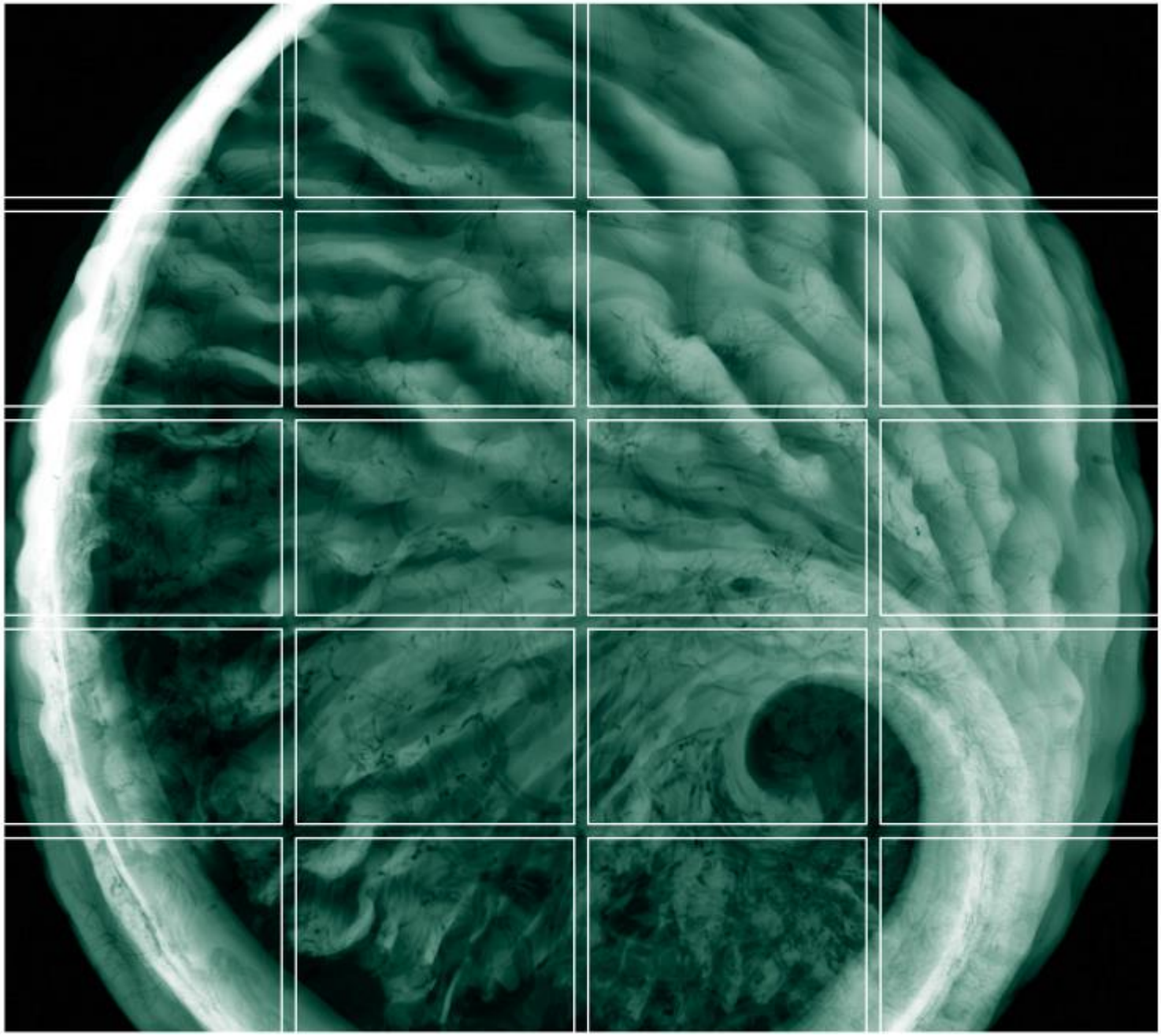

Maules Creek Mine Independent Biodiversity Audit

FINAL

Whitehaven Coal

April 2018

0435944

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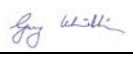
Version	**Revision**	**Author**	**Reviewed by**	**Name**	**Date**
Final	F01	Guy Williams	Michael Gaggin	Michael Gaggin	3 April 2018

Maules Creek Mine

Independent Biodiversity Audit

Prepared by:	*Guy Williams*
Position	*Principal Consultant*
Signed:	
Date:	*3 April 2018*
Approved by:	*Michael Gaggin*
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Date:	*3 April 2018*

Whitehaven Coal

April 2018

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CONTENTS

ANNEXURES

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned to perform an independent biodiversity audit (IBA), of the Maules Creek Coal Mine (herein referred to as MCCM) on behalf of Whitehaven Coal (WHC). The primary purpose of the audit was to satisfy the Department of Planning and Environment (DP&E) Ministers' Condition of Approval (MCoA) number 56, Schedule 3 of the MCCM Project Approval PA 10_0138, which requires the commissioning of an independent biodiversity audit by the end of December 2017, and every 5 years thereafter, unless the Secretary directs otherwise.

The audit objective was taken directly as per MCoA number 56 of Schedule 3 which requires the following:

- *consultation with OEH, North West LLS, DPI Lands, DoEE, CCC and DRE;*
- *assess performance of the revegetation in the rehabilitation area completed to date against the completion criteria in the Rehabilitation Management Plan;*
- *assess the performance of management and restoration in the off-site Biodiversity Offset Strategy areas completed to date against the completion criteria in the Biodiversity Management Plan;*
- *identify any measures that should be implemented to improve the performance of rehabilitation, management and restoration within the rehabilitation and biodiversity offset areas; and*
- *if the completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation and restoration once completed, and recommend additional measures to augment the Biodiversity Offset Strategy to ensure that it adequately offsets the project's impacts on biodiversity.*

The project Biodiversity Management Plan provides a set of performance criteria established as interim targets for offset area management activities. These criteria have been used as completion criteria for the purposes of this current audit.

At the specific request of DP&E a further set of observations have been provided on preliminary management of on site landform restoration for any areas where landform shaping or soil stockpiling has commenced.

- *The Mining Operations Plan provides the relevant soil management protocol, which documents the original soil balance estimate and determination of available topsoil and subsoil volumes for each stripping area.*
- *Soil stripping works were observed during the site visit with current practise involving spreading removed soil over reshaped overburden, and establishing drainage and sediment erosion control structures.*
- *The processes used for soil stockpiling support minimisation of degradation of stored soil and encourage nutrient stores.*
- *A Box-Gum Woodland Research Project delivered between WHC and University of New England is focussed on the impact of soil stock piling on seed bank viability, including physical and biological characteristics with depth and time.*

Overall, compliance was achieved against the performance criteria. A qualitative risk assessment was also completed on the findings, consistent with AS/NZS 4360:2004 Risk management and HB 436:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004 and as described in the DP&E publication "Independent Audit Guidelines" issued October 2015. Compliance was achieved with the performance criteria and no non-compliances were observed. The compliance with the criteria is summarised in Table below:

Summary of Audit Findings

Non compliances	Administrative Non - compliances	Observations	Total Conditions
0	0	0	0
High (0), Medium (0), Low (0)			

ABBREVIATIONS AND GLOSSARY

Term	Description
AEMR (AR)	Annual Environmental Management Report (Annual Review)
C	Compliant - audit finding
CCC	Community Consultative Committee
CEEC	Critically Endangered Ecology Community
DP&E	Department of Planning and Environment (formerly Department of Planning & Infrastructure)
DP&I	Department of Planning and Infrastructure (now Department of Planning & Environment)
DPI (Water)	Department of Primary Industries (Water) formerly NSW Office of Water
DRE	Department of Industry (Division of Resources and Energy)
DSEWPaC (now DoEE)	Department of Sustainability, Environment, Water, Population and Communities (now Department of Environment and Energy)
EEC	Endangered Ecological Community
EMS	Environment Management Strategy
EP&A Act	Environment & Planning Act
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EPBC	Environment Protection and Biodiversity Conservation Act 1999
ERM	Environmental Resources Management Australia Pty Ltd
IBA	Independent Biodiversity Audit
MCoA	Ministers Conditions of Approval
MCCM	Maules Creek Coal Mine
ML	Mining Lease
MOP	Mining Operations Plan
NC	Non-compliant - audit finding
NT	Not triggered – audit finding
NV	Not Verified – audit finding
O	Observation – audit finding
RMP	Rehabilitation Monitoring Program
WHC	Whitehaven Coal

1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned to perform an independent biodiversity audit (IBA), of the Maules Creek Coal Mine (herein referred to as MCCM) on behalf of Whitehaven Coal (WHC). The primary purpose of the audit was to satisfy the Department of Planning and Environment (DP&E) Ministers' Condition of Approval (MCoA) number 56, Schedule 3 of the MCCM Project Approval PA 10_0138, which requires the commissioning of an independent biodiversity audit by the end of December 2017, and every 5 years thereafter, unless the Secretary directs otherwise. The MCoA states that the audit must cover the following aspects:

a) include consultation with OEH, North West Local Land Services (LLS), DPI Lands, DoEE, CCC and DRE;

b) assess the performance of the revegetation in the rehabilitation area completed to date against the completion criteria in the Rehabilitation Management Plan;

c) assess the performance of management and restoration in the off-site Biodiversity Offset Strategy areas completed to date against the completion criteria in the Biodiversity Management Plan;

