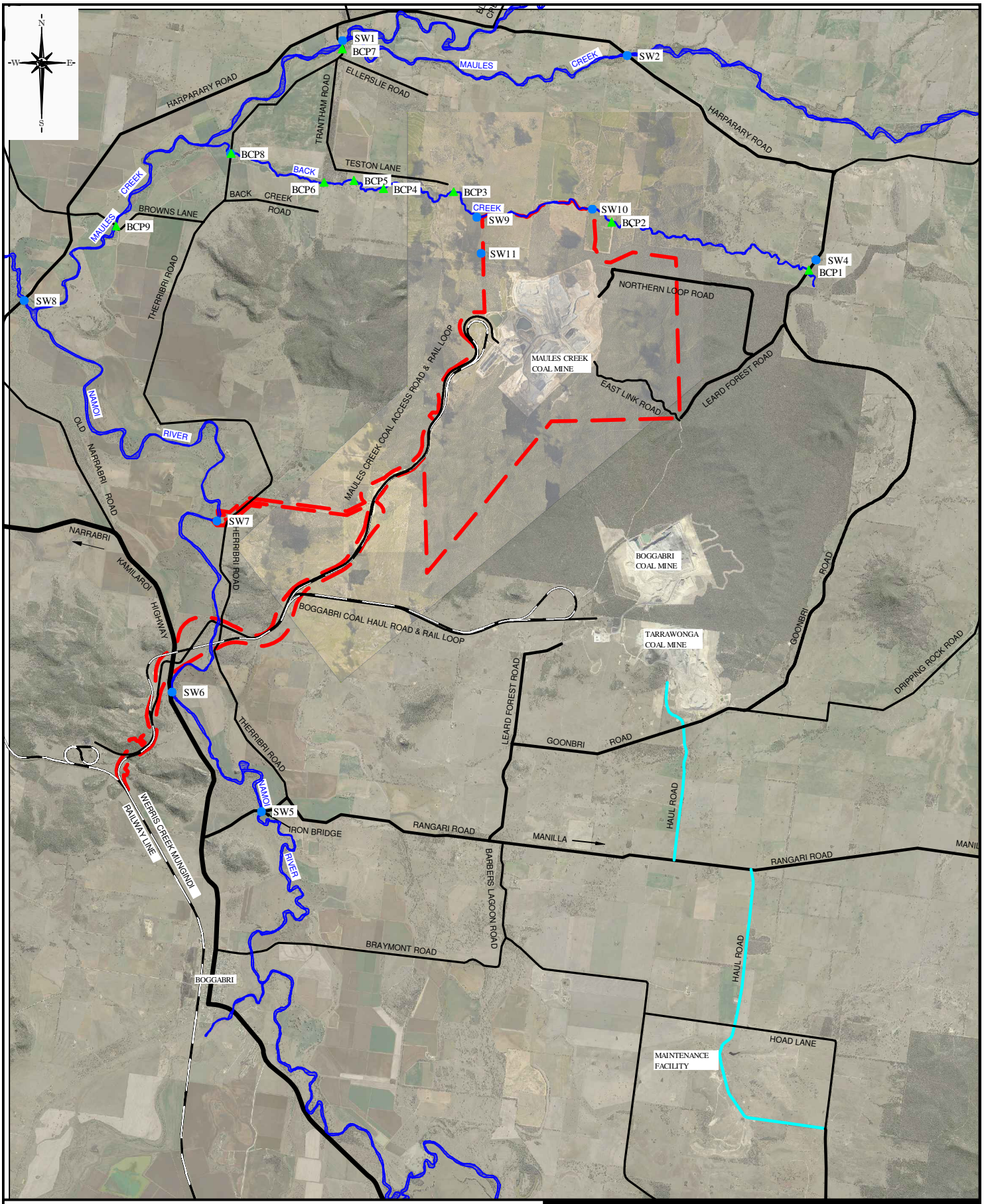
MAULES CREEK COAL PROJECT

MCC Discharge Point Monitoring Locations

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 7

0 2000 4000 Meters

SCALE. 1:80000 at A4



Legend

- Project Boundary
- Roads
- Railway
- River / Creek
- Surface Water Monitoring Locations
- Geomorphological Monitoring Locations

MAULES CREEK COAL PROJECT

MCC Surface Water & Geomorphological Monitoring Locations

CO-ORDINATE SYSTEM: MGA 94 ZONE 56	DATE: 17.05.16	DRAWN: TFS	FIGURE 8

0 2500 5000 Meters

SCALE. 1:125000 at A4

7.2.2 Environmental Performance

Surface Water Quality

Routine surface water monitoring is conducted in surrounding watercourses on a monthly basis and the pH, EC and TSS monitoring results detailed in Appendix D. Samples are collected to the OEH Approved Water Sampling Methods, AS/NZS5667.1 and AS/NZS 5667.6. All laboratory analyses are conducted by a NATA accredited laboratory.

Laboratory pH in creeks and rivers surrounding the project are all trending within the ANZECC acceptable range for Irrigation, Ecosystem Health and Recreation. Back Creek and upper Maules Creek are ephemeral and rarely contain flowing water.

No non-compliances relevant to surface water management were recorded during the reporting period, nor have there been any community complaints. Surface water EC and TSS trends are shown in Appendix D.

Preliminary Trigger Values (PTVs) for twenty six key water quality parameters for Maules Creek, Back Creek and the Namoi River have been included in the WMP. Where insufficient data is available, ANZECC eco-system trigger values have been adopted (eleven parameters). Trigger values have been developed using background data for fifteen parameters. The adopted trigger values will be refined based on further sampling to be undertaken as the operational stages of the MCCM proceed.

Onsite Water Quality

MCC monitors 'mine water' defined in the WMP as water that has come in to contact with coal (e.g. groundwater inflows and surface runoff to the open cut pit or stormwater runoff from the ROM and product coal stockpiles). The water quality sampling of any 'mine water' conducted in the 2015 reporting period has been characterised as coal contact water and results shown in Appendix D.

Flow

There was no flow recorded in Back Creek at SW9 or SW10 during the 2015 reporting period. Appendix D details the flow recorded at the Boggabri NoW Monitoring Station (419012) on the Namoi River. Throughout the reporting period, flow in the Namoi River has been largely dictated by water releases from the Keepit Dam.

Wet Weather Discharge Monitoring

In January 2015, Maules Creek Coal recorded 91.6mm or rainfall at the site weather station, of which, 52.6mm fell in one day, the 27 January 2015. This volume of rainfall exceeded the 5 day 90th percentile Gunnedah rainfall event as listed in the Maules Creek EPL 20221. As such sedimentation dam 'SD7' overflowed for a period of less than 24 hours. Water samples from SD7 and the downstream environment were collected and analysed in accordance with the WMP and EPL requirements and results shown in Appendix D.

Geomorphological Assessment

Stream and riparian vegetation health assessments were conducted at upstream and downstream locations along Maules Creek, Back Creek and the Namoi River as illustrated on **Figure 8**. Nine sites have been selected for photographic survey of the existing geomorphological condition of the downstream drainage system, from the mine site to the Namoi River. Due to land access restrictions, monitoring of one site (BCP4) could not be accessed during the November 2015 surveys. The

assessment included macroinvertebrate monitoring as well as physical and chemical monitoring in accordance with Australian River Assessment System (AusRivAS) guidelines as required in the WMP.

Visual habitat assessments were conducted at each of the 10 aquatic monitoring sites surveyed during the November 2015 survey period in accordance with the NSW AusRivAS Manual (Turak *et al*., 2004). All ten surveyed sites showed indications of disturbance from current land uses to varying degrees. All observations were recorded utilising the standard NSW AusRivAS field datasheets. A photograph was also taken at each sampling location, both upstream and downstream to provide a visual indication of the habitat at each location, and to form a baseline record of current conditions. The primary disturbances noted at all sites included presence of exotic vegetation, erosion of banks, disturbance from stock and disruption of natural hydrology from existing roads and infrastructure.

Water quality measurements were conducted at Namoi River sites (SW5, SW8) and Maules Creek site (BCP7) as well as within remnant pools at three Back Creek sites (BCP1, BCP 2 and BCP 6) (total six sites). No water quality measurements were taken at BCP3, BCP5, BCP 8 and BCP9 as these sections of Back Creek were dry and lacked any remnant pools. Water quality parameters were measured in-situ during the aquatic ecology field surveys including temperature, EC, pH, DO, turbidity and alkalinity. The in situ water quality recordings for EC and pH were within the acceptable trigger value ranges listed in the ANZECC guidelines. However both dissolved oxygen and turbidity values lay outside the trigger value ranges for most sites.

Macroinvertebrate samples were collected at each of the six sites where water quality measurements were conducted. A total length of 10 m of edge and bed/riffle habitat respectively was surveyed along the reach at each location, where possible. The entire length of any remnant pools within the reach was sampled at the three Back Creek sites.

A total of 35 different macroinvertebrate taxa were recorded across the 9 sampled habitats (3 pool, 3 edge, 2 bed and 1 riffle) with an average of approximately 10 taxa per habitat. The relatively low number of taxa recorded is reflective of the low levels of DO, turbidity and ephemeral nature of Back Creek. Of the three PET taxa, only two, Ephemeroptera (mayflies) and Tricoptera (caddisflies), were recorded. No PET taxa were recorded within the remnant pools at the three Back Creek sites. SIGNAL scores for the sites ranged from a minimum of 2.13 to a maximum of 3.75.

Overall the watercourses surveyed during November 2015 were in a moderately to highly disturbed condition due to high levels of exotic vegetation, sediment disturbance from stock and bank erosion which remained consistent with the geomorphological condition of surrounding waterways recorded during the EA.

7.2.3 Proposed Improvement Measures

The surface water monitoring program and management measures described above will continue to be implemented during the next reporting period consistent with the approved WMP. Water diversion works will continue to segregate clean and dirty water as the site expands and new infrastructure is installed.

7.3 GROUNDWATER

7.3.1 Environmental Management

Groundwater at MCCM is managed in accordance with:

- the groundwater criteria prescribed under schedule 3 condition 36 to 40 of the PA 10_0138;
- EPL 20221 Conditions P1 and M2; and
- the WMP prepared to satisfy the requirements of the EPL and PA 10_0138.

Currently groundwater monitoring is conducted at sites located within the Leard State Forest and at privately owned sites as illustrated on **Figure 9**. The Leard State Forest sites are sampled monthly for depth to water and field/laboratory quality analysis is conducted biannually. The groundwater sampling sites on privately owned land are sampled monthly for depth to water and quarterly for water quality in conjunction with landholders.

The Regional bores are sampled monthly for depth to water and quarterly for water quality for the first 12 months of sampling, while ongoing should be collected on a six monthly basis as per the WMP. Bores are sampled to the OEH Approved Water Sampling Methods and AS/NZS5667.11. All laboratory analyses are conducted by a NATA accredited laboratory.

Additionally during Q3 2015 reporting period MCC installed Water Level Logging devices in groundwater monitoring bores as required in the WMP. Data will begin to be recorded in the 2016 reporting period.

In 2010, eight groundwater monitoring bores (MAC252, MAC252R, MAC1218, MAC1219, MAC1259B, MAC1261, MAC1279, MAC1280, and MAC1283) and four vibrating wire piezometers (VWPs) (MAC263, MAC267P, MAC268P, MAC1284) were constructed within former exploration holes to form the EA baseline monitoring network. Since construction, most of the baseline monitoring bores and all the VWPs have been damaged or destroyed from the progress of mining or by protestors.

Owing to the depletion of the baseline network, a replacement monitoring network was developed by MCC in consultation with the NOW DPI-Water in Tamworth. Between October 2013 and February 2014, three groundwater monitoring bores and five nested vibrating wire piezometers (VWPs) were constructed in the coal seams at the MCCM. Currently, all the replacement bores and piezometers are active. The replacement bores have the prefix ‘RB’.

7.3.2 Environmental Performance

There were no non-compliance issues relevant to groundwater management recorded during the reporting period, nor have there been any community complaints. All bores show trends / characteristics that are within the historic range. Parameters recorded as part of the scheduled groundwater monitoring for this reporting period are summarised below and additional results provided in Appendix E.

Regional Quarterly Monitoring

Groundwater monitoring results in open/standpipe piezometers show levels to be currently stable. 'RB' and 'Reg' series bores were installed between Q4 2013 and Q1 2014. BCM01, BCM03 and Reg10 are shallow alluvial bores. No drawdown trends have been observed during the monitoring period.

Baseline groundwater conditions are still being established, however throughout most of 2015 three bores RBO1a, RB02a, Reg4 and Reg 13 show elevated pH levels (above 8.5). The pH levels at Reg 4 reduced from 12.36 to 9.02 in the December monitoring campaign. This has been determined to be a result of low recharge volumes within these bores since the drilling installation. Other replacement bores show stable groundwater pH that is characteristic of coal seams and interburden of between pH 7.5 and 8.0.

Recorded EC levels remained relatively stable during the 2015 reporting period and indicate a slightly saline groundwater quality that is characteristic of coal seam lithology. Laboratory conductivity (EC) levels are all within historic groundwater EC range of 500 to 2500 µs/cm apart from Reg13. These levels are relatively consistent with historical trends from bores monitored as part of the Maules Creek EA in 2010.

Private Groundwater Bores

Groundwater monitoring results at private bores are similar to those recorded in the MCC regional monitoring network with all results displaying constant trends to baseline data from previous years. The standing water levels remain consistent and pH levels remain relatively constant (between 7 and 8.5). EC levels are generally consistent with all results between 200 and 2500 apart from BRE2 with slightly higher levels.

Vibrating Wire Piezometers

Data from the Vibrating Wire Piezometers is downloaded on a monthly basis. Appendix E includes graphs and tables of recorded temperature and water level for the reporting period. Groundwater levels in all monitored bores have remained relatively stable/constant over the monitoring period and are consistent with monitoring results from previous years. VWP RB04 is a nested ground water monitoring location with 4 sensors targeting different coal seams. VW1 located in the Braymont seam ceased capturing data in February 2015, however there are a number of other VWP's located within the Braymont seam that continue to monitor ground trends.

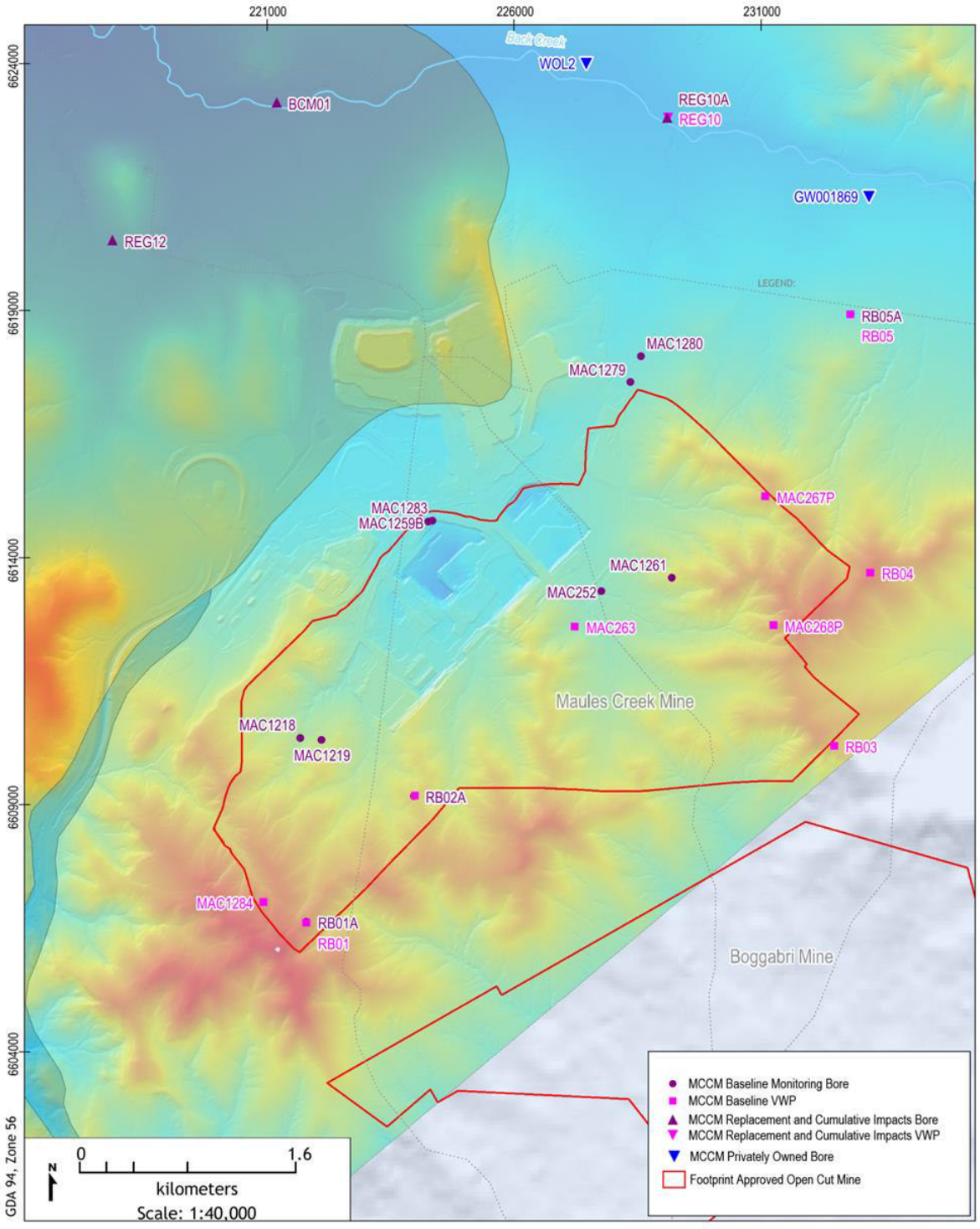


Figure 9
MCC Groundwater Monitoring Locations

Groundwater Inflows

The Groundwater Impact Assessment (AGE, 2011) estimated the rate of groundwater seepage to the open cut pits in the mining complex using a numerical model. AGE (2014) updated the groundwater model and seepage estimates as summarised in the WMP.

As mining progresses, groundwater inflows are predicted to vary with the changing mine layout, depending on the intersection of the aquifers. The groundwater modelling undertaken by AGE predicted cumulative inflow of groundwater over the life of the mine is approximately 11,540 ML, which is an average of 550 ML/year over the 21 years of mining. The predicted groundwater inflows into the open cut for Years 5, 10, 15 and 21 are 0.2, 1.2, 2.9 and 0.7 ML/day, respectively.

Groundwater inflows into the active pit have been negligible during 2015. It is likely that the minor groundwater seepage that have occurred to date have been subject to evaporation prior to accumulation and pooling in-pit.

7.3.1 Proposed Improvement Measures

The Groundwater monitoring program and management measures described above will continue to be implemented during the next reporting period.

7.4 SITE WATER BALANCE

The site water balance for the reporting period is presented below in **Table 14**.

A review of the water balance found that inflows to the site during the reporting period were generally in accordance with the predictions made in the EA for Year 5 of MCCM operations. Pumping from the Namoi River to site was consistent with water licence entitlements for the 2014/15 FY (see **Table 13**). Captured rainfall and runoff volumes were slightly less than predicted in the EA and Water Management Plan due to the additional areas to be cleared prior to Year 5, while the seepage of groundwater into the pit was negligible during the reporting period and lower than predicted.

Water usage during the reporting period was generally similar to the volumes predicted in the EA for the Year 5 scenario, with the exception of the requirements for dust suppression. These volumes were higher than predicted in the EA and Water Management Plan in order to minimise potential dust emissions from haul roads and other exposed areas during the reporting period.

Table 14
Site Water Balance (CY 2015)

Aspect	Volume (ML)
Change in Storage	
Start of 2015	250
End of 2015	517
Net Change in Storage	**267**
Water Inflows	
Namoi River Pumping	1,255
Rainfall & runoff	1,104
CHPP Water Recycling	309
In-pit Groundwater Seepage	<5*
Total Inflows	**2,668**
Water Outflows	
CHPP Water Use	-1,030
Dust Suppression	-712
Evaporation from Storages	-391
Clearing / construction process water	-87
Miscellaneous (washdown bay, etc)	-90
Total Outflows	**-2,310**
Water Balance (2015)	**358**

** Negligible groundwater seepage in the pit occurred during 2015*

8 REHABILITATION

The Rehabilitation Strategy for the MCCM is described in Section 7.16 of the EA. The State and Commonwealth approvals both specify that the rehabilitation of the MCCM must be consistent with the Rehabilitation Strategy (i.e. Condition 71 of Schedule 3 of PA 10_0138 and Condition 26 of EPBC 2010/5566). The MOP summarises the key elements of the Rehabilitation Strategy as well as providing a description of activities and mine landforms.