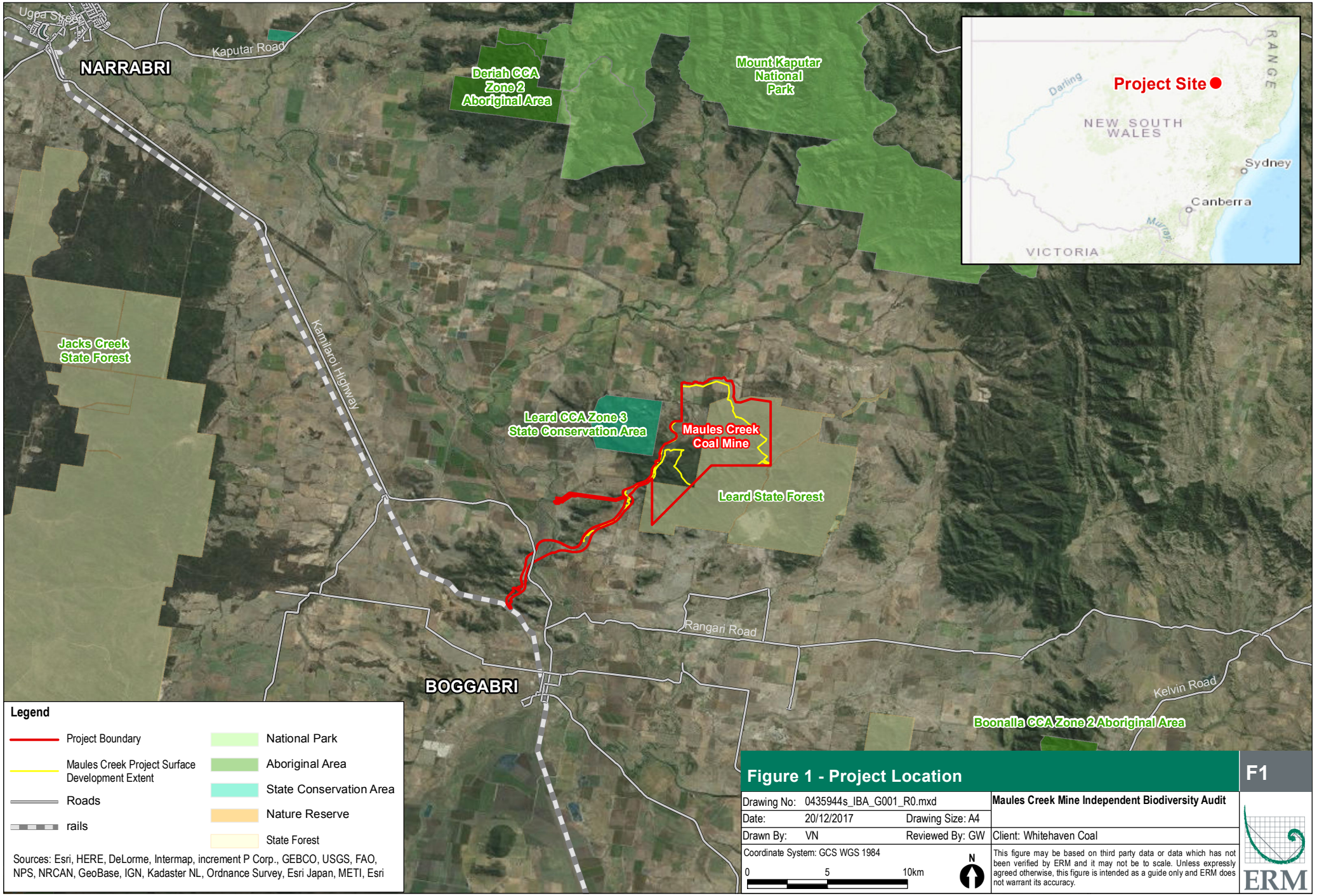
d) identify any measures that should be implemented to improve the performance of rehabilitation, management and restoration within the rehabilitation and biodiversity offset areas; and

e) if the completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation and restoration once completed, and recommend additional measures to augment the Biodiversity Offset Strategy to ensure that it adequately offsets the project's impacts on biodiversity.

Rehabilitation and restoration of the MCCM has not yet commenced and as such MCoA (b), which addresses performance of revegetation in the rehabilitation area, has not been included as a core audit requirement. However, for the purposes of this audit and at the specific request of DP&E a further set of observations have been provided on preliminary management of landform restoration for any areas where landform shaping or soil stockpiling has commenced. The remainder of the IBA covers those aspects relating to performance and management of off-site biodiversity offset areas.

1.1 MINE HISTORY & APPROVALS

The MCCM is located on the north-west slopes and plains of New South Wales (NSW), approximately 18 kilometers (km) north-east of Boggabri. 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. (*Figure 1.)*


NARRABRI
Kaputar Road
Deriah CCA Zone 2 Aboriginal Area
Mount Kaputar National Park
Project Site
NEW SOUTH WALES
Darling
RANGE
Sydney
Canberra
VICTORIA
Jacks Creek State Forest
Kamilaroi Highway
Leard CCA Zone 3 State Conservation Area
Maules Creek Coal Mine
Leard State Forest
Rangari Road
BOGGABRI
Kelvin Road
Boonalla CCA Zone 2 Aboriginal Area
Legend
Project Boundary
Maules Creek Project Surface Development Extent
Roads
rails
National Park
Aboriginal Area
State Conservation Area
Nature Reserve
State Forest
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri
Figure 1 - Project Location
F1
Drawing No: 0435944s_IBA_G001_R0.mxd
Maules Creek Mine Independent Biodiversity Audit
Date: 20/12/2017
Drawing Size: A4
Drawn By: VN
Reviewed By: GW
Client: Whitehaven Coal
Coordinate System: GCS WGS 1984
0 5 10km
N
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

The MCCM is a joint venture between Aston Coal 2 Pty Limited (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75%), ICRA MC Pty Ltd (an entity associated with ITOCHU Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co., Ltd.) (10%).

An Environmental Assessment for the Maules Creek Coal Project was prepared by Hansen Bailey (2011) and was assessed under the NSW Environmental Planning and Assessment Act, 1979 (EP&A Act) in 2012 and 2013. The NSW Planning Assessment Commission (PAC), 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 11th February 2013 by the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities.

The environmental approvals for the MCCM allow for the construction and operation of an open cut coal mine until the end of December 2034.

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.

1.2 OVERVIEW OF BIODIVERSITY MANAGEMENT

Management of Biodiversity within the MCCM project boundary and adjacent MCCM offset areas is covered by a Biodiversity Management Plan (BMP). This BMP addresses the relevant key requirements outlined in the PA 10_0138, and the requirements for the Offset Management Plan outlined in the Commonwealth Approval Decision 2010/5566.

The BMP has been submitted to the Department of Planning and Environment (DP&E) on a progressive basis and has been approved progressively. The BMP approved on 21st June 2013 was for the construction phase of the MCCM. The BMP approved in May and October 2014 was for the operations phase of the MCCM. The current BMP is for all stages of the MCCM, to the extent that these remain to be completed at the date of the approval of this BMP by the NSW Secretary of the DP&E.

A revision to the BMP was prepared on 12th April 2017 in accordance with Condition 53 of Schedule 3 to PA 10_0138. The current version of the BMP incorporates the revised and approved NSW Biodiversity Offset Strategy (Whitehaven, 2015) prepared in accordance with Condition 45 of Schedule 3 to PA 10_0138.

A biodiversity offset package has been prepared for the MCCM and includes both a NSW Biodiversity Offset Strategy and Commonwealth offset areas subject to Approval Decision EPBC 2010/5566.

It is understood that the objectives of the offset areas are to:

- protect and enhance existing native woodland/forest, including areas of Box-Gum Woodland EEC/CEEC in woodland form and habitat for threatened species listed under the TSC Act, namely those listed in Conditions 49 and 50 of Schedule 3 to PA 10_0138, and threatened species listed under the EPBC Act, namely, the Regent Honeyeater (*Xanthomyza Phrygia*), Swift Parrot (*Lathamus discolour*) and the South-eastern Long-eared Bat (*Nyctophilus corbeni*);

- protect and enhance areas of semi-cleared woodland/forest;

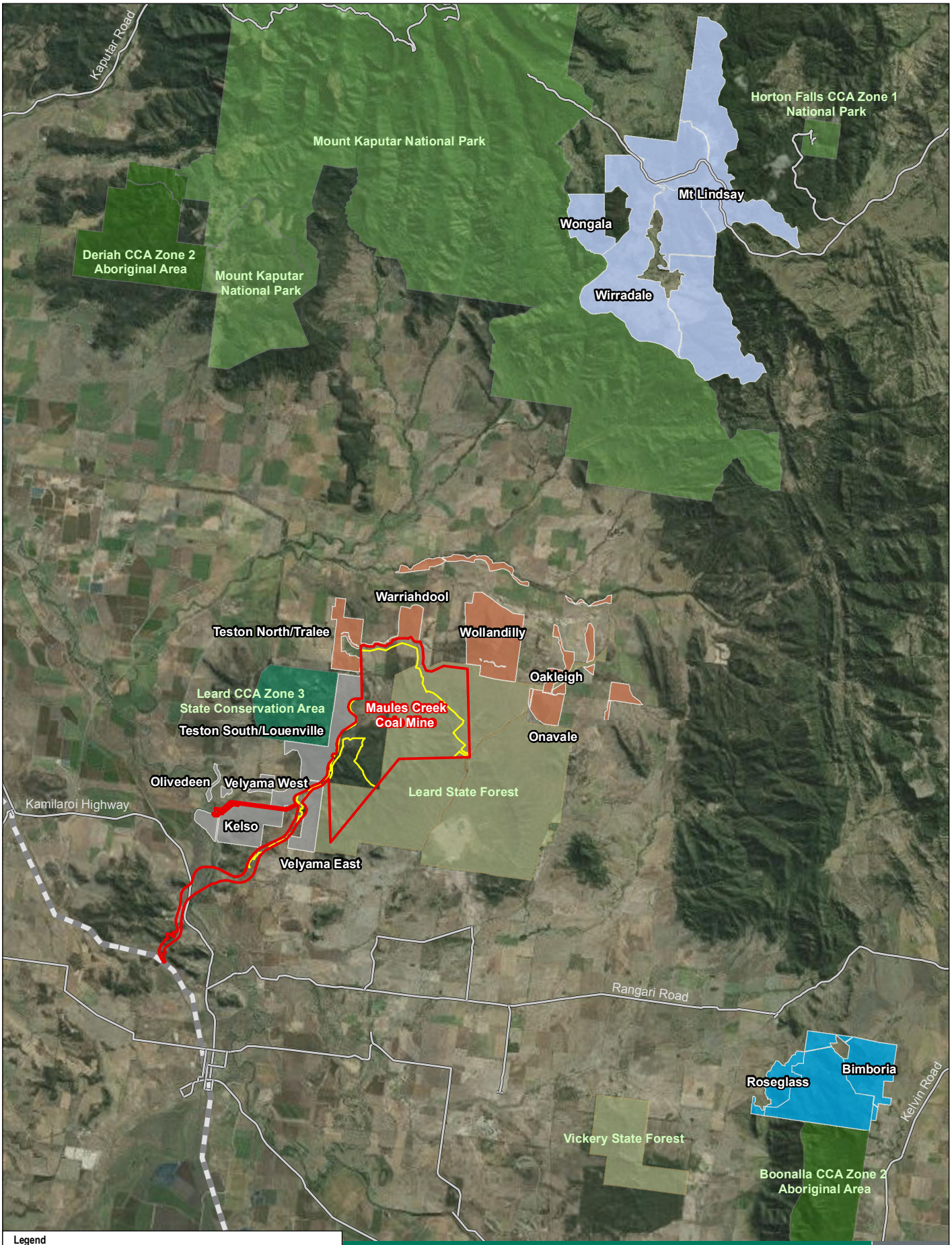
- restore self-sustaining vegetation communities within derived native grassland;

- restore the woodland form of Box-Gum Woodland within existing areas of Box-Gum Woodland EEC/CEEC (derived native grassland); and

- restore self-sustaining vegetation communities within areas of low diversity derived native grassland, pasture improved and cultivated land.

The NSW offset areas cover a total of approximately 12,169 ha and have been split into four separate regional areas (North, South, East and West) (*Figure 2*).

The total proposed Commonwealth offset areas for the MCCM covers an area of approximately 13,114 ha (i.e. a sum including the NSW revised offset areas and additional proposed Commonwealth offset areas). The Commonwealth offset areas subject to Approval Decision EPBC 2010/5566 are similar to those subject to the approved NSW Biodiversity Offset Strategy.



Legend

- Project Boundary
- Maules Creek Project Surface Development Extent
- National Park
- Aboriginal Area
- State Conservation Area
- State Forest
- Roads
- rails
- Eastern Offset
- Northern Offset
- Southern Offset
- Western Offset

Figure 2 - Approved NSW Biodiversity Offset Stategy

F2

Drawing No:	0435944s_IBA_G002_R0.mxd		Maules Creek Mine Independent Biodiversity Audit
Date:	20/12/2017	Drawing Size: GW	
Drawn By:	VN	Reviewed By: ABC	Client: Whitehaven Coal

Coordinate System: GDA 1994 MGA Zone 56

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ERM

An independent biodiversity study / review was conducted by Greenloaning Biostudies in 2013 and verified that Commonwealth offset areas contain no less than 5,532 ha of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box-Gum Woodland) (listed as a Critically Endangered Ecology Community [CEEC] under the EPBC Act and an Endangered Ecological Community [EEC] under the NSW Threatened Species Conservation Act. This study also verified that the Commonwealth offset areas contain no less than 9,334 ha of equivalent or better quality of habitat for the Regent Honeyeater (*Xanthomyza phrygia*), Swift Parrot (*Lathamus discolor*) and the South-eastern Long-eared Bat (*Nyctophilus corbeni*) (previously Greater Long-eared Bat).

The BMP provides short, medium and long-term measures for the ongoing management of vegetation and habitat in the offset areas and to implement the biodiversity offset strategy. A set of performance criteria have been established as interim targets for offset area management activities (Figure 6.9 Biodiversity Management Plan 2017). These performance criteria have been developed with reference to other similar plans, including the Draft Hunter Valley Coal Mines Best Practice Guidelines for Biodiversity Offset Management Plans (DP&I, 2014), the approved Tarrawonga Coal Mine Biodiversity Management Plan (Whitehaven, 2015c, 2015d) and Boggabri Coal Mine Biodiversity Management Plan (Boggabri Coal Pty Ltd, 2015). The criteria have also been used as completion criteria for the purposes of this current audit, with the following sections of this report demonstrating performance against each criteria.

1.3 AUDIT SCOPE

The scope of works to complete the Audit includes the following:

- audit to be carried out in accordance with DP&E's Guidelines for Independent Audits;
- audit will be carried out in accordance with AS/NZS ISO 19011:2014: Guidelines for quality and/or environmental management systems auditing;
- review compliance requirements of CoA number 56 of Schedule 3 (IBA) of the Maules Creek Coal Mine Project Approval PA 10_0138;
- site inspection to assess compliance against field implementation of active CoA (relating only to Schedule 3, CoA 56 and more specifically, limited to the offset areas detailed in the BMP);
- assess the performance of management and restoration in the off-site Biodiversity offset areas completed to date against the completion criteria in the biodiversity management plan;

- identify measures that should be implemented to improve the performance of rehabilitation, management and restoration within the biodiversity offset areas;

- where completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation and restoration once completed, and recommends additional measures to augment the Biodiversity Offset Strategy to ensure it adequately offsets the project's impacts on biodiversity;

- site inspection to assess landform establishment components of on-site rehabilitation works, notably land shaping and soil handling;

- assess the performance of any preliminary landform works to date against relevant soil handling protocols;

- identify any measures that should be implemented to improve the performance of rehabilitation, management and restoration within the mine-site areas;

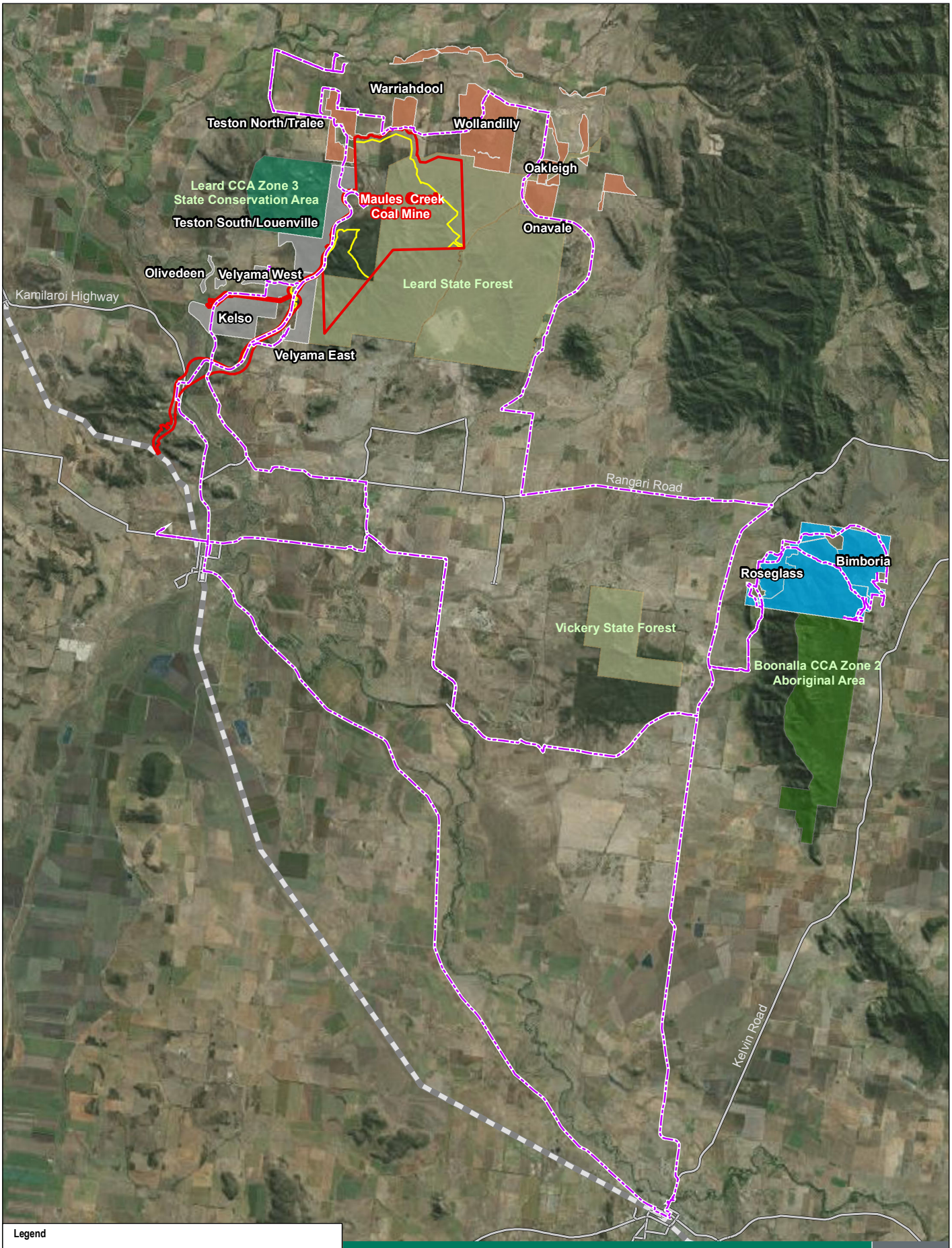
- document review of compliance against the MCoA, statement of commitments, and any other relevant consents/approvals;

- consultation with the relevant agencies such as Department of Planning and Environment (DP&E), Environment Protection Agency (EPA), NSW Department of Industry (Division of Resource and Energy (DRE)) and DPI – Water and North West LLS; CCC and Department of the Environment and Energy;.

- draft report with results of compliance assessment to be issued for comment to Whitehaven Coal; and

- final report issued for submission to the DP&E.

The Site inspection was conducted on Thursday 14th December 2017. The full area covered during the site visit is presented in *Figure 3.*



Legend

- Project Boundary
- Maules Creek Project Surface Development Extent
- Survey Tracks
- National Park
- Aboriginal Area
- State Conservation Area
- Roads
- rails
- Eastern Offset
- Northern Offset
- Southern Offset
- Western Offset
- State Forest

Figure 3 - Survey Routes

F3

Drawing No:	0435944s_IBA_G003_R0.mxd		**Maules Creek Mine Independent Biodiversity Audit**
Date:	20/12/2017	Drawing Size: GW	
Drawn By:	VN	Reviewed By: ABC	Client: Whitehaven Coal

Coordinate System: GDA 1994 MGA Zone 56

0 2 4km

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1.4 AUDIT CRITERIA

The audit considered the following specifications and standards:

- Condition of Approval PA10_0138 including Statement of Commitments
- EPBC Approval 2010/5566
- Mining Leases 1719 and 1701
- Management plans and strategy
    - Mining Operations Plan (30th January 2017)
    - Mine Site Rehabilitation Management Plan (1st August 2016)
    - Biodiversity Management Plan (12th April 2017)
    - Biodiversity Offset Strategy (August 2015)
    - Aboriginal Archaeology and Cultural Heritage Management Plan (March 2017)

The BMP details the performance and completion criteria for management activities associated with the offset areas. These are provided in Tables 6-9 of the BMP, and reproduced in section 3.1 of this report.

For the assessment of restoration works the soil handling protocol as detailed in Appendix D of the Mining Operation Plan has been determined appropriate for performance criteria for this audit. This has been included in Annex A of this report.

1.5 LIMITATIONS OF THIS REPORT

This disclaimer, together with any limitations specified in the report, applies to this report and its use.

This report was prepared in accordance with the contracted scope of services for the specific purpose stated and subject to the applicable cost, time and other constraints. In preparing this report, ERM relied on:

a) client/third party information which was not verified by ERM except to the extent required by the scope of services, and ERM do not accept responsibility for omissions or inaccuracies in the client/third party information; and

b) information taken at or under the particular times and conditions specified, and ERM do not accept responsibility for any subsequent changes.

2 AUDIT METHODOLOGY

2.1 METHODOLOGY AND PROCESS

The audit comprised a site inspection, interviews with key personnel and review of records and other related documentation over the period 13th – 15th December 2017. The audit process included the following primary components:

- development of a Terms of Reference which included:
  - audit scope and objectives;
  - date and location of audit;
  - members of audit team; and
  - list of reference documents and audit criteria.
- a project inception meeting was held via teleconference on 20th November 2017 to confirm details of the Terms of Reference, site inspection logistics and request for documentation required prior to the site inspection component of the audit;
- a brief opening meeting on 13th December 2017 was held at the WHC Gunnedah Office to confirm audit objectives and scope for the site inspection. Attendees included:
  - Guy Williams (ERM Lead Biodiversity Auditor); and
  - Andrew Wright (WHC Group Superintendent - Biodiversity).
- site inspection was undertaken on 14th December 2017;
- any identified gaps/issues were documented and followed up with site personnel and additional information was requested as required;
- a closeout meeting was held on afternoon of 14th December 2017 to discuss initial findings and recommendations. Attendees included the same participants as the opening meeting including the following:
  - Tony Dwyer (WHC Group Manager - Approvals and Biodiversity);
  - Scott Mitchell (WHC Environmental Superintendent – Maules Creek Coal);
  - Scotney Moore (WHC Environmental Officer – Maules Creek Coal);
  - Darren Swain (WHC External Relations Superintendent – Maules Creek Coal);

- Peter Wilkinson (General Manager – Maules Creek Coal);

- preparation of draft audit report;

- response to comments developed by WHC; and

- preparation of a final audit report.