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

8.1.1 Status of Mining and Rehabilitation

At the completion of the 2015 reporting period, all domains are classed as 'active' with only minor rehabilitation activities completed in association with exploration activities and stabilisation following the completion of particular construction activities. **Figure 10** below from the approved MOP represents the mining domains at the completion of the 2015 reporting period.

8.1.2 Post Rehabilitation Land Uses

The proposed post mining land use for MCCM will be consistent with the description contained in the EA and as per the requirements of the State and Commonwealth approvals. The area will be returned to a mixture of native vegetation communities including grassy woodland, shrubby woodland/open forest and riparian forest natural forest and woodland. Condition 71 of Schedule 3 of PA 10_0138 includes a table (i.e. Table 17), which lists the overall rehabilitation objectives for the MCCM. These are repeated below in **Table 15**.

Table 15
Rehabilitation Objectives

Feature	Objective
Mine site	• Safe, stable and non-polluting • Constructed landforms drain to the natural environment.
Final void	• Minimise the size and depth of the final void as far as is reasonable and feasible • Minimise the drainage catchment of the final void as far as is reasonable and feasible
Surface Infrastructure	• To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise.
All land, other than the final void	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: o local native plant species; and o a landform consistent with the surrounding environment, in accordance with the Biodiversity Offset Strategy and Biodiversity Management Plan.
Community	• Ensure public safety • Minimise the adverse socio-economic effects associated with mine closure

Note: Appropriate non-native sterile plants may be used for stabilisation and dust suppression purposes on a temporary basis, if required.

8.1.3 Rehabilitation Performance Indicators

Table 16 summarises the rehabilitation status for the MCCM. Short term (or temporary) rehabilitation, ongoing from the construction phase has included stabilisation of railway batters, road embankments, water management infrastructure and temporary stockpiles. These activities have been undertaken in accordance with the short term objectives defined in the MOP.

Table 16
Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period 2015 (Actual)	Next Reporting Period 2016 (Forecast)
A. Total mine footprint	560	910	1,329
B. Total active disturbance	560	910	1,329
C. Land being prepared for rehabilitation	0	0	0
D. Land under active rehabilitation	0	0	0
E. Completed rehabilitation	0	0	0

8.1.4 Decommissioning and Demolition Activities

As anticipated in the MOP, no decommissioning activities were undertaken during the reporting period and as such are not addressed further in this document.

8.1.5 Other Rehabilitation Activities

Rehabilitation activities associated with the exploration activities have been undertaken in the 2015 reporting period. Where possible, exploration holes were located on previously disturbed land in order to minimise clearing. Where this was not possible, the extent of clearing was restricted to the practical minimum area for each drill pad sealed and rehabilitated following completion.

8.1.6 Departmental Sign-off of Rehabilitated Areas

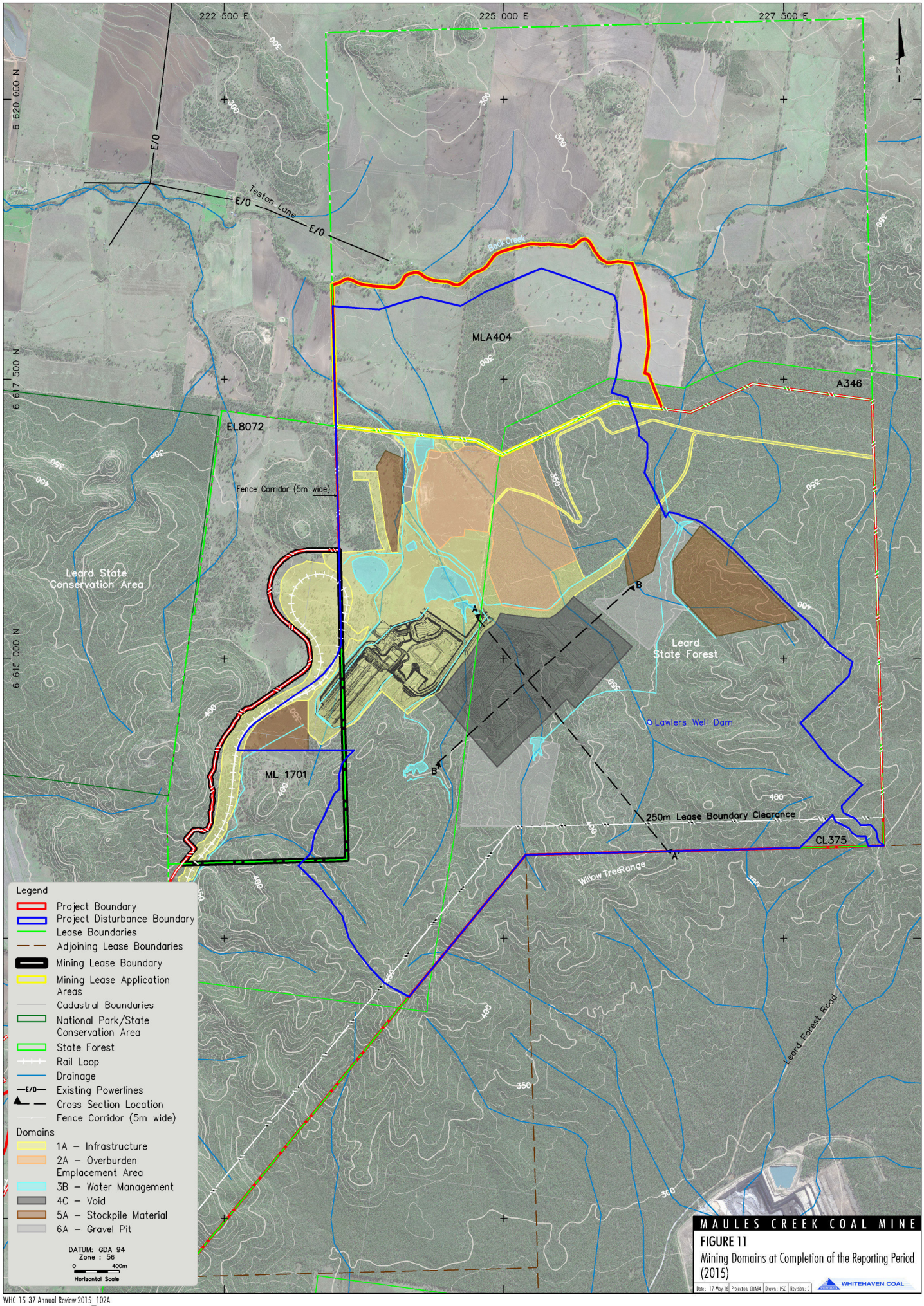
Departmental sign-off has not been requested.

8.1.7 Variations in Activities against MOP/RMP

A MOP amendment was approved during the period to update and including:

- the inclusion of a new Mining Lease;
- modification of the PA 10_0138; and
- a reduced disturbance area and footprint

There were no other variations in activities undertaken at the MCCM to those proposed in the MOP/RMP.



MAULES CREEK COAL MINE

FIGURE 11

Mining Domains at Completion of the Reporting Period (2015)

Date : 17-May-16 | Projection: GDA94 | Datum: PSC | Revision: C

WHITEHAVEN COAL

8.1.8 Monitoring

As anticipated in the approved MOP, there was no progressive rehabilitation undertaken, and accordingly, there are no monitoring results to report for the 2015 period. Visual inspections of short term (or temporary) rehabilitation is however undertaken on a regular basis to assess the establishment around infrastructure areas and topsoil stockpiles.

8.1.9 Topsoil Balance

In line with Condition 39 of Schedule 3 of PA 10_0138, and Conditions 26(b), 27(c) and 27(d) of EPBC 2010/5566, the management of topsoil at the MCCM is undertaken in accordance with the Soil Management Protocol.

Detailed soil surveys have been undertaken within the disturbance footprint, prior to the stripping of topsoil. These surveys generated assessments of the suitability of topsoil and subsoils for use on mine rehabilitation and the preparation of stripping plans for each of the topsoil areas. Topsoil volumes stored to date are summarised in **Table 17**. Including a forecast estimate for the ensuing period. MCCM will continue to monitor topsoil volumes to ensure appropriate volumes are recovered for later use on rehabilitation areas

Table 17
Topsoil Balance

Area	2014 Soil Balance (m^3)	2015 Soil Balance (m^3)	2016 Soil Balance (m^3)	Total Soil Balance (m^3)
MIA / Construction	539,166	145,990	-	-
Mining Operations	252,490	349,928	-	-
Still to clear / strip	-	-	740,000	-
Totals	**791,656**	**495,918**	**740,000**	**2,027,574**
EA Total for rehab	-	-	-	2,368,000
Net difference	-	-	-	-340,426

It is likely that the quantity of topsoil which can be recovered from the mining areas over 2016/17 will be consistent with the EA forecast for future rehabilitation.

8.1.10 Trials, Research Projects and Initiatives

Mine rehabilitation trials and research have not yet commenced due to the early production stage of the mine life.

A research project plan (required under the MCCM EPBC approval) to invest $1 million for research that will identify effective methodologies for achieving rehabilitation and restoration of functioning White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community on mining sites was approved by DoE during the period. This project plan will commence in 2016 and further inform rehabilitation strategies for MCCM.

8.1.11 Key Issues to Achieving Successful Rehabilitation

The four key issues to achieving successful rehabilitation include:

- excessive erosion and sedimentation (e.g. Gullying and sedimentation resulting in land stability and vegetation growth issues);
- weed and feral animal infestation;
- poor vegetation establishment and growth (including the Box-Gum Woodland EEC/CEEC); and
- landform stability.

In cases where the performance is sub-optimal, additional management measures will be implemented (e.g. replanting, repairing landform and water management features, application of much/fertilisers, feral animal and weed control etc.). A TARP for rehabilitation at the MCCM has been included in the MOP, which outlines appropriate actions and varied responses that will be implemented as required.

8.1.12 Actions for the next reporting period

The rehabilitation actions and detailed justification for the next reporting period are detailed in the approved MOP which covers the 2016 and 2017 calendar years.

8.1.13 Proposed Research and Rehabilitation for 2016

Due to the early operational stage of the mine, and final landform elevation for rehabilitation is not yet available, no rehabilitation research activities are planned during the 2016 period on the mine site. Trials will be planned as part of the Biodiversity Management Plan within biodiversity areas.

9 COMMUNITY

Social impacts and opportunities associated with the MCCM are managed in accordance with the Social Impact Management Plan (SIMP), Schedule 3 Condition 78 and the Statement of Commitments (SoC) Appendix 5 of PA 10_0138.

9.1 COMMUNITY ENGAGEMENT ACTIVITIES

MCC uses a variety of community engagement and consultation methods including the MCCM Community Consultative Committee (CCC), Whitehaven website, MCCM phone hotline, local media updates, local school visits, sponsorship of local community events and groups, and meetings as required with neighbours and a range of stakeholders including government and non-government agencies.

MCCM also operates a Community Consultative Committee, with meetings held quarterly during the reporting period, in addition a joint meeting between Maules Creek Coal, Boggabri Coal and Tarrawonga Coal Mines CCC's was held during November 2015. Minutes of these meetings are posted on the Whitehaven website.

MCCM are also involved and attend various community events and information forums as part of engaging with the local community including; Business Chamber forums, Progress Association meetings, council meetings, industry forums, community gatherings and charity club functions including Lions, Rotary and Rescue Helicopter.

9.2 COMMUNITY CONTRIBUTIONS & INITIATIVES

As well as attending functions, WHC and MCCM also contribute to the community by providing financial support and sponsorship to various community events and initiatives throughout the community, these include:

- Boggabri Drovers Camp Fire
- Narrabri RSL War Memorial upgrade
- Funding to Boggabri Lions Club for local community members to travel to Boggabri Cup
- Maule Creek Camp Draft
- Country North Cowboys league carnival
- Wean Race Day
- Boggabri fishing club Carp Muster
- Boggabri community – Great Cycle Challenge for Cancer
- Boggabri Carols in the Park
- Narrabri and District Chamber of Commerce Business Awards
- Children's Charity Network – Young Indigenous Art and Literacy Program
- Australian Indigenous Oztag World Cup
- Donations to emergency services provider – the Westpac Rescue Helicopter service
- Donations for medical equipment to Gunnedah Rural Health Centre

The MCCM Social Impact Management Plan (SIMP) outlines a number of objectives to monitor the effect of the MCCM within the local community relating to housing, employment, training, economic development, community infrastructure and traffic. The following reports on the activities, monitoring and results with regards to the objectives outlined in the SIMP.

Housing

To reduce the pressure on the local short term housing market during construction, third party accommodation was supplied to contractors at the Civeo Accommodation Villages in Narrabri and Boggabri, with the peak occupation rate percentage at these villages for rooms contracted by WHC/MCCM during the reporting period being 70% during the first half of March 2015, showing that suitable accommodation remained available at the peak time during the reporting period.

In addition, with the ramp up of mining employment this third party accommodation is also available to mine operations employees at a subsidised rate to assist in reducing peak rental/leasing concerns in the local area, with the fee for us increases every three months, in order to encourage employees to move to the area permanently. Whitehaven has strong focus on employing local people at its operations, and this subsidised approach has been positively received as a short term housing solution by new employees to the mine as they investigate and look to relocate to the local area. WHC will continue to monitor in conjunction with local councils the ongoing housing and accommodation market to ensure impacts are managed.

Employment and Training

As at the end of the reporting period, MCCM workforce, including supplementary labour hire, was 338 (approximately 72% of the anticipated steady state workforce) with over 75% residing in the local area, up from the previous reporting period of 38%. The remaining workforce (including management and professional staff) have permanent residence listed as being outside the Narrabri and Gunnedah LGAs. The associated transport solution of both residential and non –residential workforce is satisfied by the ongoing shuttle bus service that is provided by MCCM for both operational employees as well as staff/management where this is practicable.

Whitehaven's *Workforce Diversity Policy* has supported strong representation of women, Indigenous and young people. Of the 338 MCCM workforce employees at the end of the period:

- 53 employees (approximately 16%) are Indigenous, with the percentage remaining consistent with the previous reporting period;
- 48 employees (approximately 14%) are women, up from 11% for the previous reporting period; and
- 64 employees (approximately 19%) are new to mining, a slight decrease from the previous reporting period of 22%.

Whitehaven and MCCM provide training opportunities for apprenticeships and traineeships in order to support local employment and increase local skills levels. During the reporting period 3 young locals accepted positions as Apprentices Electricians and 1 as an Apprentice Plant Mechanic as part of the WHC MCCM apprenticeship program at the start of 2015. Taking total number of apprenticeships accepted under the program to 16, since 2011. In addition, 3 apprentices successfully completed their training and received trade qualifications during the period and both have successfully gained employment as tradesmen with MCCM.

Whitehaven also provides opportunities for scholarships for tertiary studies. During the period a recipient of a MCCM scholarship successfully completed a 4 year university degree in Engineering. Scholarships and/or cadetships were also provided to school leavers and university student during 2015, including vacation employment.

Provision of employment figures and amount of local spend by WHC is also available and provide to councils as requested to assist the councils in their forward planning, these figures are also included in financial reports released by WHC.

Economic Development

Whitehaven, which includes MCCM contributes financially to the economy at both state and federal level and to the communities in which we operate. Employees and contractors also add a significant economic contribution to the Gunnedah, Narrabri, Boggabri and Werris Creek townships through their purchases from local businesses.

In 2015 Whitehaven spent:

- $125.6m in salaries, wages, taxes and superannuation to employees (on a 100% joint venture basis)
- $84.3m in royalties to the New South Wales Government (on a 100% joint venture basis)
- Over $358.1m on mining, washing and delivering coal onto trains at our mine sites
- Over $202.2m in port and rail charges for track access haulage costs and port costs
- More than $182,000 towards local education activities and community groups

Community Infrastructure

During the reporting period MCCM paid a lump sum cash contribution to Narrabri Shire Council (NSC) of $3,268,750 under its VPA to go towards infrastructure projects and upgrades within the Narrabri, Boggabri and Maules Creek communities. MCCM also contributed $100,000 towards an environment trust to enable funding of environmental projects in and around the Leard Forest Precinct area. In additional, as a result of coal sales directly from the MCCM, a further $370,000 approximately, has been paid to NSC during 2015 to be spent on further infrastructure projects. During 2015, NSC upgraded and sealed approximately 4km of an unsealed section of Therribri Road outside of the township of Boggabri utilising a portion of the funds provided under the VPA. WHC has also supported the allocation of VPA funds to provide a permanent water supply for Baan Baa.

During the 2015 period WHC spent approximately $215 million with local businesses and suppliers in the Narrabri, Gunnedah, Tamworth and Liverpool Plains Shires. Local jobs and local spend with local businesses will remain a focus in future years.

9.3 COMMUNITY COMPLAINTS

MCC maintains a dedicated Community Hotline (1800 MAULES) for the MCCM. The Community Hotline is advertised in the local press. In the event of a complaint or enquiry, details pertaining to the complainant, the complaint and action taken are recorded on the complaints register.

A summary of the complaints (by category) received by MCCM over the last two reporting years are detailed in **Table 18**. The Complaints Register is also available on the Whitehaven Coal website.

Table 18
Summary of Community Complaints and Enquiries

Category	2014	2015
Air Quality	13	42
Traffic	7	0
Surface Water	1	0
Visual Amenity	1	0
Noise / Vibration	11	33
Blast	3	4
Other	1	0
TOTAL	**37**	**79**

Note a single complaint may involve multiple categories

9.3.1 Complaint Trends

The total number of complaints received in 2015 is higher than those recorded in the 2014 reporting period. The increase in complaints related to air quality and noise/vibration aligned with a transition from construction to production status at the MCCM. Additionally, there were no complaints regarding traffic, surface water or visual amenity compared to the nine received in 2014.

9.3.2 Actions & Proposed Improvements

Community complaints primarily related to air quality and noise concerns. Actions taken in response to complaints included a range of measures not limited to the following:

- Investigations into specific mining activities;
- Reviewing video footage or visual media where available;
- Reviewing real time data monitoring and operational activities;
- Reviewing daily risk reports to determine appropriate TARP levels dependent on specific mining activities and weather patterns to support operational management;
- Analysis of meteorological data and physical inspections of offsite locations;
- Communicating learnings and issues to operational personnel; and
- Community Consultation.

10 INDEPENDENT AUDITS

10.1 BIODIVERSITY AND ABORIGINAL CULTURAL HERITAGE AUDIT

DPE commissioned Umwelt (Australia) Pty Limited (Umwelt) to assist in conducting a compliance audit of Maules Creek Coal Mine in March 2015. The independent audit focused on biodiversity and Aboriginal cultural heritage management at MCCM.

10.1.1 Key Audit Outcomes

The Biodiversity and Aboriginal Cultural Heritage compliance audit identified a generally good level of compliance, whilst also identifying some low to moderate non-compliances and administrative non-compliances mainly associated with the implementation of the BMP and the AACHMP. Many of the issues identified were of a technical nature whilst overall on-site environmental management performance of the site was found to be generally sound.

MCC received a PIN from DP&E against Schedule 3 Condition 52 of PA10_0138 for the implementation of the Biodiversity Management Plan and in particular the measures for collection and propagation of seeds, weed and feral animal control documentation.

10.1.2 Progress Update

MCC developed and submitted an Action Plan in response to the findings of the audit. MCC has completed activities relating to the findings including:

- The weed monitoring was conducted in February 2015 within the MCCM boundary as part of site pre-clearance surveys;
- The feral animal monitoring within the MCCM boundary was conducted in March 2015 and April 2015. A feral animal control program for Pigs in currently under way on MCCM offset areas that adjoin the site;
- MCC has issued the "MCC_SB_013 Safety Brief - Code of Conduct for Drivers" which included an additional requirement to minimise risk of collision to fauna;
- The report detailing the spring 2014 monitoring conducted on offset areas and monitoring of vegetation within the MCCM Boundary (incomplete at time of audit) has been finalised;
- Updated status of sites is included in the latest version of the AACHMP approved in August 2015;
- The updated status of Aboriginal Heritage sites and the interim storage location at the WHC offices for all salvaged artefacts has been included in the latest version of the AACHMP approved in August 2015;
- To date, Quinine Bush has been identified at locations across the site. A program of plant and seed collection and propagation has been undertaken. Propagation of the seed species is ongoing; and
- The Bushfire Management Plan has been revised to align with the BMP.