2.2 *AGENCY AND COMMUNITY CONSULTATION*

As part of this audit, ERM and WHC consulted with the following agencies and stakeholders :

- NSW Department of Planning and Environment (DP&E);

- NSW Office of Environment and Heritage (OEH);

- NSW Department of Industry (Lands and Water);

- NSW Department of Primary Industry (Division of Resource and Energy (DRE));

- Commonwealth Department of the Environment and Energy (DoEE); and

- North West Local Land Service.

In each case an email was sent to representatives of each agency requesting feedback on those issues considered most relevant by their department at the time of the audit.

The Community Consultative Committee was also consulted as part of the audit process at the CCC meeting on 14th February 2018; and provided a copy of the IBA report allowing any comments received from the CCC to be considered by the Auditors in finalising the IBA.

2.2.1 *Summary of Consultation*

The Terms of Reference were submitted to the above mentioned authorities on 15th December 2017, to obtain feedback and draw attention to any key issues, within the agreed scope of the audit.

At the time of reporting regulatory responses had been received from DP&E (19th December 2017 and 9th March 2018) and OEH (13th March 2018).

Initial response from DP&E confirmed the audit team and Terms of Reference met the requirements of the IBA. DP&E also requested the scope include:

- Consideration to landform establishment components of any early-phase rehabilitation – particularly observations to include soil handling consistency with soil handling protocols; and

- Appropriate focus on actions proposed as part of the implementation plans for box gum woodland and threatened species, and related consideration of progress towards completion criteria.

The following responses were received by CCC members and associated community stakeholders, and included comments specifically relating to both the IBA report and other related matters.

- Kerri Clark (15th January 2018);
- Carolyn Nancarrow (8th February 2018);
- Libby Laird (14th March 2018);
- Pat Schultz (14th March 2018);
- Roselyn Druce (15th March 2018); and
- Anna Christie (20th March 2018).

Refer to *Annex B* for copies of regulatory correspondence received as part of the consultation process.

2.3 CLASSIFICATION OF AUDIT FINDINGS

Findings resulting from an assessment of audit evidence were divided into six categories as follows:

- **Compliant (C)**: the intent and all elements of the audit criteria requirements have been complied with within the scope of the audit.

- **Not Verified (NV):** insufficient verifiable evidence to demonstrate that the intent and all elements of the audit criteria have been complied with within the scope of the audit.

- **Non-compliance (NC):** Failure to meet the audit requirements, failure to achieve the field performance outcomes identified in documentation, or ineffective environmental management of the activity.

- **Administrative Non-compliance (ANC):** technical compliance with audit requirements that would not impact on performance and is considered minor in nature (e.g. report submitted but not on the due date, failed monitor or late monitoring session). This would not apply to performance-related aspects (e.g. exceedance of a noise limit) or where a requirement had not been met at all (e.g. noise management plan not prepared and submitted for approval).

- **Observation (O):** Observations are recorded where the audit identified issues of concern which do not strictly relate to the scope of the audit or assessment of compliance.

- **Not Triggered (NT) –** A regulatory approval requirement has an activation or timing trigger that had not been met at the time of the audit inspection; therefore a determination of compliance could not be made.

- **Note:** A statement or fact, where no assessment of compliance is required.

A qualitative risk assessment was also completed on the findings, consistent with AS/NZS 4360:2004 Risk management and HB 436:2004 Risk Management Guidelines Companion to AS/NZS 4360:2004 and as described in the DP&E publication "Independent Audit Guidelines" issued October 2015.

Risk levels for non-compliances will also be identified and assigned as follows:

High: Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence

Medium: 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-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: 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).

3 AUDIT FINDINGS

3.1 AUDIT PERFORMANCE AND COMPLETION CRITERIA

The revised BMP (April 2017) includes annual performance criteria for Biodiversity Offset Areas, as well as the set of defined completion criteria. It should be noted that WHC is currently at year 4 to 21 phase (July 2017 to meeting the Completion Criteria) and is not expected to have met the Completion Criteria in full until this final phase is concluded. The current audit is therefore focussed on assessing progress towards meeting the Performance Criteria assigned to Year 3 (July 2016 to end of June 2017).

An excerpt of the performance and completion criteria from the BMP is provided below in *Table 3.1.*

Table 3.1 Maules Creek Coal Project – Biodiversity Offset Area – Performance and Completion Criteria

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Setting Up the Offset Areas (Section 6.2)					
Long-term Conservation Security (A, B, C, D)		Commence long-term security of the offset areas (all offset areas except Wongala, Roseglass, Bimbooria and Oakleigh/Onavale) **Target Date -** Commencement within 3 months of the approval of this BMP (version 2) (extension in timing approved by DP&E). Security of the offset areas is subject to OEH timing for establishing a VCA.	-	Long-term security of the offset areas that are subject to the approval of the revised offset strategy to be registered (Wongala, Roseglass, Bimbooria and Oakleigh/Onavale) **Target Date – within 12 month of approval of the Stage 2 LFMPRRA.** Long-term security of offset areas required by Approval Decision EPBC 2010/5566 to be secured by 11th February 2018.	All offset areas are secured
Offset Implementation Costs and Conservation Bond (A, B, C, D)		Calculate Offset Implementation Costs and Lodge Conservation Bond **Target Date – Within 3 months of the approval of this BMP (version 2)**			N/A
Mapping of Fences	Complete	-	-	-	N/A

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Setting Up the Offset Areas (Section 6.2)					
Gate and Fence Installation (Perimeter of the offset areas as necessary to exclude livestock, except where adjacent to existing state forests or protected areas)	-	Complete **June 16**	-	-	Gates and fences installed around the perimeter of the offset areas (except where adjacent to existing state forests or protected areas)
Inspection of Fences for Maintenance Purposes	-	Annually and as required at other times	Annually and as required at other times	Annually and as required at other times	N/A
Removal of Redundant Fences	-	Commence	-	Complete	No redundant fencing
Signage Installation	-	Commence	-	Complete	Signs installed
Mapping of Access Tracks	Complete (refer Figures 12a to 12g	-	-	-	N/A
Inspection of Access Tracks for Maintenance Purposes	-	Annually and as required at other times	Annually and as required at other times	Annually and as required at other times	N/A
Seed Collection and Propagation (Section 6.4)					
Seed Collection	-	Commence	To be completed annually	To be completed annually as required	N/A
Seed Collection Propagation	-	Commence	To be completed annually	To be completed annually as required	N/A
Revegetation (Section 6.5)					
Identification Of Revegetation Areas (A, B, C, D)	Complete – Figures 12a to 12g	-	-	-	N/A
Revegetation of Year 2 Areas (as listed in Table 6-3) (A, B, C, D)	-	Completed design, site preparation and initial seeding/planting	Maintenance as required.	Maintenance as required.	Refer to the completion criteria below this table.
Revegetation of Year 3 Areas (as listed in Table 6-3) (A, B, C, D)	-	Completed design	Completed site preparation and initial seeding/planting	Maintenance as required.	

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Reuse of Salvaged Habitat Resources (Section 6.6)					
Relocation of salvaged habitat resources (D)	-	Commence	Continue	Continue	Complete
Management of Cultural Heritage (Section 6.7)					
Comply with Cultural Heritage Requirements	Continue	Continue	Continue	Continue	N/A
Weed Management (Section 6.8)					
Control of Major Weed Occurrences (noxious and other declared Weeds of National Significance) (A)	Commence	Continue across all offset areas that require weed control as indicated through monitoring.	Continue across all offset areas that require weed control as indicated through monitoring.	Continue across all offset areas that require weed control as indicated through monitoring.	-
Weed extent (noxious and WONS)	-	Establish baseline cover of weeds (noxious and WONS).	-	50 % reduction in the cover of weeds (noxious and WONS) in the offset areas compared to baseline cover.	80 % reduction in the cover of weeds (noxious and WONS) in the offset areas.
Note: weed species/coverage can vary substantially between seasons/years beyond the control of Whitehaven.					
Feral Animal Management (Section 6.9)					
Control of Feral Animals	Commence	Continue across all offset areas that require feral animal control as indicated through monitoring.	Continue across all offset areas that require feral animal control as indicated through monitoring.	Continue across all offset areas that require feral animal control as indicated through monitoring.	Minimal feral animals as evidenced through monitoring data.
Feral Animal Abundance	-	Establish abundance of feral animals.	Stable or downward trend in feral animal abundance compared to previous year.	Stable or downward trend in feral animal abundance compared to previous year.	50 % reduction in feral animal abundance compared to baseline.
Note: the movement patterns of some feral animals mean that some aspects of the feral population such as immigration of animals from outside the offset area are beyond the control of Whitehaven.					
Control of Erosion (Section 6.10)					
Inspection of Offset Areas for Major Erosion and (if required) Control of Erosion	-	Annually and as required at other times	Annually and as required at other times	Annually and as required at other times	Areas of active erosion reduced.