The only outstanding items relate to issues which were not seasonally feasible to complete prior to the 31 December 2015. These will be addressed during the 2016 clearing campaign where feasible including:

- native seed collection;
- improved record keeping in relation to notification to wildlife carers;
- records of bat roosts during pre-clearance surveys;
- demarcation of a buffer corridor when clearing activities are within 10m of the corridor boundary which will not be occurring during the 2016 clearing campaign.

10.2 INDEPENDENT ENVIRONMENTAL AUDIT

SMEC Australia Pty Ltd (SMEC) was commissioned by MCC by the end of June 2015 to conduct an Independent Environmental Audit (IEA) in accordance with the Project Approval 10_0138 (Schedule 5 Condition 10) for the MCCM. The audit focussed on MCCM's compliance with licences, approvals and supporting documents including management plans. This audit was conducted for the period between the 23 October 2012 (date Project Approval 10_0138 granted) and the 31 June 2015.

The IEA was submitted to DP&E during September 2015, together with MCC's response to any recommendations contained in the audit report in accordance with Schedule 5 Condition 11 of PA 10_0138. Upon approval by DP&E the IEA report will be made available on the Maules Creek Coal Mine website.

In accordance with Schedule 5 Condition 10 of PA 10_0138 the next Independent Environmental Audit will be commissioned by the end of June 2018 and submitted to the DP&E by the end of September 2018.

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1 NON-COMPLIANCES

The compliance status of the MCCM against relevant approvals during the reporting period was assessed in Section 1 as at the end of the reporting period (i.e. 31 December 2015). Further details of any non-compliance and actions undertaken or proposed for the following reporting period is summarised in **Table 19**.

Table 19
Non-Compliance Details and Proposed Action Plan

Non - Compliance	Date / Location	Cause	Action Plan	Estimated Completion Date
Surrender of DA 85/1819 has not been finalised. Delays occurred associated with landowner consent.	Required by the end of 2013.	Delays occurred associated with landowner consent.	MCC will continue to liaise with landholders to gain consent to surrender DA85/1819, continue discussions with DPE to enable MCC to satisfy this condition.	Ongoing
Not all equipment has met the SPL of the EA. MCC has undertaken initial SPL tests and an ongoing twelve monthly campaign to retest. "A" weighted levels were generally compliant with the modelled EA SPL, however some equipment has not met "L" weighted test criteria.	During reporting period.	Equipment sound power levels above those EA.	Ongoing improvements and engineering solutions are being implemented to reduce the SPL of those pieces of equipment with higher SPL's than stated in the EA.	Retesting 2016 and finalise installation of exhausts. Mobile and fixed plant works by end during 2016 and completed 2017.
All requirements of the NMP not fully implemented: • Plant Sound Power levels measured above criteria • Copy of annual review was not sent to the council • Agencies were not notified within 7 days of an attended monitoring exceedence occurring • Was not reviewed and revise (if necessary) within a three month period following an annual review	During reporting period.	Equipment sound power levels above those EA.	Ongoing improvements and engineering solutions are being implemented to reduce the SPL of those pieces of equipment with higher SPL's than stated in the EA. MCC will update the NMP during the next reporting period and implement all the requirements in the NMP.	Refer above. Submission in June 2016
All the requirements of the Blast MP not fully implemented: • Measures to improve compliance were not detailed in the 2014 Annual Review • A copy of the annual review was not forwarded to DPI, OEH, Council and CCC • Was not reviewed and revise (if necessary) within a three month period following an annual review	During reporting period.	Procedural Oversight.	Proposed improvement measures detailed in the 2015 Annual Review A copy of the Annual Review will be forwarded to the required stakeholders. MCC will update the BLMP during the next reporting period and implement all the requirements in the Blast MP.	Following approval of AR in 2016. Consultation first half 2016 and submission third quarter 2016

Non - Compliance	Date / Location	Cause	Action Plan	Estimated Completion Date
A predictive air dispersion modelling required as part of the air quality management system was not operational during the period, however predictive meteorological forecasting is utilised at the site. The predictive air dispersion modelling will be implemented as part of the BTM AQMS.	During reporting period.	Air Quality Management Strategy (AQMS) was not finalised during 2015	Finalise AQMS during 2016. In accordance with the MCC AQMP, the predictive and real time air dispersion modelling will be implemented as part of the Leard Forest Precinct AQMS. Alternate management measures have been implemented by MCC in the interim.	AQMS submitted to DPE 3rd quarter 2016. Installation of e-samplers and model software will be implemented and commissioned following AQMS approval.
All the requirements of the AQGHGMP not fully implemented: • Tenants were not advised of all their rights • Review and revise if necessary within a three month period following annual reviews, incident reports, audits or modification of the approval • Was not reviewed and revise (if necessary) within a three month period following annual reviews, incident reports, audits or modification of the approval	During reporting period.	Procedural Oversight.	Notify tenants of rights as required by PA. MCC will update the AQGHGMP and implement all the requirements in the AQGHGMP.	Refer above following approval of the AQMS.
All the requirements of the WMP not fully implemented: • Guidelines for groundwater sampling were not referenced in monitoring reports • Was not reviewed and revise (if necessary) within a three month period following an annual review	During reporting period.	Procedural Oversight.	Monitoring reports to include sampling methods. MCC will update the WMP during the next reporting period and implement all the requirements in the WMP.	Submission of revised WMP during 2016 reporting period.
All the requirements of the BMP not fully implemented. DPE issued a PIN following an audit at the commencement of the reporting period. Some items remain outstanding as at the end of the reporting period as it was not seasonally feasible for MCC to implement all the requirements as they relate to clearing activities.	During reporting period.	Seasonably unfeasible	MCC will update the BMP during the next reporting period and implement all the requirements in the BMP. Items that were not seasonably feasible for MCC to implement during 2015 will be implemented during 2016.	Consultation of BMP in April and May 2016. Other actions during 2016 approved clearing window.
The AACHMP was not reviewed and revised (if necessary) within a three month period following an annual review.	End of June 2015	Procedural Oversight	MCC will review and if necessary revise any AACHMP within the required time-frames.	Reviewed by June 2016
Not quite 90 % of employees were transported to the site via shuttle bus. DP&E issued a PIN during 2015 relating to this condition.	During reporting period.	Less than 90% of employees transported to site via shuttle bus	DP&E issued a PIN during 2015 relating to this condition. Shuttle buses remain in use at MCC. MCC are preparing a modification to the PA.	31 December 2016

Non - Compliance	Date / Location	Cause	Action Plan	Estimated Completion Date
All the requirements of the TMP were not fully implemented: • Upgrade to the intersection of Rangari Road and the Kamilaroi Highway within the timing requirements of the TMP • 90 % workforce was not transported by shuttle bus	During reporting period.	Not quite 90% of employees transported to site via shuttle bus	Assessment of intersection and traffic flows was undertaken during the reporting period which indicates the current intersection is adequate for current and future traffic flows. Another assessment will occur in 2016. Consultation with relevant agencies will continue, including with DPE. DP&E issued a PIN during 2015 relating to this condition. Shuttle buses remain in use at MCC. MCC are preparing a modification to the PA to address this condition.	31 December 2016
Liaison with GSC regarding rail transport did not occur within 12 months of the completion of the study.	During reporting period.	Procedural Oversight	MCC will liaise with GSC regarding rail transport.	December 2016
Performance against the SIMP was not reported in the 2014 Annual Review	2014 Annual Review	Procedural Oversight	SIMP performance is included in this Annual Review	Complete
No evidence could be obtained that MCC supplied all tenants list in table 1 with this information.	During reporting period.	Procedural Oversight	In 2016 MCC will advise tenants of their rights in accordance with all the condition requirements.	December 2016
A review and if necessary revision of all Management Plans within the required time-frames.	June 2015	Procedural Oversight Ineffective records	MCC will review and if necessary revise any Management Plans within the required time-frames.	June 2016
Complaints register not regularly updated within the month	During reporting period.	Procedural Oversight	MCC will maintain a current and up to date complaints register and load to the WHC web monthly.	Ongoing
Not all requirements in the EMS and EMP: • Training Matrix was not developed • Existing system and form does not consolidate environmental complaints and incidents • Inspection programs is conducted but not in the form of and “audit” • Document register does not include external consultants documents/reports	During reporting period.	Procedural and systems inconsistencies	MCC will update the EMS during the next reporting period to align with existing systems and processes and progressively implement	31 December 2016

Non - Compliance	Date / Location	Cause	Action Plan	Estimated Completion Date
• Agricultural Land Monitoring was not conducted during the period • Was not reviewed and revise (if necessary) within a three month period following an annual review				
Oral history reports not completed for landholders acquired by the mine.	During reporting period.	Procedural oversight	MCC will attempt to contact the owners of land acquired by the Project in writing and ask whether they wish to contribute to an oral history report to be compiled.	31 December 2016
Past LDP's did not have a weed map attached.	During reporting period.	Seasonably unfeasible	Weed mapping has been conducted prior to land clearing activities although have not then been attached to the LDP. Weed mapping will be filed with future LDP(s) and will include records of noxious weed locations.	March 2016
2014 AEMR did not include measures to be implemented in the following year	2014 Annual Review	Procedural oversight	Future Annual Review's will include measures to be implemented in following years	March 2016
No record of annual rehabilitation audit, even though no mine rehabilitation has been undertaken.	During reporting period.	Timing unfeasible	No mining rehabilitation has occurred at MCCM to date. Inspections of rehabilitation including monitoring of success will be undertaken when progressive mine rehabilitation commences.	Ongoing
Land holders were not notified on renewal of CL.	Following renewal in 2013	Procedural oversight	MCC will notify the relevant landholders at time of renewal of leases	Ongoing
LALC was not notified on renewal of A346	Following renewal in 2013	Procedural oversight	MCC will notify the LALC following the renewal of A346	Ongoing
The water meter had a technical fault and was not reported to DPI - Water within the seven day time-period.	June 2015	Procedural oversight	MCC will notify the DPI within 7 days of any meter reading failure.	Ongoing
Calibration certificates could not be provided	During reporting period	Procedural oversight	Water meters will be calibrated as required and certificates recorded	Ongoing

11.2 REPORTABLE INCIDENTS OR EXCEEDANCES;

Details of reportable monitoring exceedances or incidents are included below.

Monitoring result exceedances were reported to the EPA and DPE.

- Two noise recordings, 1dB above the relevant criteria. An exceedence of up to 2 dB is not considered significant in accordance with Chapter 11 of the NSW Industrial Noise Policy, which states that a development is only deemed to be in non-compliance when 'the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or license condition'. Various measures have been undertaken in the reporting period or are proposed for 2016 to attempt to prevent the reoccurrence of any noise exceedence and to mitigate the potential impacts of noise on surrounding receivers. These are detailed in Section 6.4;
- As a result of the low frequency assessment required by the NSW Industrial Noise Policy, five noise measurements in June incurred a 5dB noise resulting in levels above the relevant noise criteria; and
- monitoring results were not captured at blast monitor BM2 due to a hardware failure in December 2015. All blasts were predicted and modelled to be within the compliance criteria and investigation completed by the contractor into the hardware issue to mitigate reoccurrence. These will be included in the EPL Annual Return.

11.3 REGULATORY ACTIONS

The following official cautions or warning letters, penalty notices or prosecution proceedings issued to MCC during the reporting period:

- a show cause letter regarding alleged exceedence of noise limits during March, April and May was provided by the EPA on the 29 September 2015. MCC provided a written response addressing the EPA's queries on the 23 October 2015;
- during April 2015 MCC received a penalty notice for a breach of Schedule 3 Condition 63 of PA 10_0138; and
- following the DPE Biodiversity and Aboriginal Archaeology Audit in February 2015, MCC received a penalty notice for a failure to implement the Biodiversity Management Plan. A warning letter relating to the management of the vegetated corridor, variation between the EA and the AACHMP and the implementation of the Keeping Place and Quinine bush. A progress update for the actions out of the DPE Audit is included in Section 10.1.

12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Activities to be completed in the next reporting period to improve the environmental or community performance of the MCCM, in addition to those separately identified in Section 11 include:

- Review and revision of various Environmental Management Plans;
- Implementation of approved Leard Forest Precinct Strategies including implementation of a predictive air quality modelling tool;
- Scheduling and progressively implementing actions identified from the IEA;
- Improvements in noise management including muffler systems on Hitachi trucks, silent horn systems and other feasible measures that may be identified;
- Revision and submission of a MOP for 2016-17 to facilitate the continuation of mining; and
- Continued community liaison and engagement with local stakeholders.

APPENDIX A

BLAST MONITORING RECORDS

Appendix A
Blast Monitoring Records

The records presented in Table A-1 have been included to satisfy the blast reporting requirements of Schedule 3 Condition 19 and 20 of PA 10_0138.

Table A-1
Coal Transported Monthly

Date	Time	ID/Location	BM1 mm/s	BM1 dBL	BM2 mm/s	BM2 dBL	BM3 mm/s	BM3 dBL	BM4 mm/s	BM4 dBL
Criteria (0% exceedance, 5% exceedance)			10 (5)	120 (115)	10 (5)	120 (115)	10 (5)	120 (115)	10 (5)	120 (115)
9/01/2015	1246	Tes10	0.136	90	0.144	100.9	0.361	102.7	0.611	-
16/01/2015	1241	Tes11	*	*	0.15	94.2	0.406	93.1	0.634	99.6
27/01/2015	1304	RL335-1	0.378	98.9	0.16	104.7	0.481	107.4	0.583	98.9
4/02/2015	1247	RL335-3	0.161	100.6	0.108	95.5	0.34	98.5	0.417	103.9
10/02/2015	1240	Tes13	0.077	97.6	0.082	102.7	0.295	99.2	0.546	92.2
12/02/2015	1252	RL335-2	0.246	102.9	0.137	102.2	0.36	104.2	0.421	95.7
19/02/2015	1252	RL335-4	0.207	101.1	0.207	101.1	0.421	103.5	0.464	94.7
23/02/2015	1302	Tes15	0.079	95.1	0.086	90.7	0.293	88.3	0.381	98.2
25/02/2015	1254	Bra06	0.154	95.1	0.102	94.2	0.326	91.8	0.411	90.6
3/03/2015	1250	Tes15b	0.078	98.9	0.082	102.2	0.295	97.8	0.353	98.9
5/03/2015	1254	Tes16	0.088	103.2	0.087	108.5	0.301	96.2	0.547	98.9
10/03/2015	1252	1Brl01	0.191	90	0.133	88.2	0.346	91.8	0.445	90.6
13/03/2015	1250	2TNN01	0.079	90	0.078	96.7	0.297	100.3	0.359	98.9
19/03/2015	1253	Tes17	0.204	91.6	0.215	106.9	0.466	97.1	0.761	95.7
20/03/2015	1250	6Onv01	0.156	94.1	0.102	100.2	0.351	97.8	0.411	98.2
24/03/2015	1258	6Onv02	0.141	100.6	0.113	101.6	0.349	107.8	0.407	106.2
27/03/2015	1250	Tes19	0.156	97.6	0.158	97.7	0.379	99.2	*	*
2/04/2015	1254	Tes19a	0.226	95.1	0.141	97.7	0.383	90.2	0.566	88.7
9/04/2015	1555	Tes16b	0.069	100.1	0.084	98.6	0.306	100.3	0.365	93.5
13/04/2015	1317	6Onv03	0.1	101.6	0.87	102.7	0.335	104.5	0.381	98.9
15/04/2015	1601	6Onv03a	0.129	95.1	0.097	95.5	0.32	97.1	0.38	103.5
17/04/2015	1257	Strip 3 Tes 20	0.165	96	0.135	96.7	0.358	93.1	0.421	90.6
27/04/2015	1255	STP01 &	0.176	98.3	0.214	95.5	0.427	97.8	0.72	90.6
29/04/2015	1250	Tes21	0.226	94.1	0.167	98.6	0.392	94.3	0.452	98.9
6/05/2015	1250	Tes23	0.228	96.8	0.272	95.5	0.492	95.3	*	*
12/05/2015	1305	Tes 19c &	0.145	97.6	0.139	97.7	0.385	96.2	0.681	98.2
13/05/2015	1255	Tes 23	0.183	99.5	0.151	94.2	0.383	100.3	0.565	90.6
15/05/2015	1253	02TNN02	0.603	105.6	0.135	110.2	0.131	111.4	0.154	-
19/05/2015	1300	06Tes01	0.087	98.3	0.071	98.6	0.113	97.1	0.096	99.6
22/05/2015	1305	07Tes01	0.061	103.6	0.057	96.7	0.075	99.8	0.067	95.7
25/05/2015	1304	04TNN01	0.145	97.6	0.102	-	0.126	96.2	0.248	93.5

Date	Time	ID/Location	BM1 mm/s	BM1 dBL	BM2 mm/s	BM2 dBL	BM3 mm/s	BM3 dBL	BM4 mm/s	BM4 dBL
Criteria (0% exceedance, 5% exceedance)			10 (5)	120 (115)	10 (5)	120 (115)	10 (5)	120 (115)	10 (5)	120 (115)
28/05/2015	1254	Tes18	0.23	100.1	0.117	100.2	0.194	104.2	0.207	102.7
2/06/2015	1300	Tes27	0.117	104	0.094	100.9	0.123	103.9	0.082	101.2
5/06/2015	1300	Tes26	0.188	113.6	0.102	109.3	0.149	109.1	0.151	103.9
10/06/2015	1250	Tes25	0.21	100.6	0.156	95.5	0.154	94.3	0.109	98.9
12/06/2015	1254	Bra07, BRL03	0.415	102.9	0.174	106.6	0.23	104.2	0.208	99.6
16/06/2015	1250	Tes29, Tes03a	0.201	101.1	0.109	102.2	0.206	103.5	0.357	111.6
24/06/2015	1259	06TNN01,	0.266	91.6	0.118	97.7	0.214	102.3	0.246	97.5
2/07/2015	1304	TES28, Bra08	0.283	91.6	0.252	101.6	0.311	103.9	0.597	95.7
3/07/2015	1305	03Bra01, STP03	0.189	90	0.134	95.5	0.125	102.7	0.116	94.7
9/07/2015	1300	Tes30	0.285	91.6	0.254	96.7	0.338	99.8	*	*
10/07/2015	1250	TES31	0.21	100.6	0.156	95.5	0.154	94.3	0.109	98.9
17/07/2015	1305	04Bra01, STP04	0.157	95.3	0.145	106.2	0.184	-	0.155	-
22/07/2015	1257	02Bra, 04 Bra,	0.219	93.4	0.116	96.6	0.251	100.9	0.29	101.8
24/07/2015	1253	04TNN01	0.067	90.9	0.043	87.9	0.071	90.4	0.062	91.5
28/07/2015	1257	Tes31a	0.287	93.4	0.041	99.3	0.048	-	0.036	-
31/07/2015	1303	05Bra01, 07TSL01	0.181	94.4	0.111	96.6	0.141	-	0.102	93.5
4/08/2015	1251	05TNN02	0.111	93.4	0.088	96.6	0.089	99.5	0.128	92.6
6/08/2015	1254	Tes32, PS04	0.325	101.3	0.224	101.4	0.223	103.2	0.59	93.5
10/08/2015	1300	06TNN03, STP05	0.106	94.4	0.097	92.7	0.101	93.9	0.171	91.5
14/08/2015	1254	03Bra02	0.216	95.3	0.2	95.8	0.167	100	0.362	89
18/08/2015	1250	07TNN03	0.164	90.9	0.121	89.8	0.172	94.9	0.275	89
19/08/2015	1307	04TNN03, 03 Bra02a	0.171	104.6	0.101	105.4	0.138	104.4	0.15	92.6
25/08/2015	1259	5TNN01, 05Bra01	0.129	92.2	0.104	-	0.175	88.9	0.097	99.5
27/08/2015	1250	03Bra01a	0.125	98.8	0.074	103.8	0.194	86.9	0.077	96.4
28/08/2015	1257	03Bra01b	0.192	96.9	0.069	97.4	0.168	84.4	0.067	89
1/09/2015	1303	04TNN04	0.161	92.2	0.079	92.7	0.162	86.9	0.133	98.1
3/09/2015	1303	07TNN01 & 02	0.176	101.3	0.146	99.3	0.223	86.9	0.398	91.5
8/09/2015	1302	02TNN08, PS005	0.215	92.2	0.129	98.1	0.219	80.9	0.191	105.1
11/09/2015	1254	06Tes03, 06TNN04	0.116	94.4	0.11	95.8	0.156	96.7	0.223	94.3
17/09/2015	1257	08,355RL,4	0.313	110	0.145	109.1	0.203	109.5	0.274	102.1
18/09/2015	1254	Bra09	0.245	104.6	0.068	107.4	0.07	107.3	0.058	105.1
22/09/2015	1256	02TNN09	0.07	99.4	0.076	92.7	0.064	100.2	0.104	89
29/09/2015	1305	01BRL04	0.163	102.5	0.155	96.7	0.112	105.1	0.212	87.4
1/10/2015	1307	BRA10, Bra078a, TNN10	0.17	101.8	0.145	100.4	0.19	100.2	0.19	96.4
7/10/2015	1250	TES33	0.197	98.2	0.158	95.8	0.156	97.7	0.093	91.5
9/10/2015	1305	Bra11	0.157	101.8	0.12	104.1	0.187	103.3	0.238	93.5
14/10/2015	1300	TES34	0.177	94.4	0.185	93.9	0.164	97.7	0.106	91.5
15/10/2015	1250	Bra12	0.271	112.3	0.14	107.4	0.213	100.9	0.201	90.4
16/10/2015	1250	TES35	0.097	90.9	0.09	91.4	0.102	103.3	0.127	95.7
19/10/2015	1257	TNN11	0.091	106.7	0.061	105.9	0.089	105.1	0.073	99

Date	Time	ID/Location	BM1 mm/s	BM1 dBL	BM2 mm/s	BM2 dBL	BM3 mm/s	BM3 dBL	BM4 mm/s	BM4 dBL
Criteria (0% exceedance, 5% exceedance)			**10 (5)**	**120 (115)**	**10 (5)**	**120 (115)**	**10 (5)**	**120 (115)**	**10 (5)**	**120 (115)**
22/10/2015	1256	TNN14	0.124	99.4	0.119	103.8	0.162	99.5	0.196	104.1
23/10/2015	1303	TNN15	0.171	99.9	0.047	105.1	0.06	96.7	0.032	85.5
27/10/2015	1258	08,RL355,01, PS006	0.254	98.2	0.139	107.2	0.22	107	0.408	104.6
29/10/2015	1252	TNN13 &	0.248	84.8	0.077	89.8	0.089	95.6	0.092	93.5
3/11/2015	1258	Bra13a	0.228	98.2	0.128	95.8	0.131	95.6	0.088	92.6
4/11/2015	1242	Tes36	0.213	100.4	0.238	97.4	0.213	103.8	0.624	106.3
10/11/2015	1258	08,RL355,05 & BRA18	0.393	100.9	0.127	100.4	0.267	103.3	0.304	100.3
16/11/2015	1247	Tes37	0.255	95.3	0.212	99.3	0.238	99.5	0.517	94.3
18/11/2015	1258	BRA14,PS7,08RL 255,02	0.211	90.9	0.183	103.4	0.278	100.9	0.304	89
20/11/2015	1306	BRA19,PS08,08R L355,02	0.281	94.4	0.147	106.2	0.314	108.5	0.312	100.7
23/11/2015	1250	BRA15	0.12	105.7	0.112	105.7	0.15	94.2	0.12	105.7
27/11/2015	1303	BRA16,TES38	0.206	96.9	0.263	96.7	0.29	96.7	0.518	95.7
1/12/2015	1251	TNN12, BRA20	0.329	99.9	0.124	97.4	0.193	102.7	0.195	102.7
2/12/2015	1303	BRA17 BRA24	0.265	102.9	0.161	101.8	0.185	108.2	0.286	94.3
11/12/2015	1250	BRA24 BRA27	0.215	112.1	0.156	103.8	0.219	105.5	0.322	105.1
14/12/2015	1251	BLRL05	0.106	105.7	*	*	0.122	104.2	0.079	95.1
15/12/2015	1250	TES39 & 32a	0.238	100.4	*	*	0.303	108.2	0.711	97.6
16/12/2015	1255	BRA25	0.12	99.9	*	*	0.182	96.7	0.183	95.7
18/12/2015	1255	BRL07, PS009	0.241	96.1	*	*	0.346	98.7	0.338	91.5
21/12/2015	1300	BRA26, TNN14a	0.144	92.2	*	*	0.152	100.2	0.137	98.1
23/12/2015	1250	BRL06	0.148	93.4	*	*	0.144	100.9	0.212	103.6

APPENDIX B

COAL TRANSPORT RECORDS

Appendix B
Coal Transport Records

The records presented in Appendix B have been included to satisfy the coal transport reporting requirements of Condition 65 (a) and (b) of PA 10_0138. The amount of coal transported from the site on a monthly basis and the date and time of each rail movement generated by the MCCM has been listed in the **Tables A-1 and A-2** below.

Table B-1
Coal Transported Monthly

Month	Coal Transported (MT)
January	0.19
February	0.33
March	0.44
April	0.18
May	0.40
June	0.39
July	0.55
August	0.52
September	0.57
October	0.48
November	0.52
December	0.62
TOTAL	**5.18**

Table B-2
Daily Train Movements

DATE	Time
01-Jan-15	Day Shift
02-Jan-15	Day Shift
03-Jan-15	Day Shift
04-Jan-15	Day Shift
05-Jan-15	Day Shift
06-Jan-15	Day Shift
07-Jan-15	Day Shift
08-Jan-15	Day Shift
09-Jan-15	Day Shift
10-Jan-15	12:05:00 PM
11-Jan-15	12:45:00 PM

DATE	Time
12-Jan-15	11:35:00 AM
13-Jan-15	5:00:00 PM
15-Jan-15	12:57:00 AM
16-Jan-15	3:05:00 PM
21-Jan-15	11:30:00 PM
22-Jan-15	3:56:00 PM
24-Jan-15	1:36:00 PM
25-Jan-15	12:25:00 PM
25-Jan-15	6:35:00 PM
26-Jan-15	3:22:00 PM
28-Jan-15	6:50:00 PM

DATE	Time
29-Jan-15	1:30:00 PM
30-Jan-15	5:18:00 AM
31-Jan-15	8:15:00 AM
31-Jan-15	12:25:00 PM
02-Feb-15	12:27:00 PM
02-Feb-15	6:15:00 AM
03-Feb-15	8:53:00 AM
03-Feb-15	11:00:00 PM
04-Feb-15	1:12:00 PM
05-Feb-15	9:40:00 AM
06-Feb-15	6:58:00 PM

DATE	Time
06-Feb-15	6:15:00 AM
06-Feb-15	1:05:00 PM
07-Feb-15	8:56:00 AM
08-Feb-15	3:09:00 AM
08-Feb-15	10:42:00 AM
08-Feb-15	3:58:00 PM
09-Feb-15	12:34:00 AM
10-Feb-15	4:50:00 AM
10-Feb-15	10:45:00 AM
10-Feb-15	4:35:00 PM
11-Feb-15	1:00:00 PM
11-Feb-15	6:38:00 AM
12-Feb-15	9:50:00 AM
12-Feb-15	6:10:00 PM
13-Feb-15	12:49:00 PM
14-Feb-15	12:20:00 AM
14-Feb-15	10:10:00 AM
15-Feb-15	12:37:00 AM
20-Feb-15	8:21:00 AM
21-Feb-15	12:10:00 AM
21-Feb-15	4:23:00 PM
21-Feb-15	9:02:00 PM
22-Feb-15	10:20:00 AM
22-Feb-15	5:33:00 PM
23-Feb-15	4:55:00 AM
23-Feb-15	1:30:00 PM
23-Feb-15	6:45:00 PM
23-Feb-15	2:17:00 AM
24-Feb-15	10:54:00 AM
24-Feb-15	10:30:00 PM
25-Feb-15	9:55:00 AM
25-Feb-15	2:48:00 PM
26-Feb-15	10:15:00 AM
27-Feb-15	5:52:00 AM
28-Feb-15	12:15:00 PM
28-Feb-15	4:20:00 PM
01-Mar-15	3:36:00 AM
01-Mar-15	8:06:00 AM
01-Mar-15	4:35:00 PM
01-Mar-15	11:13:00 PM
02-Mar-15	6:30:00 AM
02-Mar-15	6:40:00 PM
02-Mar-15	10:32:00 PM
03-Mar-15	9:05:00 AM
03-Mar-15	4:03:00 PM
04-Mar-15	6:45:00 AM
04-Mar-15	10:57:00 AM
04-Mar-15	2:37:00 PM
04-Mar-15	11:15:00 PM
05-Mar-15	3:55:00 AM
06-Mar-15	9:37:00 AM

DATE	Time
13-Mar-15	12:00:01 AM
13-Mar-15	9:10:00 AM
13-Mar-15	10:50:00 PM
14-Mar-15	8:39:00 AM
14-Mar-15	11:45:00 PM
15-Mar-15	6:35:00 AM
15-Mar-15	9:25:00 AM
15-Mar-15	6:50:00 PM
16-Mar-15	6:30:00 AM
16-Mar-15	9:59:00 AM
17-Mar-15	3:44:00 AM
17-Mar-15	3:45:00 PM
17-Mar-15	11:57:00 PM
18-Mar-15	6:56:00 PM
19-Mar-15	1:04:00 AM
19-Mar-15	2:02:00 PM
20-Mar-15	8:40:00 AM
20-Mar-15	12:00:00 PM
20-Mar-15	5:05:00 PM
21-Mar-15	1:50:00 AM
21-Mar-15	9:30:00 AM
21-Mar-15	5:05:00 PM
21-Mar-15	9:28:00 PM
22-Mar-15	1:45:00 AM
22-Mar-15	7:05:00 PM
23-Mar-15	3:05:00 AM
23-Mar-15	8:56:00 AM
23-Mar-15	12:54:00 PM
24-Mar-15	5:40:00 AM
24-Mar-15	7:45:00 PM
25-Mar-15	12:38:00 AM
25-Mar-15	7:56:00 PM
26-Mar-15	8:08:00 AM
28-Mar-15	9:40:00 AM
28-Mar-15	4:52:00 PM
29-Mar-15	12:35:00 PM
29-Mar-15	3:57:00 PM
30-Mar-15	2:59:00 PM
30-Mar-15	7:46:00 PM
31-Mar-15	10:50:00 AM
01-Apr-15	2:10:00 AM
01-Apr-15	7:20:00 AM
02-Apr-15	10:15:00 AM
02-Apr-15	9:30:00 PM
06-Apr-15	9:47:00 AM
07-Apr-15	3:27:00 AM
07-Apr-15	11:45:00 AM
08-Apr-15	2:22:00 AM
10-Apr-15	12:25:00 PM
10-Apr-15	9:05:00 PM
15-Apr-15	12:55:00 PM

DATE	Time
16-Apr-15	8:55:00 AM
16-Apr-15	2:40:00 PM
16-Apr-15	8:52:00 PM
17-Apr-15	6:54:00 AM
17-Apr-15	4:57:00 PM
18-Apr-15	6:19:00 PM
19-Apr-15	3:25:00 PM
20-Apr-15	6:22:00 AM
29-Apr-15	4:27:00 PM
29-Apr-15	11:05:00 PM
30-Apr-15	4:51:00 PM
30-Apr-15	11:25:00 PM
01-May-15	4:15:00 AM
01-May-15	12:07:00 PM
02-May-15	5:42:00 AM
02-May-15	10:14:00 AM
03-May-15	4:10:00 AM
03-May-15	5:25:00 PM
04-May-15	1:19:00 AM
04-May-15	12:36:00 PM
04-May-15	11:30:00 PM
05-May-15	7:00:00 AM
05-May-15	5:05:00 PM
05-May-15	10:21:00 PM
06-May-15	8:58:00 AM
06-May-15	3:55:00 PM
06-May-15	10:04:00 PM
07-May-15	2:58:00 AM
07-May-15	11:15:00 AM
07-May-15	9:48:00 PM
08-May-15	6:20:00 AM
09-May-15	1:10:00 AM
09-May-15	8:55:00 AM
09-May-15	8:33:00 PM
10-May-15	4:53:00 PM
10-May-15	10:30:00 PM
11-May-15	11:30:00 AM
11-May-15	9:30:00 PM
12-May-15	8:13:00 AM
12-May-15	3:45:00 PM
12-May-15	11:40:00 PM
13-May-15	4:51:00 AM
13-May-15	6:00:00 PM
14-May-15	2:06:00 AM
14-May-15	5:33:00 PM
15-May-15	3:26:00 PM
17-May-15	7:04:00 AM
17-May-15	12:46:00 PM
18-May-15	12:11:00 PM
21-May-15	6:54:00 PM
23-May-15	3:50:00 AM

DATE	Time
23-May-15	10:43:00 AM
23-May-15	6:16:00 PM
24-May-15	12:21:00 AM
24-May-15	1:10:00 PM
24-May-15	9:16:00 PM
25-May-15	3:34:00 AM
25-May-15	5:20:00 PM
27-May-15	1:04:00 PM
29-May-15	7:11:00 AM
29-May-15	7:21:00 PM
30-May-15	8:08:00 AM
30-May-15	5:05:00 PM
31-May-15	3:16:00 AM
31-May-15	8:39:00 PM
31-May-15	11:55:00 PM
02-Jun-15	12:29:00 AM
02-Jun-15	7:10:00 AM
03-Jun-15	9:20:00 AM
04-Jun-15	9:35:00 AM
04-Jun-15	8:51:00 PM
05-Jun-15	2:13:00 PM
06-Jun-15	1:55:00 AM
07-Jun-15	1:02:00 PM
07-Jun-15	9:43:00 PM
08-Jun-15	3:10:00 AM
08-Jun-15	9:50:00 AM
08-Jun-15	10:03:00 PM
09-Jun-15	9:11:00 AM
09-Jun-15	12:40:00 PM
10-Jun-15	12:47:00 PM
10-Jun-15	8:41:00 PM
11-Jun-15	3:02:00 AM
11-Jun-15	10:11:00 AM
12-Jun-15	4:23:00 AM
12-Jun-15	7:40:00 PM
13-Jun-15	11:54:00 PM
15-Jun-15	5:28:00 AM
15-Jun-15	2:30:00 PM
19-Jun-15	12:07:00 AM
19-Jun-15	5:30:00 AM
20-Jun-15	12:44:00 PM
21-Jun-15	9:08:00 PM
21-Jun-15	10:55:00 AM
21-Jun-15	5:50:00 PM
21-Jun-15	9:29:00 PM
22-Jun-15	1:50:00 AM
23-Jun-15	2:45:00 AM
23-Jun-15	9:04:00 PM
24-Jun-15	5:30:00 PM
25-Jun-15	5:06:00 AM
25-Jun-15	10:10:00 AM

DATE	Time
25-Jun-15	5:30:00 PM
26-Jun-15	5:47:00 AM
26-Jun-15	3:18:00 PM
26-Jun-15	10:35:00 PM
27-Jun-15	2:18:00 AM
27-Jun-15	5:16:00 AM
27-Jun-15	2:42:00 PM
27-Jun-15	9:42:00 PM
28-Jun-15	2:11:00 AM
28-Jun-15	8:29:00 AM
28-Jun-15	12:11:00 PM
28-Jun-15	3:45:00 PM
29-Jun-15	1:45:00 AM
29-Jun-15	4:31:00 PM
30-Jun-15	9:58:00 PM
01-Jul-15	7:30:00 AM
01-Jul-15	4:10:00 PM
02-Jul-15	1:36:00 PM
04-Jul-15	11:12:00 PM
05-Jul-15	3:50:00 AM
05-Jul-15	12:20:00 PM
05-Jul-15	5:57:00 PM
05-Jul-15	10:54:00 PM
06-Jul-15	2:35:00 AM
06-Jul-15	9:30:00 AM
06-Jul-15	6:35:00 PM
07-Jul-15	5:17:00 AM
07-Jul-15	11:12:00 AM
07-Jul-15	4:43:00 PM
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09-Jul-15	1:59:00 AM
09-Jul-15	10:35:00 AM
09-Jul-15	11:38:00 PM
10-Jul-15	5:09:00 AM
10-Jul-15	10:58:00 AM
10-Jul-15	4:22:00 PM
10-Jul-15	11:19:00 PM
11-Jul-15	4:14:00 AM
11-Jul-15	3:36:00 PM
11-Jul-15	7:28:00 PM
12-Jul-15	3:17:00 AM
12-Jul-15	5:25:00 AM
12-Jul-15	3:51:00 PM
12-Jul-15	9:32:00 PM
13-Jul-15	6:57:00 AM
13-Jul-15	12:45:00 PM
16-Jul-15	11:56:00 PM
17-Jul-15	7:46:00 AM
17-Jul-15	9:24:00 PM

DATE	Time
18-Jul-15	2:32:00 AM
18-Jul-15	8:18:00 AM
18-Jul-15	4:24:00 PM
19-Jul-15	1:47:00 AM
19-Jul-15	1:05:00 PM
20-Jul-15	6:20:00 AM
21-Jul-15	2:18:00 AM
21-Jul-15	7:06:00 AM
21-Jul-15	9:44:00 AM
22-Jul-15	8:00:00 AM
22-Jul-15	2:12:00 PM
22-Jul-15	8:00:00 PM
23-Jul-15	4:47:00 AM
23-Jul-15	12:53:00 PM
24-Jul-15	1:02:00 AM
24-Jul-15	4:15:00 AM
24-Jul-15	10:20:00 PM
25-Jul-15	11:36:00 AM
25-Jul-15	10:28:00 PM
26-Jul-15	12:15:00 AM
26-Jul-15	12:15:00 AM
26-Jul-15	7:38:00 AM
26-Jul-15	11:50:00 AM
27-Jul-15	7:31:00 AM
27-Jul-15	10:10:00 AM
27-Jul-15	6:32:00 PM
27-Jul-15	11:59:00 PM
28-Jul-15	7:25:00 PM
28-Jul-15	11:00:00 PM
29-Jul-15	2:48:00 AM
29-Jul-15	8:35:00 AM
29-Jul-15	11:32:00 AM
30-Jul-15	1:36:00 AM
30-Jul-15	11:35:00 AM
30-Jul-15	3:54:00 PM
30-Jul-15	9:57:00 PM
31-Jul-15	11:42:00 PM
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01-Aug-15	10:02:00 AM
01-Aug-15	4:50:00 PM
01-Aug-15	10:52:00 PM
02-Aug-15	5:45:00 AM
02-Aug-15	8:54:00 AM
02-Aug-15	7:18:00 PM
03-Aug-15	3:36:00 AM
03-Aug-15	9:10:00 PM
04-Aug-15	12:37:00 AM
04-Aug-15	8:53:00 AM
04-Aug-15	6:45:00 PM
05-Aug-15	4:04:00 AM
05-Aug-15	4:30:00 PM

DATE	Time
06-Aug-15	2:52:00 AM
07-Aug-15	3:41:00 AM
08-Aug-15	7:50:00 AM
08-Aug-15	6:24:00 PM
09-Aug-15	4:46:00 AM
09-Aug-15	4:22:00 PM
09-Aug-15	10:22:00 PM
10-Aug-15	8:20:00 AM
10-Aug-15	11:35:00 PM
11-Aug-15	5:47:00 AM
11-Aug-15	6:03:00 PM
11-Aug-15	9:10:00 PM
12-Aug-15	3:00:00 AM
12-Aug-15	8:00:00 AM
13-Aug-15	12:25:00 AM
13-Aug-15	7:48:00 AM
13-Aug-15	12:33:00 PM
13-Aug-15	5:03:00 PM
13-Aug-15	9:26:00 PM
14-Aug-15	12:10:00 AM
14-Aug-15	8:50:00 AM
14-Aug-15	11:18:00 AM
14-Aug-15	4:35:00 PM
14-Aug-15	10:35:00 PM
15-Aug-15	8:05:00 AM
15-Aug-15	2:31:00 PM
16-Aug-15	4:10:00 AM
16-Aug-15	8:43:00 AM
21-Aug-15	6:20:00 AM
21-Aug-15	10:56:00 AM
21-Aug-15	3:55:00 PM
22-Aug-15	9:42:00 AM
22-Aug-15	1:47:00 PM
22-Aug-15	5:04:00 PM
23-Aug-15	3:37:00 AM
23-Aug-15	9:51:00 AM
23-Aug-15	6:31:00 PM
24-Aug-15	2:47:00 AM
24-Aug-15	9:47:00 AM
24-Aug-15	6:23:00 PM
24-Aug-15	11:55:00 PM
25-Aug-15	3:40:00 PM
25-Aug-15	11:50:00 PM
26-Aug-15	2:32:00 PM
26-Aug-15	5:04:00 PM
26-Aug-15	11:07:00 PM
27-Aug-15	6:32:00 AM
27-Aug-15	11:59:00 AM
27-Aug-15	6:20:00 PM
27-Aug-15	11:45:00 PM
28-Aug-15	6:58:00 AM