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Management of Livestock (Section 6.11)					
Agricultural Suitability Assessment	Complete	-	-	-	N/A
Grazing Management (A, B, C, D)	Commence	Continue	Continue	Continue	Livestock absent from Grazing Exclusion Areas
Inspection of Fences for Maintenance Purposes	-	Annually and as required at other times	Annually and as required at other times	Annually and as required at other times	N/A
Bushfire Management (Section 6.13)					
Establish Bushfire Management Measures	Complete	Reviewed and updated as required	Reviewed and updated as required	Reviewed and updated as required	N/A
Mapping of Fire Breaks and Trails	Commence	Complete	-	-	N/A
Monitoring of Fuel Loads	-	Continue	Continue	Continue	N/A
Controlled Burning	-	Fuel load reduction was undertaken (where required) without substantially damaging the integrity of the vegetation communities	Fuel load reduction was undertaken (where required) without substantially damaging the integrity of the vegetation communities	Fuel load reduction was undertaken (where required) without substantially damaging the integrity of the vegetation communities	Fuel load reduction activities have not damaged integrity of the vegetation communities (e.g. no species lost)
Translocation of *Tylophora linearis* (Section 6.14)					
Procedures for Translocation	Complete	-	-	-	N/A
Translocation to be undertaken	-	Complete	-	-	Translocations are undertaken and the success reported
Monitoring	-	Commence	Continue	Continue	N/A

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Translocation of *Pomaderris queenslandica* (Section 6.15)					
Procedures for Translocation	-	Complete	-	-	N/A
Translocation to be undertaken	-	-	Complete	-	Translocations are undertaken and the success reported
Monitoring	-	-	Commence	Continue	N/A
Monitoring (Section 6.17)					
Vegetation and Habitat Monitoring (A, B, C, D)	Commence **Spring 2014**	Continue **Target Timing Spring 2015**	Continue **Target Timing – Spring 2016**	Continue **Target Timing - Spring**	N/A
Fauna Monitoring	Commence **Spring and summer before May 2015**	Continue **Target Timing – Winter 2015**	-	Continue **Target Timing - Spring, summer, winter every three years**	N/A
Monitoring for Regent Honeyeater, Swift Parrot and Southern Long- eared Bat (B, C, D)	Commence	Continue	Continue	Continue	N/A
Weed Monitoring	Commence	Continue **Indicative Timing** – August, November, February, May	Continue **Indicative Timing** – August, November, February, May	Continue **Indicative Timing** – August, November, February, May	N/A
Feral Animal Monitoring	Commence	Continue Indicative Timing – August, November, February, May	Continue Indicative Timing – August, November, February, May	Continue Indicative Timing – August, November, February, May	N/A
Recording (Section 7.1)					
Recording information summarised in Section 7.1	-	Annually	Annually	Annually	N/A

Action	Performance Criteria				Completion Criteria
	Year 1 (May 2014 to end of June 2015)	**Year 2 (July 2015 to end of June 2016)**	**Year 3 (July 2016 to end of June 2017)**	**Year 4 to 21 (July 2017 to meeting the Completion Criteria)**	
Reporting (Section 7.2)					
Box-Gum Woodland EEC/CEEC and threatened species investigation reports and implementation plans	Complete	-	-	-	N/A
MCCM Annual Review	Annually	Annually	Annually	Annually	N/A
BMP Annual Report	Annually (A, B, C, D)	Annually	Annually	Annually	N/A
Commonwealth Approval Compliance Reports	Annually (A, B, C, D)	Annually Target Timing – March	Annually	Annually	N/A
Tylophora linearis Propagation and Translocation Program	Annually	Annually **Target Translocation Timing –** September - December	Annually	Annually	N/A
A - Performance criteria relevant to the Box-Gum Woodland EEC/CEEC.					
B - Performance criteria relevant to potential habitat for the Regent Honeyeater (*Xanthomyza phrygia*).					
C- Performance criteria relevant to potential habitat for the Swift Parrot (*Lathamus discolor*).					
D - Performance criteria relevant to potential habitat for the South-eastern Long-eared Bat (*Nyctophilus corbeni*).					

3.2 BIODIVERSITY OFFSET PERFORMANCE

3.2.1 Setting up Offset Areas

The establishment and security of offset areas is accomplished through a combination of secure land tenure conservation agreements; designated implementation costs and allocation of conservation bonds; and the management of appropriate on-ground infrastructure to protect and control offset areas.

Conservation Land Tenure

Pursuant to Condition 54 of Schedule 3 to PA 10_0138, it has been confirmed that long-term security of the NSW offset has commenced with Voluntary Conservation Agreement applications being submitted to Office of Environment and Heritage to be registered on the title under section 69F of the National Parks and Wildlife Act (1974). WHC has commenced negotiations with NPWS, OEH and DPE regarding transfer of Offset Area lands (notably parts of the Northern and Southern Offset Areas to the National Parks Estate).

Condition 13 of Approval Decision EPBC 2010/5566 requires legally binding covenant(s) to be registered over the Commonwealth offset areas by 11th February 2018. The additional Commonwealth offset areas are not currently subject to the management measures described in this BMP until a legally binding covenant is in place. At the time of this audit these areas (for land over and above that already approved for both NSW/Commonwealth Offset) have not yet been enacted and the focus of WHC management is currently not on these areas.

Conservation Bond

In accordance with Condition 55 of Schedule 3 to PA 10_0138, all offset implementation costs are required to be calculated and a Conservation and Biodiversity Bond lodged with the DP&E to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria. Subsequently, WHC have provided evidence of submission of a Conservation Bond spreadsheet including calculation of the MCCM Offset Bond value to DPE on 13th February 2018. DPE responded with questions on 7th March 2018 with WHC answering on 9th March 2018.

The process to prepare and submit a Conservation Bond has however commenced with initial drafting of a costing worksheet. This presents costs for required management actions to manage the Offset Area for the life of the project, estimated for a 17 year period (from 2018 to 2034). WHC is currently working with an endorsed quantity surveyor to finalise and review the cost sheet. DP&E have provided the extension to receive the quantity surveyor reports and completed Conservation Bond costing and as such all documentation provided was in draft form.

Project Infrastructure

A key component of the site visit included inspection of the condition and use of project infrastructure, namely fencing, gates and signage.

Extensive new fencing was observed in all offset areas. In many cases this involved a process of removing existing internal fencing to allow safe and free movement of fauna within offset areas, and replacing with new perimeter fencing. The BMP states that, wherever practical, new fencing will be mostly plain strand wire fencing (minimising the use of barbed wire).

In most cases new fencing included single strand of barbed wire, but was limited to mid-rung to limit harm or damage to livestock or native fauna. All gates were in good condition and used appropriately.

New signage was observed on all gates including details of the property name and land use status (i.e. conservation reserve). Further periodic signage was used to show activities being undertaken within an area (such as weed spraying or pest control). All signs and gates are mapped on a MCCM Signage / Gate Plan covering the complete offset area.

The project offset area maintains an extensive network of access tracks / fire trails that were all in suitable condition. These tracks allowed easy and safe movement to many areas of the offset reserve during the site visit, and would provide a similar benefit for efficient movement and access during monitoring, as well as weed and pest control activities and related fire management. The placement of these tracks has in many cases followed pre-existing route of past fence lines or tracks so as to minimise impacts on threatened flora and communities.

In most cases existing large infrastructure has been retained to date, including dwellings, water tanks and sheds. A general management practice of removing small infrastructure and waste / debris has commenced across all offset areas with subcontractors engaged to carry out waste removal.

See *Annex C* - photo log for records of fencing, gates, signage and access tracks observed during the site visit.

3.2.2 Seed Collection and Propagation

Third-party contractors are engaged to undertake all seed collection, storage and propagation activities as part of revegetation. Evidence of contractor seed collection and propagation record sheets were provided and included necessary detail, including species, quantity of seed collected, dates and locations, as per the seed collection protocol.

The seed sourced directly from project offset areas current makes up a small but important percentage of seed stock. Revegetation by tubestock / seedlings of the scale required is undertaken by contractor nurseries that can effectively collect commercial quantities of seed from a range of regional locations, and propagate, grow and harden seedlings to coincide with planned offset revegetation activities.

3.2.3 Revegetation

The objective of the revegetation program is to increase the area, quality and connectivity of native vegetation and habitats. A key feature of the revegetation activity is to encompass the outcomes of the MCCM Box-Gum Woodland Endangered Ecological Community Implementation Plan (Whitehaven, 2015b), which was developed to maximise the prospects for regeneration of the Box-Gum Woodland EEC/CEEC on the offset areas.

The objectives also include restoration of self-sustaining vegetation communities within previously cleared areas (i.e. derived native grassland, pasture improved and cultivated land).

Revegetation in the offset areas preferentially uses local endemic (adapted) species, however consideration is given to the use of a high quality seed sourced further from the site over a low quality local seed source. Flora species used in this revegetation program includes a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat. An indicative species list is provided in Table 3.2 below (which includes species specifically associated with the Box-Gum Woodland EEC/CEEC).

Common Name	Scientific Name	Common Name	Scientific Name
OVERSTOREY		**UNDERSTOREY**	
* White Box	*Eucalyptus albens*	* Smooth Darling Pea	*Swainsona galegifolia*
* Yellow Box	*Eucalyptus melliodora*	*Barb-wire Grass	*Cymbopogon refractus*
* Blakely's Red Gum	*Eucalyptus blakelyi*	*Silky Blue-grass	*Dichanthium sericeum*
Narrow-leaved Ironbark	*Eucalyptus crebra*	*Daises	*Brachyscome spp.*
Narrow-leaved Grey Box	*Eucalyptus pilligaensis*	*Everlasting Daises	*Chrysocephalum spp.*
Inland Grey Box	*Eucalyptus microcarpa*	*Kangaroo Grass	*Themeda triandra*
Dwyer's Red Gum	*Eucalyptus dwyeri*	*Wallaby Grass	*Austrodanthonia induta*
MIDSTOREY		*Winter Apple	*Eremophila debilis*
*Sticky Hop-Bush	*Dodonaea viscosa ssp. angustifolia*	Blue Trumpet	*Brunoniella australis*
*Wilga	*Geijera parviflora*	Three-awn Speargrass	*Aristida vagans*
Belah	*Casuarina cristata*	Slender Stackhousia	*Stackhousia viminea*
-	*Allocasuarina spp.*	Yellow Burr-daisy	*Calotis lappulacea*
Black Tea-tree	*Melaleuca bracteata*	-	*Rostellularia adscendens var. adscendens*
Silver Wattle	*Acacia dealbata*	Plains Grass	*Austrostipa aristiglumis*
Hickory Wattle	*Acacia implexa*	-	*Panicum spp.*
White Cypress Pine	*Callitris glaucophylla*	-	*Austrodanthonia spp.*
Scant Pomaderris	*Pomaderris queenslandica*	-	*Bothriochloa spp.*
Buloke	*Allocasuarina leuhmanii*	-	*Chloris spp.*
		-	*Tylophora linearis*

** Specifically associated with the Box-Gum Woodland EEC/CEEC.*

Locations inspected during the site visit included areas undergoing all stages of revegetation through design, site preparation and commencement of revegetation planting. All proposed revegetation techniques as detailed in the BMP were observed, including passive revegetation (natural revegetation following clearing and burn events) as well as active revegetation (including direct seeding and tubestock planting).

The provisional revegetation schedule as provided in Table 6-3 of the BMP was considered as part of the assessment of revegetation progress. All assigned Year 2 and Year 3 planting has been completed. For Year 4 areas, site preparation activities including weed control, ground preparation and grazing protection have commenced.

Revegetation areas are maintained through a variety of activities, including weed control and feral animal control. In some cases germination and persistence of planted native seed stock was limited and follow-up measures including second seed application or follow-up weed control has been used to address potential issues with the revegetation areas.

3.2.4 Reuse of Salvaged Habitat Resources

The BMP details a range of naturally scarce fauna habitat features that were salvaged from the MCCM at the time of initial site clearance, for later reuse. This includes bush rocks, fallen timber and timber hollows. Most of these habitat items are currently stored in stockpile areas adjacent to the existing mine site for re-allocation, and were observed during site visit. Some discussion during the mine site visit indicated that the process to split and allocate these resources between rehabilitation of the MCCM site and enhancement of offset sites is ongoing.