DATE	Time
01-Sep-15	12:31:00 AM
01-Sep-15	2:55:00 PM
02-Sep-15	12:30:00 AM
02-Sep-15	4:27:00 AM
02-Sep-15	10:00:00 PM
03-Sep-15	2:22:00 AM
03-Sep-15	8:46:00 AM
03-Sep-15	11:56:00 AM
04-Sep-15	12:56:00 AM
04-Sep-15	5:04:00 AM
04-Sep-15	7:09:00 PM
05-Sep-15	1:36:00 AM
05-Sep-15	10:12:00 AM
05-Sep-15	3:15:00 PM
05-Sep-15	7:38:00 PM
05-Sep-15	11:30:00 PM
06-Sep-15	6:37:00 AM
06-Sep-15	1:05:00 PM
06-Sep-15	9:40:00 PM
07-Sep-15	5:40:00 AM
07-Sep-15	10:16:00 PM
08-Sep-15	3:23:00 AM
08-Sep-15	1:10:00 PM
08-Sep-15	8:59:00 PM
09-Sep-15	2:50:00 AM
09-Sep-15	9:52:00 AM
09-Sep-15	4:19:00 PM
09-Sep-15	8:16:00 PM
10-Sep-15	9:14:00 AM
10-Sep-15	2:44:00 PM
11-Sep-15	11:08:00 AM
11-Sep-15	10:27:00 PM
12-Sep-15	5:03:00 PM
13-Sep-15	12:45:00 AM
13-Sep-15	8:38:00 AM
13-Sep-15	1:10:00 PM
13-Sep-15	10:08:00 PM
14-Sep-15	10:22:00 AM
16-Sep-15	2:45:00 AM
17-Sep-15	12:52:00 PM
18-Sep-15	5:01:00 PM
19-Sep-15	1:09:00 AM
19-Sep-15	11:24:00 PM
20-Sep-15	4:07:00 AM
20-Sep-15	7:20:00 AM
20-Sep-15	4:16:00 PM
20-Sep-15	10:17:00 PM
21-Sep-15	8:10:00 AM
21-Sep-15	11:37:00 AM
21-Sep-15	2:55:00 PM
22-Sep-15	3:50:00 AM

DATE	Time
22-Sep-15	8:19:00 PM
23-Sep-15	8:05:00 AM
23-Sep-15	2:34:00 PM
23-Sep-15	11:59:00 PM
24-Sep-15	4:32:00 AM
24-Sep-15	1:23:00 PM
25-Sep-15	11:23:00 AM
25-Sep-15	5:49:00 PM
25-Sep-15	9:08:00 PM
26-Sep-15	7:37:00 PM
27-Sep-15	7:42:00 AM
27-Sep-15	10:58:00 PM
28-Sep-15	2:10:00 AM
28-Sep-15	6:51:00 AM
28-Sep-15	12:27:00 PM
29-Sep-15	4:49:00 AM
29-Sep-15	11:05:00 AM
29-Sep-15	2:00:00 PM
29-Sep-15	11:29:00 PM
01-Oct-15	1:23:00 AM
01-Oct-15	6:45:00 AM
01-Oct-15	9:02:00 PM
01-Oct-15	11:42:00 PM
02-Oct-15	5:34:00 AM
02-Oct-15	9:15:00 AM
03-Oct-15	12:07:00 PM
03-Oct-15	7:45:00 PM
03-Oct-15	11:45:00 PM
04-Oct-15	1:10:00 AM
05-Oct-15	2:54:00 AM
05-Oct-15	9:04:00 AM
05-Oct-15	5:25:00 PM
05-Oct-15	8:43:00 AM
09-Oct-15	6:44:00 PM
09-Oct-15	10:15:00 PM
10-Oct-15	10:28:00 AM
10-Oct-15	2:03:00 PM
10-Oct-15	4:46:00 PM
11-Oct-15	10:56:00 PM
12-Oct-15	7:44:00 PM
12-Oct-15	11:42:00 PM
13-Oct-15	11:40:00 AM
14-Oct-15	8:09:00 AM
14-Oct-15	4:00:00 PM
14-Oct-15	8:42:00 PM
15-Oct-15	8:15:00 AM
15-Oct-15	11:12:00 PM
16-Oct-15	9:05:00 AM
16-Oct-15	3:32:00 PM
17-Oct-15	4:26:00 AM
17-Oct-15	12:35:00 PM

DATE	Time
17-Oct-15	4:31:00 PM
18-Oct-15	1:31:00 AM
18-Oct-15	9:40:00 AM
18-Oct-15	2:30:00 PM
19-Oct-15	2:15:00 AM
19-Oct-15	8:15:00 PM
20-Oct-15	12:26:00 AM
20-Oct-15	9:00:00 AM
21-Oct-15	9:23:00 PM
22-Oct-15	8:32:00 AM
22-Oct-15	6:25:00 PM
23-Oct-15	5:01:00 AM
24-Oct-15	12:00:00 AM
24-Oct-15	7:28:00 PM
25-Oct-15	3:50:00 AM
25-Oct-15	6:52:00 PM
25-Oct-15	9:31:00 PM
26-Oct-15	12:53:00 AM
26-Oct-15	5:21:00 AM
26-Oct-15	11:20:00 AM
26-Oct-15	7:18:00 PM
27-Oct-15	5:17:00 AM
27-Oct-15	5:40:00 PM
28-Oct-15	1:45:00 AM
28-Oct-15	5:10:00 PM
28-Oct-15	8:37:00 PM
29-Oct-15	10:35:00 PM
30-Oct-15	5:43:00 AM
31-Oct-15	2:54:00 AM
01-Nov-15	6:43:00 AM
01-Nov-15	1:57:00 PM
01-Nov-15	8:30:00 PM
02-Nov-15	3:10:00 AM
02-Nov-15	8:10:00 AM
04-Nov-15	11:36:00 AM
05-Nov-15	1:54:00 AM
05-Nov-15	8:20:00 AM
05-Nov-15	10:40:00 AM
05-Nov-15	6:00:00 PM
06-Nov-15	9:18:00 AM
06-Nov-15	12:04:00 PM
07-Nov-15	9:25:00 PM
08-Nov-15	6:48:00 AM
08-Nov-15	11:10:00 AM
08-Nov-15	6:39:00 PM
09-Nov-15	1:47:00 AM
09-Nov-15	6:06:00 AM
13-Nov-15	6:22:00 AM
13-Nov-15	5:30:00 PM
14-Nov-15	1:03:00 AM
14-Nov-15	10:00:00 AM

DATE	Time
14-Nov-15	2:47:00 PM
14-Nov-15	7:00:00 PM
15-Nov-15	12:21:00 AM
15-Nov-15	6:50:00 AM
15-Nov-15	3:12:00 PM
16-Nov-15	12:05:00 AM
16-Nov-15	9:08:00 AM
16-Nov-15	12:51:00 PM
16-Nov-15	4:56:00 PM
17-Nov-15	2:28:00 AM
17-Nov-15	9:20:00 AM
17-Nov-15	3:06:00 PM
17-Nov-15	10:17:00 PM
18-Nov-15	3:09:00 PM
18-Nov-15	12:07:00 PM
19-Nov-15	9:51:00 AM
19-Nov-15	12:50:00 PM
20-Nov-15	3:40:00 AM
20-Nov-15	2:00:00 PM
21-Nov-15	6:02:00 AM
21-Nov-15	10:40:00 AM
21-Nov-15	7:29:00 PM
22-Nov-15	9:09:00 AM
22-Nov-15	2:56:00 PM
23-Nov-15	12:14:00 AM
23-Nov-15	6:50:00 PM
24-Nov-15	4:20:00 AM
24-Nov-15	7:18:00 AM
25-Nov-15	12:02:00 PM
25-Nov-15	11:37:00 AM
25-Nov-15	3:35:00 PM
25-Nov-15	7:04:00 PM
25-Nov-15	10:04:00 PM
26-Nov-15	7:20:00 AM
26-Nov-15	12:00:00 PM
26-Nov-15	7:42:00 PM
27-Nov-15	5:30:00 AM
27-Nov-15	4:22:00 PM
28-Nov-15	3:32:00 AM
28-Nov-15	3:59:00 PM
28-Nov-15	11:54:00 PM
29-Nov-15	3:43:00 AM
29-Nov-15	10:07:00 AM
29-Nov-15	5:00:00 PM
30-Nov-15	1:45:00 AM
30-Nov-15	6:00:00 AM
30-Nov-15	1:20:00 PM
30-Nov-15	11:42:00 PM
01-Dec-15	2:29:00 AM
01-Dec-15	7:40:00 AM
01-Dec-15	11:58:00 AM

DATE	Time
01-Dec-15	4:02:00 PM
01-Dec-15	11:19:00 PM
02-Dec-15	7:22:00 AM
02-Dec-15	12:15:00 PM
04-Dec-15	2:36:00 PM
04-Dec-15	7:14:00 PM
05-Dec-15	12:53:00 AM
05-Dec-15	7:30:00 AM
05-Dec-15	12:42:00 PM
05-Dec-15	2:59:00 PM
06-Dec-15	1:53:00 AM
06-Dec-15	4:32:00 AM
06-Dec-15	11:47:00 AM
06-Dec-15	2:51:00 PM
06-Dec-15	5:16:00 PM
06-Dec-15	9:56:00 PM
07-Dec-15	5:00:00 AM
07-Dec-15	9:08:00 PM
08-Dec-15	3:09:00 AM
08-Dec-15	2:25:00 PM
08-Dec-15	10:40:00 PM
09-Dec-15	8:22:00 AM
09-Dec-15	5:04:00 PM
10-Dec-15	5:57:00 AM
10-Dec-15	5:50:00 PM
11-Dec-15	5:45:00 AM
12-Dec-15	4:23:00 AM
12-Dec-15	4:45:00 PM
12-Dec-15	8:05:00 PM
14-Dec-15	3:43:00 AM
14-Dec-15	7:06:00 AM
14-Dec-15	1:40:00 PM
14-Dec-15	5:00:00 PM
15-Dec-15	4:24:00 AM
15-Dec-15	1:04:00 PM
15-Dec-15	9:30:00 PM
16-Dec-15	3:45:00 PM
18-Dec-15	1:42:00 AM
18-Dec-15	12:51:00 PM
18-Dec-15	4:45:00 PM
19-Dec-15	1:00:00 AM
19-Dec-15	1:13:00 PM
19-Dec-15	6:00:00 PM
19-Dec-15	9:58:00 PM
20-Dec-15	3:33:00 AM
20-Dec-15	2:59:00 PM
21-Dec-15	4:14:00 PM
22-Dec-15	5:01:00 AM
22-Dec-15	11:52:00 AM
22-Dec-15	6:45:00 PM
23-Dec-15	12:27:00 AM

DATE	Time
23-Dec-15	7:57:00 AM
23-Dec-15	12:30:00 PM
23-Dec-15	5:50:00 PM
24-Dec-15	12:33:00 AM
24-Dec-15	6:15:00 AM
24-Dec-15	11:26:00 AM
24-Dec-15	8:12:00 PM
24-Dec-15	11:48:00 PM

DATE	Time
25-Dec-15	6:03:00 AM
25-Dec-15	8:26:00 PM
25-Dec-15	11:34:00 PM
27-Dec-15	1:05:00 AM
27-Dec-15	7:00:00 AM
27-Dec-15	12:36:00 PM
27-Dec-15	4:29:00 PM
27-Dec-15	11:41:00 PM

DATE	Time
28-Dec-15	5:03:00 AM
28-Dec-15	10:05:00 AM
28-Dec-15	12:42:00 PM
28-Dec-15	7:04:00 PM
29-Dec-15	2:14:00 AM
29-Dec-15	6:08:00 PM
29-Dec-15	11:29:00 PM
30-Dec-15	3:05:00 AM

APPENDIX C

Annual Sound Power Testing

Appendix C
Annual Sound Power Testing

Table C-1

Sound Power Level Testing Results

MCC Unit	Equipment Type	Parameter	Criteria dBA	Result dBA
DOZ301	Dozer - CAT D10T	Stationary	**115**	106.0
		1 Gear Back	**127**	113.0
DOZ302	Dozer - CAT D10T	Stationary	**115**	103
		1 Gear Back (with track noise)	**127**	116
DOZ320	Dozer - CAT D11T	Stationary	**115**	103
		1 Gear Back (with track noise)	**127**	114
DOZ321	Dozer - CAT D11T	Stationary	**115**	104
		1 Gear Back (with track noise)	**127**	112
DOZ322	Dozer - CAT D11T	Stationary	**115**	108.0
		1 Gear Back	**127**	117.0
DOZ323	Dozer - CAT D11T	Stationary	**115**	101
		1 Gear Back (with track noise)	**127**	115.0
DOZ324	Dozer - CAT D11T	Stationary	**115**	102
		1 Gear Back (with track noise)	**127**	112.0
DOZ816	Dozer - Cat D10T - Emeco DZ266	Stationary	**115**	104
		1 Gear Back (with track noise)	**127**	113
DOZ818	Dozer - Cat D10T	Stationary	**115**	104
		1 Gear Back (with track noise)	**127**	114
DOZ853	Dozer - Cat D10R - Emeco DZ181	Stationary	**115**	117
		1 Gear Back (with track noise)	**127**	118
DOZ870	Dozer - Cat D10T - Emeco	Stationary	**115**	106
		1 Gear Back (with track noise)	**127**	112
DOZ871	Dozer - Cat D11X - Emeco	Stationary	**115**	108
		1 Gear Back (with track noise)	**127**	115
DOZ872	Dozer - Cat D10X - Emeco	Without track noise	**115**	110
		1 Gear Back (with track noise)	**127**	114
DRG451	Drill - CAT MD6290	Stationary	**118**	118
DRG452	Drill - CAT MD6290	Stationary	**118**	117
DRG453	Drill - CAT MD6290	Stationary	**118**	115
DRG454	Drill - CAT MD6290	Stationary	**118**	118.0
DRG830	Drill - SK50F - CJC Drilling - 1V68L71	Stationary	**118**	118
DRG837	Drill - SK50I - CJC Drilling - 1Z69546	Stationary	**118**	118
EXC221	Excavator - Hitachi EX3600	Dynamic	**119**	115
EXC222	Excavator - Hitachi EX3600	Dynamic	**119**	117
EXC223	Excavator - Hitachi EX3600	Dynamic	**119**	116
EXC261	Excavator - Hitachi EX8000	Dynamic	**123**	117
EXC262	Excavator - Hitachi EX8000	Dynamic	**123**	112
EXC263	Excavator - Hitachi EX8000	Dynamic	**123**	119.0
GRD401	Grader - CAT 16M	1 Gear Forward	**112**	105.0
GRD402	Grader - CAT 16M	1 Gear Forward	**112**	111

MCC Unit	Equipment Type	Parameter	Criteria dBA	Result dBA
GRD415	Grader - CAT 24M	1 Gear Forward	**112**	110
GRD861	Grader - CAT 16M - Emeco MG082	1 Gear forward	**112**	108
GRD863	Grader - CAT	1 Gear Forward	**112**	110
RDT001	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	114.0
RDT002	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT003	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT004	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	114.5
RDT005	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.0
RDT006	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	116.5
RDT007	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	116.0
RDT008	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	116.5
RDT009	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	116.5
RDT010	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	116.5
RDT011	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	117.0
RDT012	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT013	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.0
RDT014	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT015	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT016	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT017	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.0
RDT018	Dump Truck - Hitachi EH5000-4	Average (Uphill / Downhill)	**117**	115.5
RDT019	Dump Truck - Hitachi EH5000-3	Average (Uphill / Downhill)	**117**	114.5
RDT101	Dump Truck - CAT 789D XQ	Average (Uphill / Downhill)	**117**	113.0
RDT102	Dump Truck - CAT 789D XQ	Average (Uphill / Downhill)	**117**	114.0
RDT103	Dump Truck - CAT 789D XQ	Average (Uphill / Downhill)	**117**	114.5
RDT104	Dump Truck - CAT 789D XQ	Average (Uphill / Downhill)	**117**	112.5
RDT874	Dump Truck - Cat 789C - EMECO - RD259	Average (Uphill / Downhill)	**117**	114.0
RDT875	Dump Truck - Cat 789C - EMECO - RD259	Average (Uphill / Downhill)	**117**	112.0
RDT882	Dump Truck - Cat 789D - EMECO - RD280	Average (Uphill / Downhill)	**117**	116.5
RDT883	Dump Truck - Cat 789D - EMECO - RD281	Average (Uphill / Downhill)	**117**	114.0
RDT884	Dump Truck - Cat 789D - EMECO - RD284	Average (Uphill / Downhill)	**117**	115.5
RDT885	Dump Truck - Cat 789D - EMECO - RD289	Average (Uphill / Downhill)	**117**	115.0
RDT887	Dump Truck - Cat 789C - EMECO - RD182	Average (Uphill / Downhill)	**117**	115.5
RDT888	Dump Truck - Cat 789C - EMECO - RD246	Average (Uphill / Downhill)	**117**	116.0
RDT891	Dump Truck - Cat 789C - EMECO - RD340	Average (Uphill / Downhill)	**117**	115.0
WAT501	Water cart - Cat777G	Average (Uphill / Downhill)	**115**	111.0
WAT801	Water cart - Cat773 - EMECO	Average (Uphill / Downhill)	**115**	115.0
WAT802	Water cart - Cat773 - EMECO	Average (Uphill / Downhill)	**115**	115.0
WAT803	Water cart - Cat777 - EMECO	Average (Uphill / Downhill)	**115**	115.5
WAT814	Water cart - Cat773 - EMECO	Average (Uphill / Downhill)	**115**	115.0
WAT820	Water cart - Cat773D - EMECO	Average (Uphill / Downhill)	**115**	115.0
WAT821	Water cart - Cat773D - EMECO	Average (Uphill / Downhill)	**115**	113.0
WLO806	Wheel Loader - Cat992G - EMECO - WL163	Uphill	**115**	109
WLO810	Wheel Loader - Cat992G - EMECO - WL131	Uphill	**115**	110
WLO811	Wheel Loader - Cat992G - EMECO - WL157	Uphill	**115**	109
	Primary sizer		**109**	109
	Secondary sizer		**112**	109
	Conveyor 200m		**108**	107
	Conveyor 500m		**112**	110

MCC Unit	Equipment Type	Parameter	Criteria dBA	Result dBA
	Raw coal transfer station		**103**	101
	Train load out transfer station		**103**	113
	CHPP Product Transfer Station		**103**	104
	Preparation plant	South East façade	**117**	125
		South West façade	**117**	118
		North West façade	**117**	120
		North East façade	**117**	111
		Façade Average	**117**	118.5
		North Roof	**117**	102
		South Roof	**117**	102

APPENDIX D

Surface Water

Appendix D
Surface Water

Surface Water Quality

The surface water monitoring results for the reporting period are detailed in the table below.