During November 2017, AMBS ecologists observed rock structures in the Western and Southern Offsets. These rock structures are thought likely to provide potential habitat for a range of terrestrial vertebrate and invertebrate fauna, in particular native reptiles (e.g. skinks, geckos and snakes). It should be noted that these rock habitat structures were not visited or observed during the current audit.

Early works phase of offset site revegetation is largely focussed on site preparation, planting and maintenance. However, further early introduction of each habitat features would provide benefit in terms of providing travelling, nesting and respite features for native fauna, and should be included in ongoing offset activity.

3.2.5 Management of Cultural Heritage

Numerous cultural heritage sites were observed both within and adjacent to the project offset areas. These were clearly fenced and marked including necessary signage to indicate the heritage feature present and reduce access.

The WHC Biodiversity team (as lead by Andrew Wright) has responsibility for identification, demarcation and ongoing management of heritage sites, and is able to ensure effective awareness and conservation of these sites occurs in parallel with other offset works.

There is synergy between the operation of the BMP and the WHC Aboriginal Archaeology and Cultural Heritage Management Plan (AACHMP) with regards ongoing management of the heritage sites. The AACHMP includes procedure for location identification and fencing of cultural heritage sites, each of which was observed as being implemented during the site visit.

3.2.6 Weed Management

Historical land use across much of the offset areas is based on agricultural cultivation and livestock grazing which has facilitated the growth and distribution of both environmental and noxious weeds (including WONS). Weed management of the offset areas is aimed at controlling the occurrence and spread of weeds whilst encouraging native species. It is understood that the long term objective is to reach a stage where the offset areas only require a low level of weed control and where the native vegetation is not inhibited by the presence of weeds.

The weed control program includes the following core activities:

- identifying weeds;
- application of weed control techniques in areas requiring weed control;
- follow-up monitoring of weed control; and
- follow-up inspection weed control as required.

WHC undertakes routine Quarterly Weed Monitoring that allows targeted weed surveys to be completed and in turn guide ongoing weed control programs that are based on the current seasonal conditions. The quarterly weed monitoring reports were provided for Spring 2015, 2016 and 2017 activities (AMBS February 2016, October 2017, December 2016 respectively). These reports indicates that the distribution, abundance and type of weeds varied both between and within the offsets. Notable variation in weed coverage observed during monitoring included high weed presence throughout the cleared areas and remnant edges of the southern portion of the western offset, and high weed densities in paddocks in the southern offset. Large areas of very low weed density were present, predominantly in the least-grazed, woody vegetation remnants of the property. This general distribution of weediness across the offset sites matched the weed control efforts observed during the site visit. A qualitative comparison between the Spring 2016 and 2017 Quarterly Weed Monitoring reports indicates that the trend in weed coverage appears to be decreasing based the summary of observations from both reports. The performance criteria of a 50% reduction metric is not triggered until the Year 4 to 21 period which is outside the time period of the current audit. In accordance with the performance criteria for years Year 2 and 3 in the BMP; WHC are

required to undertake weed control as per monitoring including establishing a baseline weed cover and thus are compliant. A repeat of the same methodology for determining weed coverage as per baseline monitoring should be repeated in Year 4 to allow quantitative comparison of weed populations to determine what % reduction has been achieved as per Performance Criteria for Year 4.

There is some discussion on exotic plant abundance and coverage in the most recent vegetation and habitat monitoring report (AMBS 2017), however this is not specific to weed control and coverage.

The current weed control program involves active and extensive weed control by suitable long-term contractors who receive direction from the WHC Biodiversity team. The chemical storage on contractor vehicles had bund protection to ensure safe handling of polluting substances and the containment of any unintended spills. WHC contractor work and performance statements were provided for ongoing weed control activity, including pesticide application records.

3.2.7 Feral Animal Management

The goal of feral animal management in the offset areas is to ensure that impacts to native species, existing vegetation and rehabilitation efforts caused by feral animals are minimised and managed. Feral animals are controlled within offset areas by a combination of trapping, ground baiting (using 1080 poison) and ground shooting. The long term objective being to reach a stage where the conservation management areas only require a low level of feral animal control and where the biodiversity value of native vegetation and rehabilitation efforts and restorations areas are not at high risk from feral animal.

The two most recent feral animal monitoring reports were provided as indication of ongoing monitoring and reporting efforts (FY17 4th Quarter Report, HLMA 28th July 2017; and FY18 2nd Quarter Report, HLMA 2nd January 2018). These reports provide appropriate coverage of the monitoring for feral animal distribution and abundance and the application of different management controls used. The data provided, including presentation of spatial and statistical data, ensure efforts are undertaken in a systematic and effective way to ensure accurate monitoring and ongoing targeted management. The results of these monitoring events show varying changes in feral animal occurrence and abundance across offset sites with some pest species increasing in numbers or are occurring in areas where they had not previously been identified in monitoring. Nine non-native animal species were recorded during the surveys including Red Fox (*Vulpes vulpes*), Pig (*Sus scrofa*), Goat (*Capra hircus*), Cat (*Felis catus*), European Brown Hare (*Lepus capensis*), European Rabbit (*Oryctolagus cuniculus*), Wild Dog, Red Deer and Fallow Deer. Relevant recommendations have also made to expand control program in subsequent period/s. Other common pest species such as fox and goat were recorded as having overall decreasing numbers.

The latest report (FY18 2nd Quarter Report) identifies that there can be large seasonal fluctuations in feral numbers but overall feral abundance is declining. This latest report has also been updated with % reduction for comparison with the Performance Criteria. In accordance with the Performance Criteria for Year 2 and 3 in the BMP; WHC undertake feral animal control as per monitoring with a downward trend in abundance and thus are compliant. The 50% reduction Performance is not triggered until after the Year 4 to 21 period which is outside the time period of the current audit.

Feral animal control is undertaken by licensed contractors under the direction of the WHC Biodiversity team. Evidence of pig traps and signs indicating current 1080 poison application, was observed during the site visit and compliant with relevant guides, including the *PestSmart Toolkit* (Invasive Animals Cooperative Research Centre, 2015); and the *Vertebrate Pest Control Manual* (DPI, 2014b). Wild pigs were observed within Western and Southern offset sites, and in both cases were seen moving through retained understorey vegetation.

3.2.8 Control of Erosion

The two potential causes of erosion across the offset areas are from historical land cultivation and extensive livestock grazing. The proposed revegetation program (that aims to restore native vegetation cover) and livestock exclusion will likely reduce the potential of erosion issues developing in the offset areas. The current status of livestock exclusion is discussed in the following section (3.2.9), however the broad exclusion of all livestock from offset areas would support in reducing any erosion pressure to these areas.

An existing area of erosion in domain area Rv/E1 was indicated in the BMP. During the site visit the location of this area was not observed.

No further large areas of erosion were observed or highlighted during the site visit. However, it is thought likely that based on historical land practises that areas of erosion may persist, but have not to date been mapped. It is suggested that a register be developed for any other known areas of erosion for ongoing management.

3.2.9 Management of Livestock

The offset areas is managed primarily for the purposes of compensating for biodiversity impacts from the MCCM and improving regional biodiversity outcomes, and as such commercial livestock grazing is largely inconsistent with this objective. When the BMP was first developed large areas of the offset properties still had livestock on-site and a plan was developed to transition / exclude livestock through a progressive program. This program detailed that the short term (covered by the 3 year period of the BMP) would look to remove livestock from offset areas as existing licence/agistment agreements expired, with a longer term goal to totally exclude livestock from offset areas. In practise WHC management have fast tracked this program and currently manage offset

areas with total livestock exclusion. This more favourably supports current native revegetation that would be sensitive to any livestock disturbance.

No stock grazing of MCCM Offset Areas was observed during the site inspection. All new fencing bordering agricultural properties has been designed to reduce harm to native animals whilst ensuring livestock are appropriately excluded.

3.2.10 Bushfire Management

The BMP defines the objective of fire management for the offset areas as including appropriate management of the risk of unplanned bushfire occurring; and using fire to reduce weeds and/or promote the biodiversity of the offset areas. The design, construction and maintenance of all access trails within offset area supports effective fire breaks and ensures periodic reduction of fuel load on tracks. These tracks are all mapped and included in the project spatial register to support access during fire control events.

During the site inspection a visual assessment of general fuel loads across the offset area was completed. In the eastern and western offset region the general fuel load was limited as a result of historical land use (livestock grazing) and some previous seasonal controlled burning. The areas in the southern offsets, notably in the Roseglass property area, maintain a more considerable fuel load in a well-established native under-storey and mid-storey associated with Dry Sclerophyll Forests that has likely not had any burn episode for at least 10 years. Future controlled burns of these areas should occur in consultation with the NSW Rural Fire Service. Prior to controlled burns, consideration should be given to known occurrences of threatened flora species and their sensitivities to fire.

Annual fuel load monitoring is undertaken across all offset areas and data has been analysed and presented through spatial database that presents mapped surface fuel load across the project site/s.

Evidence of previous burn activity records were provided for 2017 burns in the Wollondilly, Kelso and Vellyama offset areas. These reports detailed location condition, fuel loads, and associated fire management procedure. Relevant safety procedures and associated emergency contacts protocol was presented in these records.

3.2.11 Translocation of Tylophora linearis

Tylophora linearis (a threatened flora species listed under the TSC Act and EPBC Act) was identified in the MCCM Project Boundary during pre-clearing flora surveys during 2014. It was also found in the offset areas, Leard State Forest and in other local conservation reserves. A propagation and translocation program has been prepared for the species in consultation with Dr Colin Driscoll (Hunter Eco), OEH, DP&E and DoEE.

Following successful germination of seedlings of this species a site was selected in Wollandilly (Eastern Offset Area) for plantings, located nearby to a known natural occurrence of this plant. Of the approximately 80 original seedlings planted seven plants currently have above ground stems (the biology of *Tylophora* indicates that it can be long lived underground in a dormant tuber only producing above ground stems in favourable conditions that can senesce in unfavourable conditions). A second site within Leard State Forest has also been identified for morning the species growth and persistence. At this stage and based on discussions during site visit the long term persistence of this species within the offset areas remains unknown and current population numbers are small. Further research may be required to better understand the requirements of this species to support future site selection and translocation / plantings.

Two of the known threats to this species include track maintenance and inappropriate disturbance regimes. The location of the current Wollandilly translation site is located immediately adjacent to an access road. The indirect impact from both vibration and dust through vehicle movement is unknown. It is important to note that the known threats as detailed in the EPBC and TSC listing are not the same. Further advice should be sought from relevant experts on the potential impact from disturbance patterns and appropriate mitigation measures.

Dr Colin Driscoll has been commissioned to undertake monthly site visits, monitoring and reporting on the success and persistence of this species. The most recent email reports (5th December 2017 and 4th January 2018) were provided and include a brief summary of health and persistence of this species on the trial sites.