Table C-1
MCC Surrounding Surface Water Monitoring Results

		pH Value	Electrical Conductivity @ 25°C	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Turbidity	Total Alkalinity as CaCO3	Calcium (filt.)	Magnesium (filt.)	Sodium (filt.)	Potassium (filt.)	Aluminium (total)	Cadmium (total)	Chromium (total)	Copper (total)	Lead (total)	Manganese (total)	Nickel (total)	Selenium (total)	Silver (total)	Zinc (total)	Boron (total)	Iron (Total)	Nitrite + Nitrate as N	Total Nitrogen	Total Phosphorus as P	Total Anions	Total Cations
SW1	14/01/2015	7.46	382	242	8	*	127	32	12	30	2	0.16	<0.0001	<0.001	<0.001	<0.001	0.07	<0.001	*	*	0.106	<0.05	0.56	<0.01	*	0.12	3.83	3.94
SW1	11/02/2015	7.59	379	267	<5	*	147	23	10	35	1	0.04	<0.0001	<0.001	<0.001	<0.001	0.062	<0.001	*	*	<0.005	<0.05	0.46	0.02	*	0.1	4.01	3.52
SW1	11/03/2015	7.59	386	208	14	*	133	27	12	33	3	0.69	<0.0001	<0.001	<0.001	<0.001	0.08	<0.001	*	*	<0.005	<0.05	1.11	0.08	*	0.15	3.63	3.85
SW1	14/04/2015	7.46	404	177	<5	*	151	32	12	29	2	<0.01	<0.0001	<0.001	<0.001	<0.001	0.046	<0.001	*	*	0.008	<0.05	<0.05	0.03	*	0.09	4.01	3.9
SW1	19/05/2015	7.82	394	188	<5	2.3	126	33	13	31	2	0.04	<0.0001	<0.001	<0.001	<0.001	0.039	<0.001	<0.01	<0.001	<0.005	<0.05	0.29	0.02	<0.1	0.06	3.73	4.12
SW1	11/06/2015	7.65	389	245	<5	2.2	125	32	12	28	1	0.02	<0.0001	<0.001	<0.001	<0.001	0.053	<0.001	<0.01	<0.001	<0.005	<0.05	0.48	<0.01	<0.1	0.07	3.71	3.83
SW1	13/07/2015	7.66	371	248	<5	4.8	121	32	12	32	1	0.04	<0.0001	<0.001	<0.001	<0.001	0.026	<0.001	<0.01	<0.001	<0.005	<0.05	0.27	<0.01	0.4	0.11	3.6	4
SW1	25/08/2015	7.57	357	202	13	7.4	115	29	10	28	1	0.26	<0.0001	<0.001	<0.001	<0.001	0.037	<0.001	<0.01	<0.001	<0.005	<0.05	0.54	0.02	0.3	0.12	3.2	3.51
SW1	16/09/2015	7.73	393	232	<5	4	132	30	12	31	1	0.08	<0.0001	<0.001	<0.001	<0.001	0.047	<0.001	<0.01	<0.001	<0.005	<0.05	0.36	<0.01	<0.1	0.07	4.06	3.86
SW1	12/10/2015	7.9	381	226	14	8.2	136	31	13	33	2	0.43	<0.0001	<0.001	<0.001	<0.001	0.049	<0.001	<0.01	<0.001	<0.005	<0.05	0.67	<0.01	0.4	0.09	4.02	4.1
SW1	12/11/2015	7.62	410	270	18	10.5	134	31	12	28	2	0.38	<0.0001	<0.001	<0.001	<0.001	0.059	<0.001	<0.01	<0.001	<0.005	<0.05	0.57	0.02	<0.1	0.04	3.89	3.8
SW1	11/12/2015	8.15	412	262	15	15.5	146	36	14	34	2	0.49	<0.0001	<0.001	0.002	<0.001	0.05	0.002	<0.01	<0.001	0.016	<0.05	0.75	<0.01	0.2	0.02	4.28	4.48
SW2	14/01/2015 **Dry - No Sample**																											
SW2	11/02/2015 **Dry - No Sample**																											
SW2	11/03/2015 **Dry - No Sample**																											
SW2	14/04/2015 **Dry - No Sample**																											
SW2	19/05/2015 **Dry - No Sample**																											
SW2	11/06/2015 **Dry - No Sample**																											
SW2	13/07/2015 **Dry - No Sample**																											
SW2	25/08/2015 **Dry - No Sample**																											
SW2	16/09/2015 **Dry - No Sample**																											
SW2	12/10/2015 **Dry - No Sample**																											
SW2	12/11/2015 **Dry - No Sample**																											
SW2	11/12/2015 **Dry - No Sample**																											

		pH Value	Electrical Conductivity @ 25°C	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Turbidity	Total Alkalinity as CaCO3	Calcium (filt.)	Magnesium (filt.)	Sodium (filt.)	Potassium (filt.)	Aluminium (total)	Cadmium (total)	Chromium (total)	Copper (total)	Lead (total)	Manganese (total)	Nickel (total)	Selenium (total)	Silver (total)	Zinc (total)	Boron (total)	Iron (Total)	Nitrite + Nitrate as N	Total Nitrogen	Total Phosphorus as P	Total Anions	Total Cations
SW3	14/01/2015	**No sample required - no discharge at this location this month.**																										
SW4	11/02/2015	**No sample required - no discharge at this location this month.**																										
SW5	11/03/2015	**No sample required - no discharge at this location this month.**																										
SW6	14/04/2015	**No sample required - no discharge at this location this month.**																										
SW7	19/05/2015	**No sample required - no discharge at this location this month.**																										
SW8	11/06/2015	**No sample required - no discharge at this location this month.**																										
SW9	13/07/2015	**No sample required - no discharge at this location this month.**																										
SW10	25/08/2015	**No sample required - no discharge at this location this month.**																										
SW11	16/09/2015	**No sample required - no discharge at this location this month.**																										
SW12	12/10/2015	**No sample required - no discharge at this location this month.**																										
SW13	12/11/2015	**No sample required - no discharge at this location this month.**																										
SW14	11/12/2015	**No sample required - no discharge at this location this month.**																										
SW4	14/01/2015	**Dry - No Sample**																										
SW4	11/02/2015	**Dry - No Sample**																										
SW4	11/03/2015	**Dry - No Sample**																										
SW4	14/04/2015	**Dry - No Sample**																										
SW4	19/05/2015	**Non-sampling month - No Sample**																										
SW4	11/06/2015	**Dry - No Sample**																										
SW4	13/07/2015	**Non-sampling month - No Sample**																										
SW4	25/08/2015	**Non-sampling month - No Sample**																										
SW4	16/09/2015	**Dry - No Sample**																										
SW4	12/10/2015	**Non-sampling month - No Sample**																										
SW4	12/11/2015	**Non-sampling month - No Sample**																										
SW4	11/12/2015	**Dry - No Sample**																										
SW5	14/01/2015	8.14	491	280	41	*	153	41	24	32	4	0.53	<0.0001	<0.001	0.001	<0.001	0.027	0.002	*	*	0.049	<0.05	0.54	<0.01	*	0.07	4.8	5.52
SW5	11/02/2015	8.05	490	276	17	*	177	30	20	38	4	1.03	<0.0001	0.001	0.003	<0.001	0.075	0.001	*	*	0.092	<0.05	1.18	0.13	*	0.04	5.35	4.9
SW5	11/03/2015	8.28	595	295	15	*	197	37	25	40	5	0.69	<0.0001	<0.001	<0.001	<0.001	0.078	0.002	*	*	<0.005	<0.05	0.76	0.02	*	0.06	6.03	5.77
SW5	14/04/2015	8.35	978	542	5	*	218	62	38	69	4	<0.01	<0.0001	0.002	0.002	<0.001	0.004	0.004	*	*	<0.005	<0.05	<0.05	<0.01	*	0.07	9.72	9.32
SW5	19/05/2015	**Non Sampling Month**																										
SW5	11/06/2015	8.12	570	318	14	12.5	162	44	27	37	4	0.46	<0.0001	<0.001	0.002	<0.001	0.087	0.002	<0.01	<0.001	<0.005	<0.05	0.54	<0.01	0.4	0.02	5.54	6.13
SW5	13/07/2015	**Non Sampling Month**																										
SW5	25/08/2015	**Non Sampling Month**																										
SW5	16/09/2015	8.18	511	296	17	21.3	154	34	20	38	2	0.82	<0.0001	0.001	0.002	<0.001	0.055	0.002	<0.01	<0.001	<0.005	<0.05	0.93	0.03	0.3	0.05	5.25	5.05
SW5	12/10/2015	**Non Sampling Month**																										
SW5	12/11/2015	**Non Sampling Month**																										
SW5	11/12/2015	8.5	902	505	<5	3.8	209	37	41	86	4	0.26	<0.0001	<0.001	<0.001	<0.001	0.084	0.002	<0.01	<0.001	0.008	0.06	0.24	<0.01	0.8	0.06	8.97	9.06

		pH Value	Electrical Conductivity @ 25°C	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Turbidity	Total Alkalinity as CaCO3	Calcium (filt.)	Magnesium (filt.)	Sodium (filt.)	Potassium (filt.)	Aluminium (total)	Cadmium (total)	Chromium (total)	Copper (total)	Lead (total)	Manganese (total)	Nickel (total)	Selenium (total)	Silver (total)	Zinc (total)	Boron (total)	Iron (Total)	Nitrite + Nitrate as N	Total Nitrogen	Total Phosphorus as P	Total Anions	Total Cations
SW6	14/01/2015	8.19	495	303	42	*	Suite 2 not required																					
SW6	11/02/2015	7.91	487	270	25	*	Suite 2 not required																					
SW6	11/03/2015	8.29	605	310	28	*	Suite 2 not required																					
SW6	14/04/2015	8.34	668	314	10	*	Suite 2 not required																					
SW6	19/05/2015	8.33	661	285	<5	10.6	Suite 2 not required																					
SW6	11/06/2015	8.19	577	318	15	5.4	Suite 2 not required																					
SW6	13/07/2015	8.3	420	276	12	23.1	Suite 2 not required																					
SW6	25/08/2015	8.25	458	248	20	21.8	Suite 2 not required																					
SW6	16/09/2015	8.19	512	264	25	23.6	Suite 2 not required																					
SW6	12/10/2015	8.25	535	329	40	34.8	Suite 2 not required																					
SW6	12/11/2015	8.09	738	404	39	38.2	Suite 2 not required																					
SW6	11/12/2015	8.1	949	480	<5	7.2	Suite 2 not required																					
SW7	14/01/2015	8.27	492	292	40	*	Suite 2 not required																					
SW7	11/02/2015	8.11	489	260	30	*	Suite 2 not required																					
SW7	11/03/2015	8.28	564	300	18	*	Suite 2 not required																					
SW7	14/04/2015	8.37	756	344	11	*	Suite 2 not required																					
SW7	19/05/2015	8.4	655	304	14	17	Suite 2 not required																					
SW7	11/06/2015	8.12	568	314	14	14.8	Suite 2 not required																					
SW7	13/07/2015	8.31	401	272	16	30.4	Suite 2 not required																					
SW7	25/08/2015	8.1	441	254	33	43.3	Suite 2 not required																					
SW7	16/09/2015	8.24	502	228	24	21.6	Suite 2 not required																					
SW7	12/10/2015	8.36	528	336	26	22.9	Suite 2 not required																					
SW7	12/11/2015	8.14	792	460	19	15.9	Suite 2 not required																					
SW7	11/12/2015	8.2	865	395	33	24.1	Suite 2 not required																					
SW8	11/03/2015	8.2	508	268	<5	*	178	30	21	35	5	0.51	<0.0001	<0.001	<0.001	<0.001	0.075	0.001	*	*	<0.005	<0.05	0.54	0.03	*	0.06	5.17	4.88
SW8	14/04/2015	8.17	528	251	6	*	197	39	23	32	4	<0.01	<0.0001	<0.001	0.002	<0.001	0.004	0.003	*	*	0.006	<0.05	<0.05	<0.01	*	0.04	5.6	5.33
SW8	19/05/2015	**Non Sampling Month**																										
SW8	11/06/2015	8.16	580	320	18	19.5	161	43	27	39	4	0.61	<0.0001	<0.001	0.002	<0.001	0.091	0.002	<0.01	<0.001	<0.005	<0.05	0.69	0.03	0.6	0.06	5.55	6.17
SW8	13/07/2015	**Non Sampling Month**																										
SW8	25/08/2015	**Non Sampling Month**																										
SW8	16/09/2015	8.25	482	236	22	23.7	148	34	20	38	3	1.44	<0.0001	0.002	0.003	<0.001	0.057	0.002	<0.01	<0.001	<0.005	<0.05	1.64	0.03	0.3	0.05	5.06	5.07
SW8	12/10/2015	**Non Sampling Month**																										
SW8	12/11/2015	**Non Sampling Month**																										
SW8	11/12/2015	8.46	730	364	30	16.4	222	46	32	62	5	0.07	<0.0001	<0.001	<0.001	<0.001	0.017	<0.001	<0.01	<0.001	<0.005	<0.05	0.15	<0.01	0.8	0.1	7.3	7.75

		pH Value	Electrical Conductivity @ 25°C	Total Dissolved Solids (TDS)	Suspended Solids (SS)	Turbidity	Total Alkalinity as CaCO3	Calcium (filt.)	Magnesium (filt.)	Sodium (filt.)	Potassium (filt.)	Aluminium (total)	Cadmium (total)	Chromium (total)	Copper (total)	Lead (total)	Manganese (total)	Nickel (total)	Selenium (total)	Silver (total)	Zinc (total)	Boron (total)	Iron (Total)	Nitrite + Nitrate as N	Total Nitrogen	Total Phosphorus as P	Total Anions	Total Cations
SW9	14/01/2015	**Dry-no sample**																										
SW9	11/02/2015	**Dry-no sample**																										
SW9	11/03/2015	**Dry-no sample**																										
SW9	14/04/2015	**Dry-no sample**																										
SW9	19/05/2015	**Non Sampling Month**																										
SW9	11/06/2015	**Dry-no sample**																										
SW9	13/07/2015	**Non Sampling Month**																										
SW9	25/08/2015	**Non Sampling Month**																										
SW9	16/09/2015	**Dry-no sample**																										
SW9	12/10/2015	**Non Sampling Month**																										
SW9	12/11/2015	**Non Sampling Month**																										
SW9	11/12/2015	**Dry-no sample**																										
SW10	14/01/2015	**No sample required - no discharge at this location this month.**																										
SW10	11/02/2015	**No sample required - no discharge at this location this month.**																										
SW10	11/03/2015	**No sample required - no discharge at this location this month.**																										
SW10	14/04/2015	**No sample required - no discharge at this location this month.**																										
SW10	19/05/2015	**No sample required - no discharge at this location this month.**																										
SW10	11/06/2015	**No sample required - no discharge at this location this month.**																										
SW10	13/07/2015	**No sample required - no discharge at this location this month.**																										
SW10	25/08/2015	**No sample required - no discharge at this location this month.**																										
SW10	16/09/2015	**No sample required - no discharge at this location this month.**																										
SW10	12/10/2015	**No sample required - no discharge at this location this month.**																										
SW10	12/11/2015	**No sample required - no discharge at this location this month.**																										
SW10	11/12/2015	**No sample required - no discharge at this location this month.**																										
SW11	14/01/2015	**No sample required - no discharge at this location this month.**																										
SW11	11/02/2015	**No sample required - no discharge at this location this month.**																										
SW11	11/03/2015	**No sample required - no discharge at this location this month.**																										
SW11	14/04/2015	**No sample required - no discharge at this location this month.**																										
SW11	19/05/2015	**No sample required - no discharge at this location this month.**																										
SW11	11/06/2015	**No sample required - no discharge at this location this month.**																										
SW11	13/07/2015	**No sample required - no discharge at this location this month.**																										
SW11	25/08/2015	**No sample required - no discharge at this location this month.**																										
SW11	16/09/2015	**No sample required - no discharge at this location this month.**																										
SW11	12/10/2015	**No sample required - no discharge at this location this month.**																										
SW11	12/11/2015	**No sample required - no discharge at this location this month.**																										
SW11	11/12/2015	**No sample required - no discharge at this location this month.**																										

Note: Sampling was unable to be taken at all monitoring locations as Back Creek and upper Maules Creek are ephemeral and rarely contain flowing water.

**Parameter not tested*

Table C-2
Sediment Dam Discharge Triggers

Parameter	100th percentile
Oil and grease (mg/L)	10
pH	6.5-8.5
Total suspended solids (mg/L)	50

Table C-3
Sediment Dam Discharge Field Monitoring Results

	Field Parameters			
Sample ID	pH	EC (µS/cm)	Temp (°C)	TSS (mg/L)
SW8	8.21	481	23.3	43
SW5	8.29	484	23.5	81
SD7	8.14	318	23.1	719

Table C-4
Sediment Dam Discharge Field Lab Analysis

Laboratory Analysis Results	Units	LOR*	SW8	SW5	SD7
pH Value	pH Unit	0.01	8.08	8.15	7.7
Electrical Conductivity @ 25°C	µS/cm	1	493	492	328
Total Dissolved Solids @180°C	mg/L	10	235	230	354
Suspended Solids (SS)	mg/L	5	32	27	122
Hydroxide Alkalinity as CaCO3	mg/L	1	<1	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	1	162	164	95
Total Alkalinity as CaCO3	mg/L	1	162	164	95
Calcium	mg/L	1	37	37	19
Magnesium	mg/L	1	24	24	10
Sodium	mg/L	1	33	34	32
Potassium	mg/L	1	4	4	3
Aluminium	mg/L	0.01	1.39	0.79	11.5
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	0.003	<0.001	0.004
Copper	mg/L	0.001	0.003	0.002	0.008
Lead	mg/L	0.001	<0.001	<0.001	0.005
Manganese	mg/L	0.001	0.066	0.053	0.186
Nickel	mg/L	0.001	0.002	0.002	0.006
Selenium	mg/L	0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.005	0.008	<0.005	0.03
Boron	mg/L	0.05	<0.05	<0.05	<0.05
Iron	mg/L	0.05	1.32	0.82	7.9
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001
Total Nitrogen as N	mg/L	0.1	0.6	0.6	1.9
Total Phosphorus as P	mg/L	0.01	0.06	0.05	0.36
Oil & Grease	mg/L	5	<5	<5	<5

** LOR = Limit of Rocording*
SD7 = MCC water retention dam
SW5 = Namoi River upstream
SW8 = Namoi River downstream

Site Water Monitoring

Table C-7
On-site Surface Water Monitoring

Site	Parameter	Units	Frequency	Samples	Date	Min	Mean	Max/Only Value
Mine Void	TSS	mg/L	Every 2 months	2	27/02/2015	< 5	7	9
	Conductivity	µs/cm		2	27/02/2015	612	1496	2380
	Oil & Grease	mg/L		2	27/02/2015	< 5	< 5	< 5
	pH	pH		2	27/02/2015	8.19	8.29	8.39
Mine Void	TSS	mg/L	Every 2 months	1	22/04/2015			< 5
	Conductivity	µs/cm		1	22/04/2015			946
	Oil & Grease	mg/L		1	22/04/2015			< 5
	pH	pH		1	22/04/2015			8.07
Mine Void	TSS	mg/L	Every 2 months	1	24/06/2015			< 5
	Conductivity	µs/cm		1	24/06/2015			722
	Oil & Grease	mg/L		1	24/06/2015			< 5
	pH	pH		1	24/06/2015			8.08
Mine Void	TSS	mg/L	Every 2 months	1	24/06/2015	Mine pit dry during August, insufficient inflows for sampling		
	Conductivity	µs/cm		1	24/06/2015			
	Oil & Grease	mg/L		1	24/06/2015			
	pH	pH		1	24/06/2015			
Mine Void	TSS	mg/L	Every 2 months	1	21/10/2015			48
	Conductivity	µs/cm		1	21/10/2015			1600
	Oil & Grease	mg/L		1	21/10/2015			< 5
	pH	pH		1	21/10/2015			8.22
Mine Void	TSS	mg/L	Every 2 months	1	18/12/2015			< 5
	Conductivity	µs/cm		1	18/12/2015			1640
	Oil & Grease	mg/L		1	18/12/2015			< 5
	pH	pH		1	18/12/2015			8.38

APPENDIX E

Groundwater

Appendix E
Groundwater

Regional Groundwater Bores

Table D-1
Groundwater Levels

SWL	RB01*	RB02*	RB05	Reg3	Reg4	Reg5a	Reg5b	Reg6	Reg7	Reg10	Reg12	Reg13	Reg14	BCM01	BCM03
Jan-15	163.95	140.1	55.83	13.81	20.19				6.76		25.72	22.94	20.14		
Feb-15	164.27	140.47	55.98	14.05	20.23				6.85		25.78	23	20.67		
Mar-15	164.42	140.77	56.5	14.18	20.57				6.93		25.77	22.97	20.67		
Apr-15	164.69	141.19	55.6	13.8	20.23	17.79	22.52		7.04		25.79	22.97	19.95		
May-15	164.99	141.24	56.78	13.6	20.6	17.82			7.19		25.81	22.99	19.77		
Jun-15	165.22	141.35	56.94	13.53	20.64	17.84	22.22		7.35		25.85	23.01	19.65		
Jul-15	165.36	141.44	56.97	13.49	20.58	18.07			7.41		25.8	22.94	19.59		
Aug-15	165.42	141.43	57.08	13.52	20.61	17.83			7.58		25.83	22.99	19.57		
Sep-15	165.68	141.69	57.2	13.54	20.58	18.04		20.13	7.71		22.84	22.96	19.54		
Oct-15	165.87	141.82	57.35	14.17	20.55	17.78		20.16	7.87		25.81	22.93	20.27		
Nov-15	166	141.93	57.4	14.22	20.54	17.96		20.15	7.93		25.8	22.89	19.74		
Dec-15			57.57	14.16	20.18	17.76		20.17	8.03		25.83	22.85	20		

Table D-2

Groundwater Monitoring Results

Location	Date	pH Value	Electrical Conductivity @ 25°C	TDS @180°C	Aluminium (filt.)	Arsenic (filt.)	Barium (filt.)	Cadmium (filt.)	Copper (filt.)	Lead (filt.)	Lithium (filt.)	Manganese (filt.)	Nickel (filt.)	Zinc (filt.)	Boron (filt.)	Iron (filt.)	Ammonia as N	Nitrite as N	Nitrate as N	Total Anions	Total Cations
			µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L
RBO1	18/03/2015	Sample not obtainable[1]																			
RBO1	30/06/2015	9.26	999	546		0.004		<0.0001	<0.001	<0.001			<0.001	0.018		<0.05	0.35	<0.01	<0.01	9.98	10.6
RBO1	24/09/2015	9.49	979	578	0.03	0.004	0.015	<0.0001	0.003	<0.001	0.041	0.002	<0.001	0.043	0.09	0.13	0.38	<0.01	0.05	9.71	10.6
RBO1	18/01/2016	8.87	1040	524	0.03	0.004	0.012	<0.0001	<0.001	<0.001	0.052	<0.001	0.001	<0.005	0.1	<0.05	0.43	<0.01	0.02	9.09	10.5
RBO2	18/03/2015	Sample not obtainable[2]																			
RBO2	23/04/2015	11.6	1200	381	0.02	<0.001	0.303	<0.0001	<0.001	<0.001	0.055	<0.001	0.001	<0.005	<0.05	<0.05	0.2	<0.01	1.15	6.72	7.57
RBO2	30/06/2015	11.6	1330	493	0.04	<0.001	0.269	<0.0001	<0.001	<0.001	0.054	<0.001	0.001	<0.005	<0.05	<0.05	0.2	<0.01	1.16	7.59	7.96
RBO2	24/09/2015	12	1660	452	<0.01	<0.001	0.259	<0.0001	<0.001	<0.001	0.046	<0.001	0.002	0.062	<0.05	<0.05	0.18	<0.01	1.14	8.66	9.18
RBO2	18/01/2016	11.6	1430	542	0.03	<0.001	0.213	<0.0001	<0.001	<0.001	0.049	<0.001	0.001	0.059	<0.05	<0.05	0.46	0.01	0.55	6.64	6.87
Reg3	18/03/2015	7.63	1720	921	<0.01	<0.001	0.33	<0.0001	<0.001	<0.001	0.031	0.07	0.005	0.035	0.07	0.52	0.67	0.22	<0.01	21.1	20.2
Reg3	30/06/2015	7.42	1720	980	<0.01	<0.001	0.303	<0.0001	0.001	<0.001	0.03	0.093	0.005	0.073	0.07	0.24	0.58	<0.01	<0.01	18.8	19.5
Reg3	24/09/2015	7.47	1720	976	0.02	<0.001	0.296	<0.0001	<0.001	<0.001	0.027	0.063	0.003	0.122	0.06	0.2	0.58	<0.01	0.06	18.1	19.7
Reg3	30/12/2015	7.32	1970	1090	0.03	0.002	0.315	<0.0001	<0.001	<0.001	0.031	0.071	0.003	0.01	0.05	0.21	0.63	0.04	<0.01	21.8	22.5
Reg4	17/03/2015	11.5	1160	496	0.01	0.001	0.044	<0.0001	0.001	<0.001	0.149	<0.001	<0.001	0.011	0.06	<0.05	0.92	0.07	0.18	9.53	8.74
Reg4	29/06/2015	11.5	1500	577	0.01	<0.001	0.104	<0.0001	<0.001	<0.001	0.203	<0.001	<0.001	0.014	0.06	<0.05	1.19	0.08	0.02	9.94	9.95
Reg4	18/09/2015	12	1110	454	<0.01	<0.001	0.176	<0.0001	0.003	<0.001	0.219	<0.001	<0.001	0.045	0.05	<0.05	1.28	0.1	0.1	10.1	11.8
Reg4	29/12/2015	8.77	925	546	0.01	0.001	0.063	<0.0001	<0.001	<0.001	0.06	0.014	<0.001	0.006	0.1	<0.05	0.28	0.13	<0.01	9.3	9.71
Reg5aSth	18/03/2015	Sample not obtainable[3]																			
Reg5a Sth	30/06/2015	6.54	2890	4870	0.26	0.004	0.623	<0.0001	0.027	0.002	<0.001	4.74	0.051	0.297	<0.05	18.3	7.86	<0.10	<0.10	36.4	30.4
Reg5a Sth	24/09/2015	7.4	2010	1140	0.03	0.003	0.061	<0.0001	<0.001	<0.001	0.009	1.19	0.01	0.272	0.06	0.19	0.58	<0.01	0.08	20.4	22
Reg5a Sth	30/12/2015	7.95	2040	1230	0.04	0.004	0.056	<0.0001	<0.001	<0.001	0.007	1.19	0.009	0.015	0.06	0.25	0.47	<0.01	0.01	21.2	21.1
Reg7	17/03/2015	7.61	834	491	<0.01	0.008	0.09	<0.0001	0.002	<0.001	0.002	1.25	0.002	0.051	<0.05	0.69	0.03	<0.01	0.17	10.1	10.1
Reg7	29/06/2015	7.31	793	486	<0.1	0.008	0.084	<0.0001	<0.001	<0.001	0.001	0.956	<0.001	0.019	<0.05	0.7	0.01	<0.01	0.02	8.86	9.15
Reg7	18/09/2015	7.41	772	450	<0.01	0.008	0.085	<0.0001	<0.001	<0.001	0.001	0.86	<0.001	0.037	<0.05	0.29	0.07	<0.01	0.09	8.24	9.39
Reg7	29/12/2015	7.79	860	468	<0.01	0.009	0.089	<0.0001	<0.001	<0.001	0.002	1.05	0.001	0.008	<0.05	0.7	<0.01	<0.01	<0.01	9.06	8.63

Location	Date	pH Value	Electrical Conductivity @ 25°C	TDS @180°C	Aluminium (filt.)	Arsenic (filt.)	Barium (filt.)	Cadmium (filt.)	Copper (filt.)	Lead (filt.)	Lithium (filt.)	Manganese (filt.)	Nickel (filt.)	Zinc (filt.)	Boron (filt.)	Iron (filt.)	Ammonia as N	Nitrite as N	Nitrate as N	Total Anions	Total Cations
			µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L
Reg10	17/03/2015	Dry																			
Reg10	30/06/2015	Dry																			
Reg10	24/09/2015	Dry																			
Reg10	30/12/2015	Dry																			
Reg12	17/03/2015	7.99	2100	1210	<0.01	0.002	0.081	<0.0001	0.002	<0.001	0.018	0.29	0.002	0.033	0.12	0.24	0.09	<0.01	0.07	26.7	24.1
Reg12	29/06/2015	7.78	2080	1070	<0.01	0.001	0.07	<0.0001	<0.001	<0.001	0.016	0.265	0.002	0.031	0.11	0.32	0.09	<0.01	<0.01	23.4	23.1
Reg12	18/09/2015	7.76	2080	1170	<0.01	0.003	0.069	<0.0001	0.002	<0.001	0.016	0.232	0.001	0.059	0.1	0.36	0.09	<0.01	0.04	21.6	24.2
Reg12	29/12/2015	8.82	2440	1230	0.01	0.002	0.074	<0.0001	<0.001	<0.001	0.037	0.13	0.007	0.048	0.13	0.08	0.05	<0.01	0.08	26.8	26.4
Reg13	17/03/2015	11.2	3170	1930	0.02	<0.001	0.05	<0.0001	0.003	<0.001	0.314	0.001	0.002	0.019	0.08	<0.05	0.42	0.03	0.19	33.1	35.5
Reg13	29/06/2015	11.1	3190	78	<0.01	<0.001	0.036	<0.0001	0.002	<0.001	0.267	<0.001	<0.001	0.022	0.07	<0.05	0.42	<0.01	0.06	32.3	34.7
Reg13	24/09/2015	11.3	2960	2250	<0.01	<0.001	0.048	<0.0001	0.002	<0.001	0.283	<0.001	0.001	0.048	0.07	<0.05	0.34	0.02	0.36	30.2	35.6
Reg13	29/12/2015	8.01	3060	1670	<0.01	<0.001	0.039	<0.0001	0.001	<0.001	0.324	<0.001	0.001	0.006	0.1	<0.05	0.38	0.01	0.17	32.3	31.8
Reg14	17/03/2015	8.09	1220	758	<0.01	0.01	0.05	<0.0001	<0.001	<0.001	0.003	0.359	0.002	0.009	0.05	<0.05	0.32	<0.01	0.03	14.5	13.9
Reg14	29/06/2015	7.85	1200	699	0.02	0.008	0.044	<0.0001	0.001	<0.001	0.002	0.447	0.001	0.01	<0.05	<0.05	0.25	<0.01	0.05	12.8	13.6
Reg14	24/09/2015	7.85	797	480	<0.01	0.004	0.041	<0.0001	<0.001	<0.001	<0.001	0.181	0.002	0.039	<0.05	0.07	0.01	<0.01	0.05	8.19	9.07
Reg14	29/12/2015	7.95	959	535	<0.01	0.009	0.038	<0.0001	<0.001	<0.001	<0.001	0.348	0.002	0.006	<0.05	0.41	0.03	<0.01	0.02	9.74	9.84
BCM01	17/03/2015	Dry																			
BCM01	29/06/2015	Dry																			
BCM01	18/09/2015	Dry																			
BCM01	29/12/2015	Dry																			
BCM03	17/03/2015	Dry																			
BCM03	29/06/2015	Dry																			
BCM03	18/09/2015	Dry																			
BCM03	30/12/2015	Dry																			

Notes

[1.] RBO1 was not sampled in March as unable to collect an adequate sample from bore depth. Access restrictions prevented sampling in December 2015 so replacement sample was collected in the following month.

[2.] RBO2 was not sampled in March as unable to collect an adequate sample from bore depth. Access restrictions prevented sampling in December 2015 so replacement sample was collected in the following month.

[3]. Reg5aSth was not sampled in March 2015 as it had not been drilled.

Private Groundwater Bores

Table D-3
Groundwater Levels

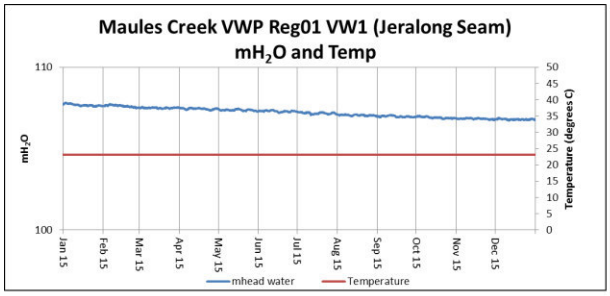
	MOR1	MOR2	BRE2	GW002831	GW006567	WOL1	WOL2	School Raw	School Filtered	Whan	Tralee	Morse	Bas1	Bas2
SWL														
Jan-15	12.06	13.16	18.3			4.35	10.41			3.95	19.8			
Jul-15	12.14	13.2	18.52		18.63	4.93	10.84			4.32	19.93			

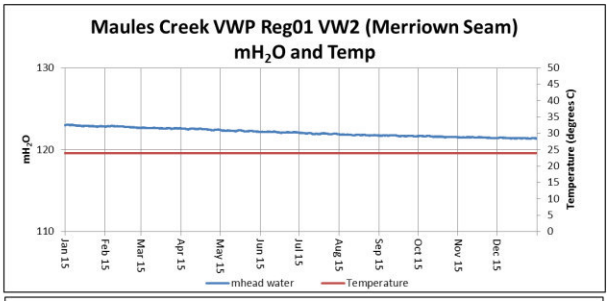
Table D-4
Groundwater Monitoring Results

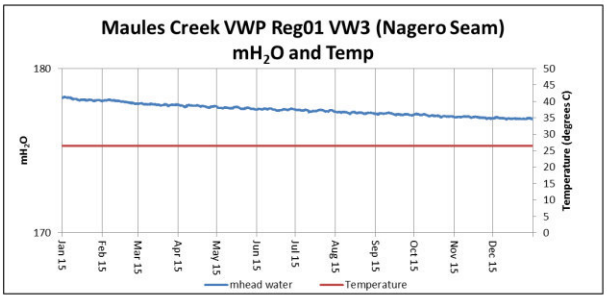
Location	Date	pH Value	Electrical Conductivity @ 25°C	TDS @180°C	Arsenic (filt.)	Cadmium (filt.)	Copper (filt.)	Lead (filt.)	Nickel (filt.)	Zinc (filt.)	Iron (filt.)	Ammonia as N	Nitrite as N	Nitrate as N	Total Anions	Total Cations
		pH Unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	meq/L	meq/L
MOR1	28/01/2015	7.72	1620	910	<0.001	<0.0001	<0.001	<0.001	<0.001	0.094	0.12	0.09	0.03	24.2	16.3	19.3
MOR1	27/07/2015	7.79	1650	928	<0.001	<0.0001	0.004	<0.001	0.002	0.017	<0.05	<0.01	<0.01	15.2	15.5	18.6
MOR2	28/01/2015	8.23	230	112	<0.001	<0.0001	0.004	<0.001	<0.001	0.073	<0.05	0.35	<0.01	0.08	2.02	2.48
MOR2	27/07/2015	7.36	267	90	<0.001	<0.0001	<0.001	<0.001	0.001	0.008	<0.05	0.02	<0.01	0.04	2.01	2.28
BRE2	29/01/2015	8.02	2420	1430	0.008	<0.0001	<0.001	<0.001	<0.001	0.048	2.36	0.7	<0.01	<0.01	24.6	26.1
BRE2	27/07/2015	8.01	2620	1140	0.007	<0.0001	0.002	<0.001	0.002	0.013	0.49	1.12	<0.01	0.04	24.5	25.1
GW002831	28/01/2015	7.6	1410	721	<0.001	<0.0001	0.003	<0.001	<0.001	0.03	<0.05	<0.01	0.01	0.41	14	14.3
GW002831	27/07/2015	No Access														
GW006567	28/01/2015	No Access														
GW006567	27/07/2015	No Access														
GW001869	2015	No Access														
WOL1	29/01/2015	8.1	517	298	<0.001	<0.0001	0.005	<0.001	0.003	0.016	<0.05	<0.01	<0.01	0.73	5.34	5.99
WOL1	27/07/2015	7.61	507	234	0.001	<0.0001	0.004	<0.001	<0.001	0.012	<0.05	<0.01	<0.01	0.68	4.72	5.54
WOL2	29/01/2015	8.35	635	366	<0.001	<0.0001	0.005	<0.001	<0.001	0.14	<0.05	0.5	<0.01	0.03	6.39	7.75
WOL2	27/07/2015	8.32	640	273	<0.001	<0.0001	0.014	<0.001	0.022	0.042	<0.05	0.1	<0.01	0.02	6.03	6.49
School	2015	No Access														
WHAN	29/01/2015	7.46	433	265	<0.001	<0.0001	<0.001	<0.001	<0.001	0.071	<0.05	<0.01	<0.01	0.38	4.28	4.31
WHAN	27/07/2015	7.31	436	211	<0.001	<0.0001	0.01	0.002	0.013	0.026	<0.05	<0.01	<0.01	0.46	3.95	4.17
Teston	2015	No Access														
Tralee	28/01/2015	7.42	1470	772	<0.001	<0.0001	<0.001	<0.001	0.007	0.047	0.09	0.38	<0.01	0.16	15.6	15.9
Tralee	28/07/2015	7.4	1420	747	<0.001	<0.0001	<0.001	<0.001	0.007	0.05	11	0.18	<0.01	0.2	14	16
Morse	2015	No Access														
BAS1	28/01/2015	7.25	678	390	<0.001	<0.0001	0.002	<0.001	0.002	0.193	0.15	0.02	<0.01	<0.01	6.75	6.99
BAS1	28/07/2015	7.18	614	332	<0.001	<0.0001	<0.001	<0.001	0.002	0.006	0.3	0.02	<0.01	0.02	5.59	6.12
BAS2	29/01/2015	7.35	928	515	<0.001	<0.0001	0.001	<0.001	<0.001	0.132	<0.05	0.02	<0.01	0.68	9.12	9.47
BAS2	28/07/2015	No Access														

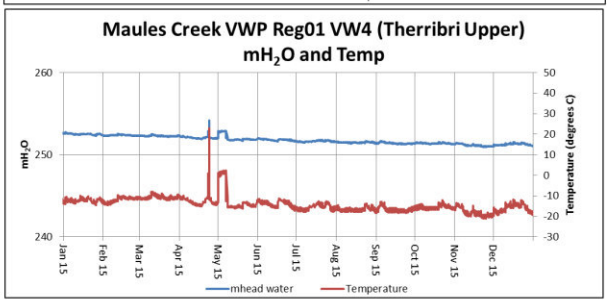
Note aluminium, barium, lithium, manganese, molybdenum, rubidium, strontium, boron, bromine and total phosphorus were not included in the monitoring suite during 2015.