Annual reports documenting the implementation of the Propagation and Translocation Program for *Tylophora linearis* has been completed for 2016 and 2017. These reports detail the above mentioned process to propagate and establish this threatened flora, and presents further analysis and discussion on the survival rate and ongoing program management.

3.2.12 Translocation of Pomaderris queenslandica

Scant Pomaderris (*Pomaderris queenslandica*) (a threatened flora species listed under the TSC Act) was identified in the MCCM Project Boundary during pre-clearing flora surveys during 2015, and a propagation and translocation program was prepared for the species in consultation with Dr Colin Driscoll (Hunter Eco), OEH and DP&E.

Scant Pomaderris plants were excavated and removed from the mine site and collection of seeds. Scant Pomaderris plants were propagated from the seed, and a further effort to propagate from cuttings. Of these efforts, a single seedling was propagated (10th April 2015) in a nursery and planted in selected location within Wollandilly (Eastern Offset Area) on 23rd November 2017. This

site was selected as it is located outside of a drainage line and surrounding vegetation won't immediately compete for moisture but will provide shade.

During the site visit this individual was observed and was in largely good health with limited sign of growth stress. However, the risk of damage or mortality to a single plant is high and it is suggested that the ongoing translocation program require efforts to increase the population size.

The first translocation of the Scant Pomaderris occurred on 23rd November 2017 just prior to the site inspection. Dr Colin Driscoll commenced monitoring of the Scant Pomaderris translocation on 20th December 2017. All future monitoring and reports will be prepared by Dr Colin Driscoll.

Annual reports documenting the implementation of the Propagation and Translocation Program for *Pomaderris queenslandica* has been completed for 2016 and 2017. These reports detail the initial root architecture study and process to collect seed and initial germination trials, and does not report on recent plantings or ongoing plant management trials propagate.

3.2.13 Monitoring

An annual program of monitoring has been established to track changes in fauna, vegetation and habitat in the offset areas in response to management measures.

The status of all offset lands has been assigned to one of the management domains as defined in the BMP (section 6.3). These include the following:

- Native Woodland/Forest-intact (Habitat management);
- Native Woodland / Forest-semi-cleared (Enhancement);
- Derived Native Grassland (Restoration); and
- Cleared Land (Revegetation).

All offset areas have been assigned a management domain and management unit identifier, which have been mapped for all areas. Known threatened community and species records and water courses have been assigned to each unit as part of the baseline and these units provide the condition and location reference for periodic monitoring efforts.

The monitoring includes detailed sampling in both degraded native vegetation which will be subject to restoration and enhancement through predominantly natural regeneration (i.e. the Restoration and Enhancement Domains); and in cleared areas subject to active revegetation (i.e. the Revegetation Domain). The vegetation and habitat monitoring program also includes observational and photo monitoring through-out the offset areas (including the Habitat Management Domain and along watercourses). Monitoring sites have been located across all offset areas with a focus in Box-Gum Woodland EEC/CEEC.

During the site visit a number of monitoring plots were observed and appropriate signage was evidenced to identify monitoring efforts.

Both fauna and vegetation and habitat are monitored on an annual basis with monitoring activities occurring in Spring to best reflect the highest diversity of fauna and flora plants.

The vegetation and habitat monitoring program includes measurement of a number of indicators (parameters) that would enable changes to the Box-Gum Woodland EEC/CEEC to be detected (e.g. floristics, recruitment), including changes that may be ascribed to water stress (e.g. visual dieback). The monitoring program also includes measurement of a number of indicators (parameters) that will enable changes to the habitat (for the Regent Honeyeater, Swift Parrot and South-eastern Long-eared Bat) to be detected.

The most recent annual monitoring report covers the Spring (October / November) 2016 survey period (AMBS, December 2017) and builds upon the initial data collected for the full monitoring program in 2015 and baseline data collected as part of the pilot study undertaken in 2014 by Australian Museum Consulting. This latest report documents an increase in both native and exotic flora species across all treatments, an increase in tree recruitment, and an increase in exotic species cover in the ground layer. Whilst some of the changes recorded in the offset areas may be likely a result of management actions, heavy rainfall during the previous season may also account for many of the changes, including increased recruitment of young trees, species richness (native and exotic), and % cover in the ground layer (native and exotic). Further data also demonstrates the value of livestock exclusion from a number of the restoration and revegetation plots. A further two threatened plant species were recorded during the 2016 monitoring programme; *Dichanthium setosum* from seven sites in the northern offset area (increase from two sites in 2015), and *Tylophora linearis* recorded in two sites (compared to one in 2015).

The fauna morning program is designed to ensure coverage across all offset sites and spread across each of the management domains. The purpose of the fauna monitoring effort is to demonstrate if there has been any increase in the species richness and/or abundance associated with changes in quantity and/or quality of habitat resources. All native and introduced vertebrate fauna groups are targeted, including frogs, reptiles, birds, bats, other arboreal mammals; and ground-dwelling mammals. In compliance with Condition 19 of the Approval Decision EPBC 2010/5566, baseline surveys and subsequent annual monitoring has been undertaken for the Regent Honeyeater (*Xanthomyza phyygia*), Swift Parrot (*Lathamus discolour*) and the South-eastern Long-eared Bat (*Nyctoophilus corbeni*) in accordance with the Survey Guidelines for Australia's Threatened Birds (DEWHA, 2010b) and the Survey Guidelines for Australian Threatened Bats (DEWHA, 2010a).

The most recent fauna monitoring report covers a similar period of the Spring (October / November) 2016 survey period as completed by AMBS Ecology and Heritage. The scope of these surveys was to repeat the methods employed during previous quarterly surveys, for collection of data regarding vertebrate

fauna at 16 established survey sites and an additional 4 survey sites in the revegetation areas. A total of 199 species of vertebrate were recorded, with eleven of the species recorded listed as threatened on the Schedules of the NSW Threatened Species Conservation Act 1995 and/or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Threatened species recorded included the following:

- Pale-headed Snake (*Hoplocephalus bitorquatus*)
- Speckled Warbler (*Chthonicola sagittata*)
- Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*)
- Dusky Woodswallow (*Artamus cyanopterus*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Turquoise Parrot (*Neophema pulchella*)
- Barking Owl (*Ninox connivens*)
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)
- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*)
- Squirrel Glider (*Petaurus norfolcensis*)

A further ten non-domesticated introduced species were recorded within the offset areas, with foxes considered to be abundant, pigs common, while goats, European rabbits and European brown hares were moderately common.

The survey effort and ongoing program for both fauna and vegetation and habitat is deemed suitable and the necessary data is being collected across the offset area to demonstrate program in meeting relevant performance criteria.

The 2017 monitoring effort has been concluded for fauna, vegetation and habitat, with the final survey effort concluding in the days immediately prior to the audit. However, the results and associated report have not yet been issued.

Additional monitoring covering weeds, feral animals, and the progress of translocation program for *Tylophora linearis* and *Pomaderris queenslandica* has been completed and results detailed in relevant sections above (3.2.6, 3.2.7, 3.2.11, 3.2.12).

3.2.14 Reporting

A number of overarching reporting protocols are required to assess the quality and compliance of the management of the MCCM offset areas. Most of these reports are available publically and provided on the WHC website (http://www.whitehavencoal.com.au/environment/maules_creek_environmental_management.cfm).

The MCCM Annual Review (2016) outlines the environmental performance of the MCCM including offset areas over the previous calendar year. The summary information provided specifically considers management treatments over offset areas and trends in results associated with, weed and feral animal monitoring and inspections; fuel load assessment; and seed management and collection flora and fauna monitoring associated with revegetation and rehabilitation efforts. This annual review also provides the most appropriate forum to present non-compliance associated with the current IBA, and related actions to ensure compliance. It is understood the 2017 MCCM Annual Review is currently being finalised and would also be made available on the WHC documentation website.

The following reports required according to the BMP performance criteria were sighted and reviewed as complete during the audit:

- BMP Annual Report – reflected in most recent updated version of BMP (12th April 2017);
- *Tylophora linearis* Propagation and Translocation Program reports (February 2016 / February 2017); and
- *Pomaderris queenslandica* Propagation and Translocation Program (February 2016 / February 2017).

The Commonwealth Approval Compliance Report detailing annual compliance with Approval Decision EPBC 2010/5566 was not provided during the audit, but was sourced and sighted from the MCCM website (http://www.whitehavencoal.com.au/environment/docs/epbc-compliance-audit-2016.pdf and http://www.whitehavencoal.com.au/environment/docs/epbc-compliance-audit-2015.pdf). These reports are published on the MCC website by the end of March each year in accordance with Condition 34 of the Approval Decision EPBC 2010/5566. The WHC website also provides the original EPBC Approval documentation.

3.3 *COMPLIANCE WITH PERFORMANCE CRITERIA*

A compliance check against the performance and completion for the biodiversity offset areas criteria has been completed. Non-compliances and observations for each component are summarised in *Table 3.2*.

As discussed in *Section 2.3*, a qualitative risk assessment was completed on the findings as follows:

- non-compliance assessed as 'high' have been colour coded red;
- non-compliance assessed as 'moderate' have been colour coded orange; and
- non-compliance assessed as 'low' have been colour coded yellow.

Table 3.2 Audit Findings

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
6.2		***Setting up the Offset Area***			
6.2.1	Long-term Conservation Security	All offset areas are secured	Long-term security of the NSW offset has commenced through a Voluntary Conservation Agreement to be registered on the title and under section 69F of the National Parks and Wildlife Act (1974). Legally binding covenant(s) over the "additional" Commonwealth offset areas for land over and above that already approved for both NSW/Commonwealth Offset (pursuant to Condition 13 of Approval Decision EPBC 2010/5566) have not yet been registered. EPBC 2010/5566 Condition 13 deadline was 11th February 2018 and subsequently has been extended to 31st December 2018.	NT	
6.2.2	Offset Implementation Costs and Conservation Bond	Calculate Offset Implementation Costs and Lodge Conservation Bond	WHC have provided evidence of submission of a Conservation Bond spreadsheet including calculation of the MCCM Offset Bond value to DPE on 13th February 2018. DPE responded with questions on 7th March 2018 with WHC answering on 9th March 2018.	C	
6.2.3	Mapping of Fences	Complete (mapping of fences)	Extensive new fencing observed in all offset areas and fence / gate map sighted	C	

[1] Item number reference taken from Section 6 of the Biodiversity Management Plan (April 2017).