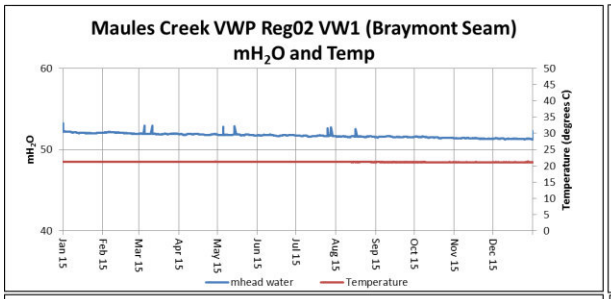
Vibrating Wire Piezometers

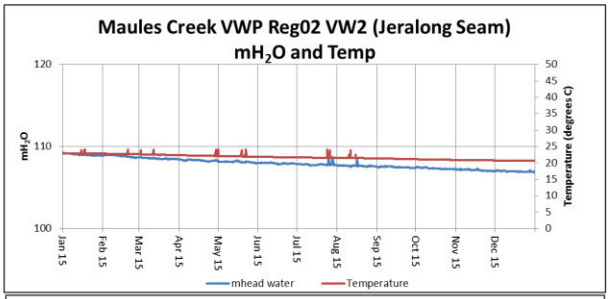


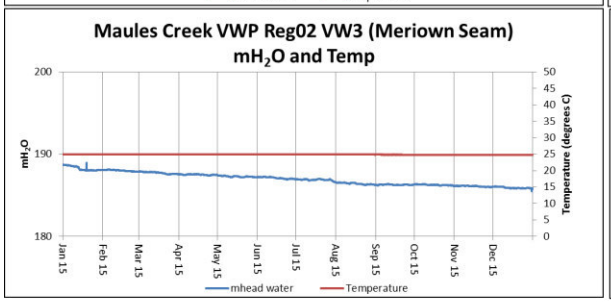


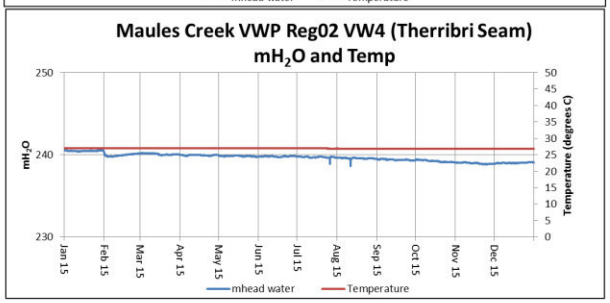


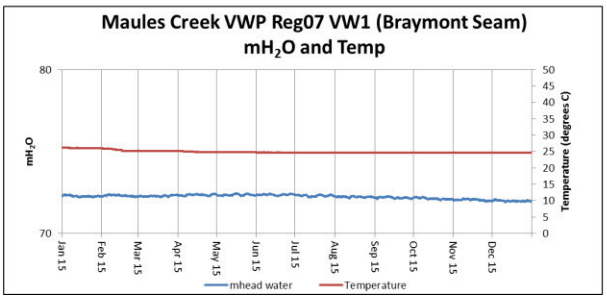


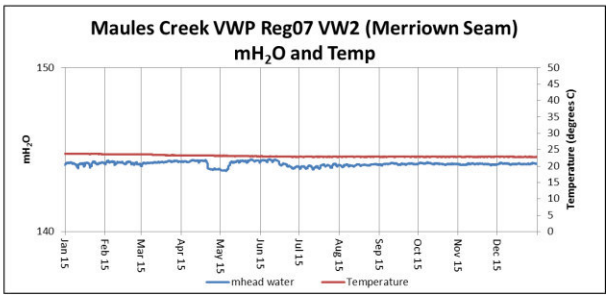


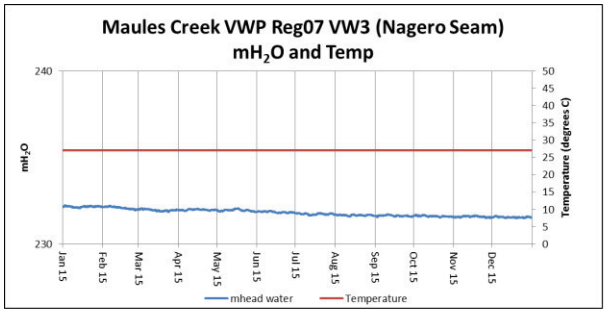


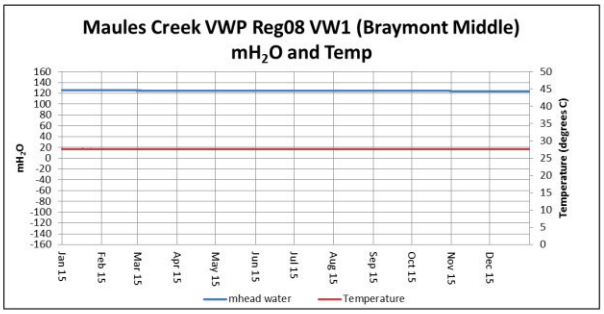


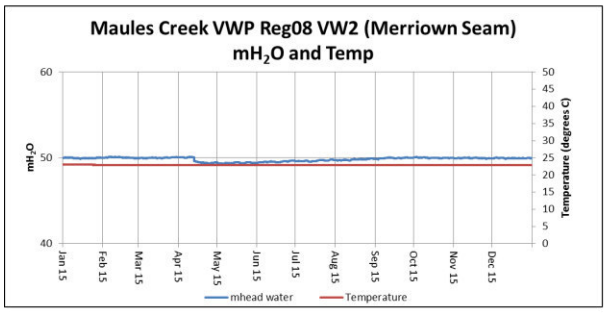


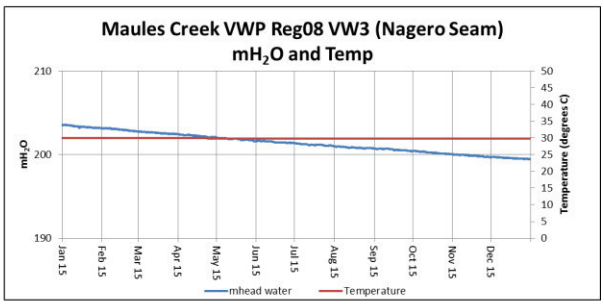


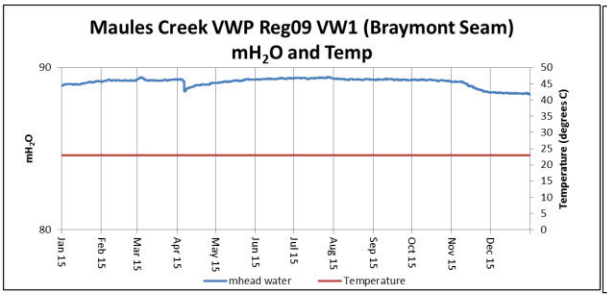


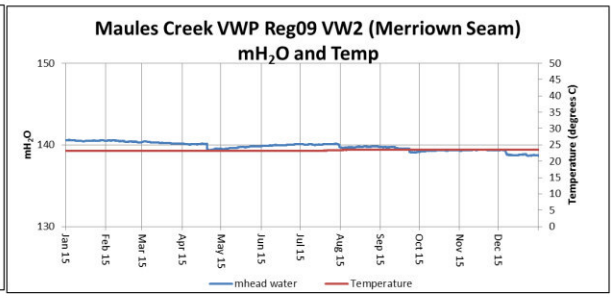

Maules Creek VWP Reg07 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

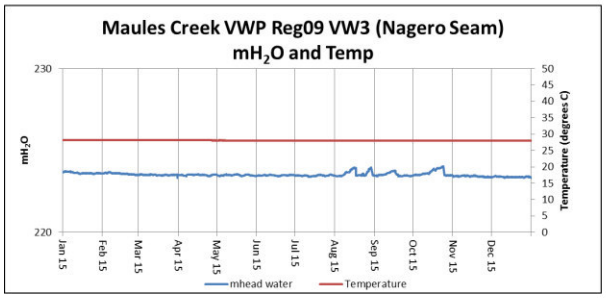

Maules Creek VWP Reg08 VW1 (Braymont Middle)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

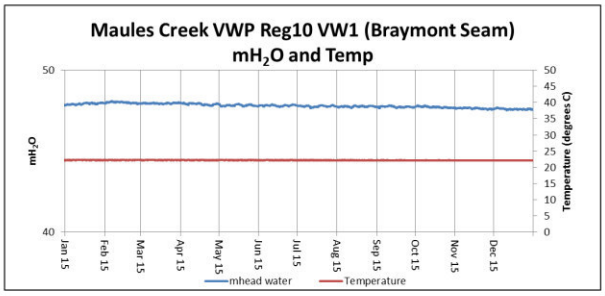

Maules Creek VWP Reg08 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

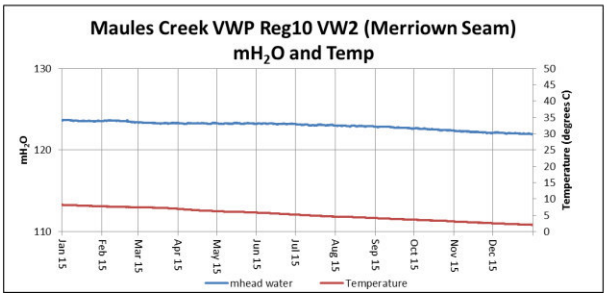

Maules Creek VWP Reg08 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP Reg09 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP Reg09 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP Reg09 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP Reg10 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature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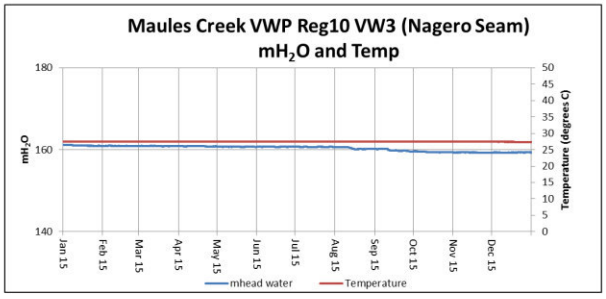
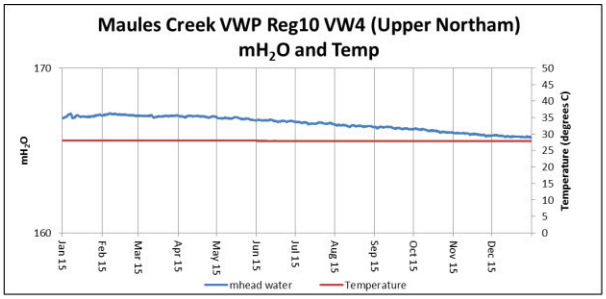
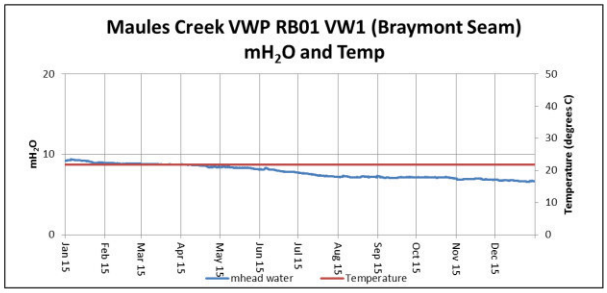
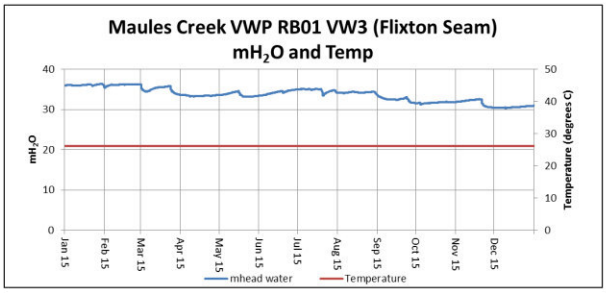
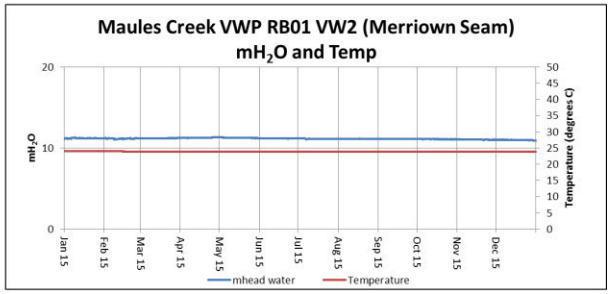
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

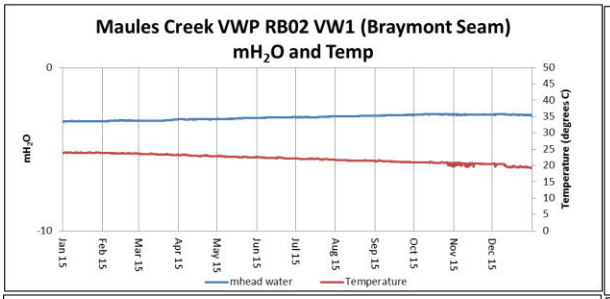

Maules Creek VWP Reg10 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

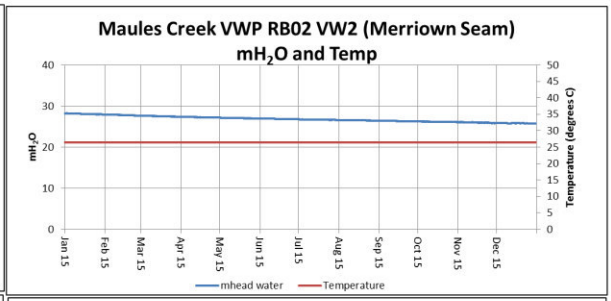

Maules Creek VWP Reg10 VW4 (Upper Northam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

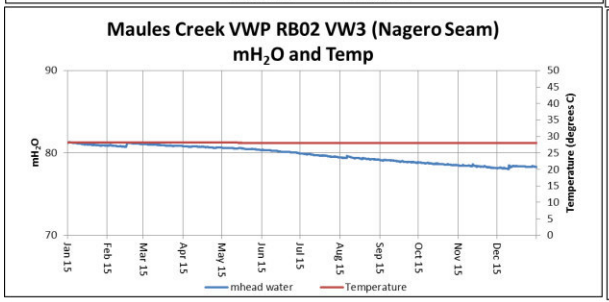

Maules Creek VWP RB01 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

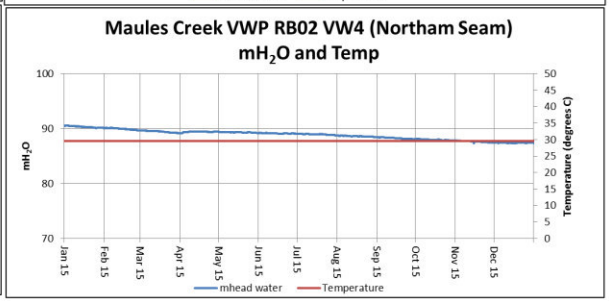

Maules Creek VWP RB01 VW3 (Flixton Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

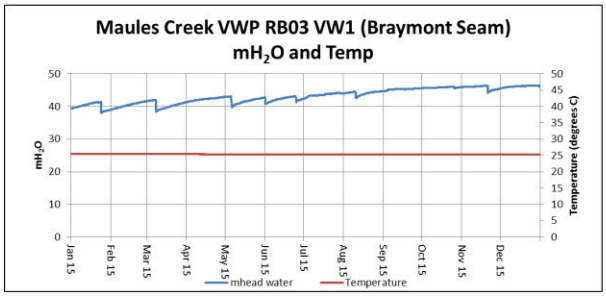

Maules Creek VWP RB01 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

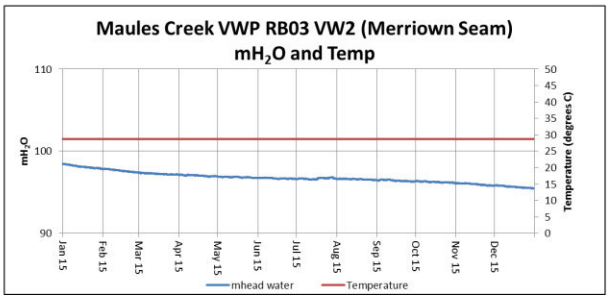

Maules Creek VWP RB02 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

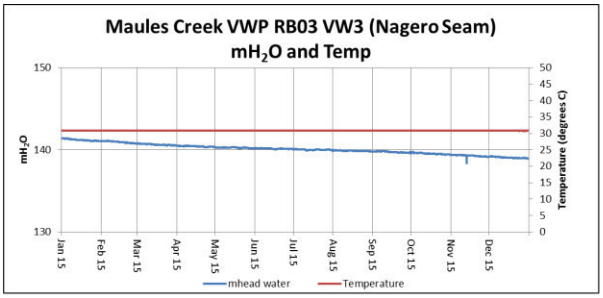

Maules Creek VWP RB02 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

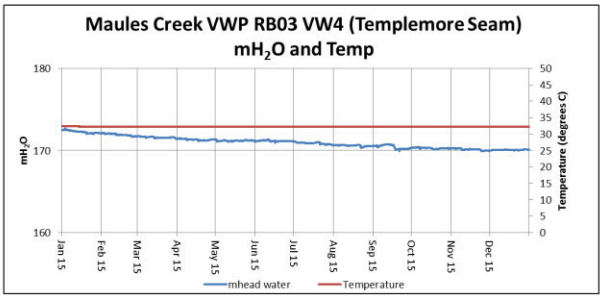

Maules Creek VWP RB02 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

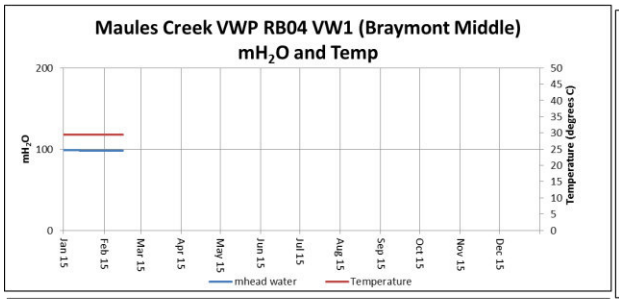

Maules Creek VWP RB02 VW4 (Northam Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

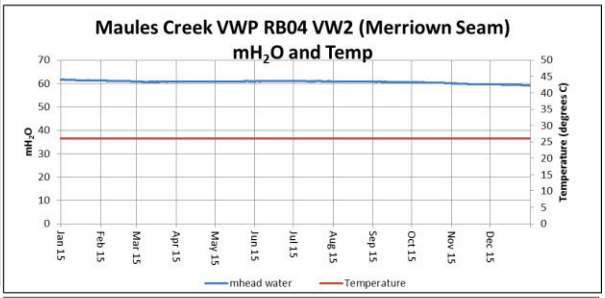

Maules Creek VWP RB03 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

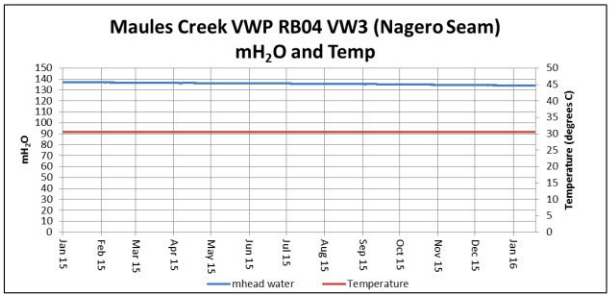

Maules Creek VWP RB03 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

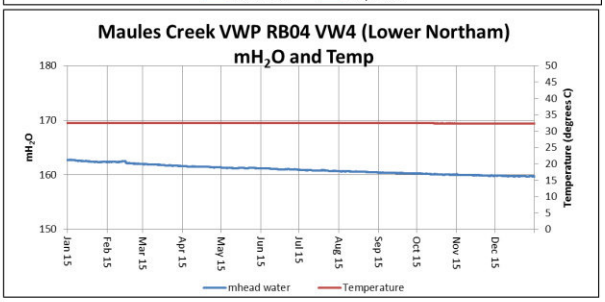

Maules Creek VWP RB03 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

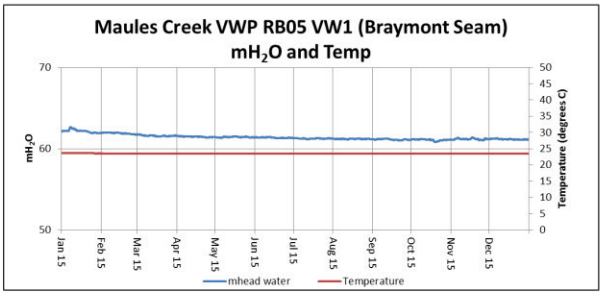

Maules Creek VWP RB03 VW4 (Templemore Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

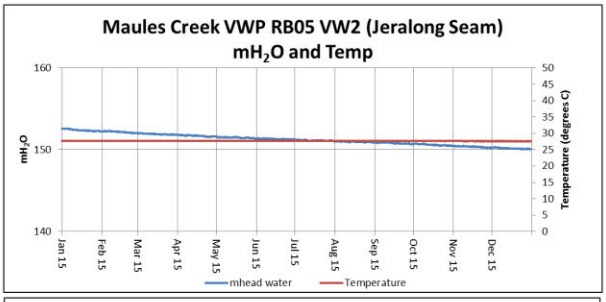

Maules Creek VWP RB04 VW1 (Braymont Middle)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

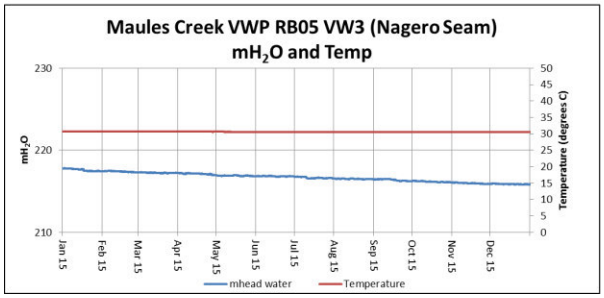

Maules Creek VWP RB04 VW2 (Merriown Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature

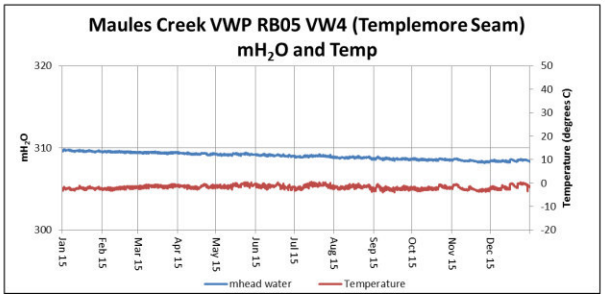

Maules Creek VWP RB04 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP RB04 VW4 (Lower Northam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP RB05 VW1 (Braymont Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP RB05 VW2 (Jeralong Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP RB05 VW3 (Nagero Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature


Maules Creek VWP RB05 VW4 (Templemore Seam)
mH2O and Temp
mH2O
Temperature (degrees C)
mhead water
Temperature