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
			Complete. No further action required.		
6.2.4	Inspection of Fences for Maintenance Purposes	Annually and as required at other times	New fencing includes single strand of barbed wire, but was limited to mid-rung to limit harm native fauna. All fences were in good condition.	C	
6.2.5	Removal of Redundant Fences	No redundant fencing	Existing internal fences have been removed to allow safe and free movement of fauna within offset areas. Required ongoing for all new offset areas properties.	C	
6.2.6	Signage Installation	Signs installed	New signage observed including details of the property name and land use status (ie. conservation reserve). Further periodic signage was used to show activities undertaken within an area. All signs and gates are mapped on a MCCM Signage / Gate Plan covering the complete offset area. Complete. No further action required.	C	
6.2.7	Mapping of Access Tracks	Complete (mapping of access tracks)	Complete. No further action required.	C	
6.2.8	Inspection of Access Tracks for Maintenance Purposes	Annually and as required at other times	An extensive network of access tracks / fire trails that were all in suitable condition. Placement and condition suitable.	C	
6.4		***Seed collection and propagation***			
6.4.1	Seed collection	To be completed annually as required	Third-party contractors engaged to undertake seed collection, storage and propagation activities as part of revegetation for the offset area. Evidence of contractor seed collection and propagation record sheets sighted.	C	
6.4.2	Seed Collection Propagation	To be completed annually as required	Revegetation by propagated seeds undertaken by contractor nurseries. Evidence of use of local province seeds as part of revegetation activities	C	

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
			observed.		
6.5		***Revegetation***			
6.5.1	Identification Of Revegetation Areas	Complete (identification of areas)	As per revegetation plan in BMP (Table 6-3). Complete. No further action required.	C	
6.5.2	Revegetation of Year 2 Areas	Completed design, site preparation, initial seeding/planting, maintenance	All assigned Year 2 and Year 3 revegetation activities has been completed.	C	
6.5.3	Revegetation of Year 3 Areas	Completed design, site preparation, initial seeding/planting, maintenance	All assigned Year 2 and Year 3 revegetation activities have been completed.	C	
6.6		***Reuse of Salvaged Habitat Resources***			
6.6.1	Relocation of salvaged habitat resources	Commenced / Completed	Salvage timber is currently stored in stockpile areas adjacent to existing mine site for re-allocation, and were observed during site visit. Construction of rock habitat structures have commenced in Offset Areas as per AMBS advice.	C	
6.7		***Management of Cultural Heritage***			
6.7.1	Comply with Cultural Heritage Requirements	Continue	Cultural heritage sites were observed within and adjacent to the project offset areas. These were clearly fenced and marked including necessary signage to indicate the heritage feature present and reduce access.	C	
6.8		***Weed Management***			
6.8.1	Control of Major Weed Occurrences (noxious and WONS)	Continue across all offset areas that require weed control as indicated through monitoring	Current weed control program involves active and extensive weed control by suitable long-term contractors who receive direction from the WHC Biodiversity team.	C	

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
6.8.2	Weed extent (noxious and WONS)	Establish baseline cover of weeds; and % (50, 80) reduction in the cover of weeds (noxious and WONS) in the offset areas.	Annual weed monitoring report (AMBS February 2016) provides the baseline cover and current reduction in distribution, abundance and type of weeds varied between and within the offset areas. A qualitative comparison between the Spring 2016 and 2017 Quarterly Weed Monitoring reports show weed infestations being effectively managed and the trend decreasing based the summary of observations from both reports. The 50% reduction performance criteria metric is not triggered until the Year 4 to 21 period which is outside the time period of the current audit. ***Recommended Action:*** The methodology used in Year 4 should replicate the baseline weed monitoring to allow quantitative comparison of weed populations and determine what % reduction has been achieved.	C	Repeat baseline weed monitoring methodology of Maules Offsets by end of Spring 2018.
6.9		***Feral Animal Management***			
6.9.1	Control of Feral Animals	Minimal feral animals as evidenced through monitoring data.	Feral animal control efforts and changes in distribution reports through most recent feral animal monitoring report (FY17 4th Quarter Report, HLMA 28th July 2017). Report shows general downward trend in feral animal distribution and abundance.	C	

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
6.9.2	Feral Animal Abundance	Establish abundance of feral animals; and 50 % reduction in feral animal abundance compared to baseline.	Routine feral animal monitoring reporting presents baseline abundance of feral animals and trends in changes for individual feral animals species. The FY18 Q2 report identifies that there can be large seasonal fluctuations in feral numbers but overall feral abundance is declining. In accordance with the Performance Criteria for Year 2 and 3 in the BMP; WHC undertake feral animal control as per monitoring with a downward trend in abundance. The latest report has been updated with % reduction, however the 50% reduction performance criteria metric is not triggered until the Year 4 to 21 period which is outside the time period of the current audit.	C	
6.10		***Control of Erosion***			
6.10.1	Inspection of Offset Areas for Major Erosion and (if required) Control of Erosion	(Inspection) annually and as required at other times; and Areas of active erosion reduced.	No further large areas of erosion were observed or highlighted during the site visit. An existing area of erosion in domain area Rv/E1 was indicated in the BMP thought to be the old quarry on Teston North. It is thought likely that based on historical land practises that areas of erosion may persist, but have not to date been mapped. ***Recommended Action:*** It is suggested that a register of offset erosion areas be developed to incorporate the old Teston North quarry and other areas of erosion as identified.	NV	A WHC Offset Erosion Area Register (Quarries) to be developed by end of June 2018.

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
6.11		***Management of Livestock***			
6.11.1	Agricultural Suitability Assessment	Complete	Complete. No further action required.	C	
6.11.2	Grazing Management	Livestock absent from Grazing Exclusion Areas	WHC management have fast tracked and ongoing plan to limit and reduce livestock grazing in offset areas and currently manage offset areas with total livestock exclusion.	C	
6.13		***Bushfire Management***			
6.13.1	Establish Bushfire Management Measures	Reviewed and updated as required	BMP defines the objective of fire management for the offset areas and appropriate management of the risk of unplanned bushfire occurring.	C	
6.13.2	Mapping of Fire Breaks and Trails	Complete	The design, construction and maintenance of all access trails within offset area supports as effective fire breaks and ensures periodic reduction of fuel load on tracks. These tracks are mapped and included in the project spatial register to support access during fire control events.	C	
6.13.3	Monitoring of Fuel Loads	Continue	Annual fuel load monitoring is also undertaken across all offset areas and data analysed and presented through spatial data base that present mapped surface fuel load across the project site/s	C	
6.13.4	Controlled Burning	Fuel load reduction activities have not damaged integrity of the vegetation communities (e.g. no species lost)	Evidence of previous burn activity records were provided for 2017 burn activity in the Wollondilly, Kelso and Vellyama offset areas. Site evidence confirmed no damage to native vegetation communities and likely benefit to emergence of native understorey and possible role in activation of native seed bank.	C	

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
6.14		***Translocation of Tylophora linearis***			
6.14.1	Procedures for Translocation		Propagation and translocation program has been prepared for the species in consultation with Dr Colin Driscoll (Hunter Eco), OEH, DP&E and DoEE. Procedure for translocation detailed in 2016 annual report.	C	
6.14.2	Translocation to be undertaken	Translocations are undertaken and success reported	Following successful germination of seedlings successfully translocated. Currently seven plants exist with above ground stems. Actual success of translocation unable to be determined. ***Recommended Action:*** Further research may be required to better understand the requirements of this species to support ongoing translocation success.	NV	Review and revise *Tylophora linearis* Propagation and Translocation Program to expedite further translocation; identify further research opportunities including investigation of potential indirect impacts at existing translocation site by end of September 2018.
6.14.3	Monitoring	Continue	Dr Colin Driscoll commissioned to undertake monthly monitoring. Latest reports observed.	C	
6.15		***Translocation of Pomaderris queenslandica***			
6.15.1	Procedures for Translocation		Propagation and translocation program has been prepared for the species in consultation with Dr Colin Driscoll (Hunter Eco), OEH, DP&E and DoEE. Procedure for translocation detailed in 2016 annual report.	C	
6.15.2	Translocation to be undertaken	Translocations are undertaken and success reported	Following successful germination of seedlings one seedling successfully translocated (23rd November 2017). Actual success of translocation unable to be determined.	NV	Review and revise *Pomaderris queenslandica* Propagation and Translocation

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
			Recommended Action: Further research may be required to better understand the requirements of this species to support ongoing translocation success.		Program to expedite further translocation and identify further research opportunities by end of September 2018.
6.15.3	Monitoring	Continue	Dr Colin Driscoll commissioned to undertake monthly monitoring. Latest reports observed.	C	
6.17		***Monitoring***			
6.17.1	Vegetation and Habitat Monitoring	Continue (Target - Spring)	An annual program of monitoring has been established to track changes in vegetation and habitat in the offset areas in response to management measures. Most recent annual monitoring report sighted covers the Spring (October / November) 2016 survey period (AMBS, December 2017).	C	
6.17.2	Fauna Monitoring	Continue (Target - Spring, summer, winter every three years)	An annual program of monitoring has been established to track changes in fauna in the offset areas in response to management measures. Most recent annual monitoring report sighted covers the Spring (October / November) 2016 survey period (AMBS, December 2017).	C	
6.17.3	Monitoring for Regent Honeyeater, Swift Parrot and Southern Long‐eared Bat	Continue	The annual vegetation and habitat monitoring includes indicators to enable changes to the habitat for the Regent Honeyeater, Swift Parrot and South-eastern Long-eared Bat to be detected. The fauna monitoring includes specific searches for these target taxa.	C	
6.17.4	Weed Monitoring	Continue (Indicative Timing - Indicative Timing – August, November, February, May)	The most recent weed monitoring report was provided for Spring 2015, 2016 and 2017 activities (AMBS). A qualitative comparison between the Spring 2016 and 2017 Quarterly Weed Monitoring	C	

Item No[1]	Action	Criteria	Comment	Audit Classification	WHC Response / Action
			reports show that weed infestations are decreasing.		
6.17.5	Feral Animal Monitoring	Continue (Indicative Timing - Indicative Timing – August, November, February, May)	The most recent feral animal monitoring report provided for FY17 4th Quarter (HLMA 28th July 2017). This report provides appropriate coverage of the monitoring for feral animal distribution and abundance and the extent of different management controls used.	C	
7.2		***Reporting***			
7.2.1	Box-Gum Woodland EEC/CEEC and threatened species investigation reports and implementation plans	Completed	Complete. No further action required.	C	
7.2.2	MCCM Annual Review	Annually	The MCCM Annual Review (2016) outlines the environmental performance of the MCCM including offset areas over the previous calendar year. It is understood the 2017 MCCM Annual Review is currently being finalised and would also be made available on the WHC documentation website	C	
7.2.3	BMP Annual Report	Annually	Reflected in most recent updated version of BMP (12th April 2017).	C	
7.2.4	Commonwealth Approval Compliance Reports	Annually	The Commonwealth Approval Compliance Report detailing annual compliance with Approval Decision EPBC 2010/5566 was located on the MCCM webpage.	C	
7.2.5	*Tylophora linearis* Propagation and Translocation Program	Annually	The most recent (2017) annual report for the *Tylophora linearis* Propagation and Translocation Program was provided during the audit.	C	
7.2.6	*Pomaderris queenslandica* Propagation and Translocation Program	Annually	The most recent (2017) annual report for the *Pomaderris queenslandica* Propagation and Translocation Program was provided during the audit.	C	

3.4 *REVIEW OF LANDFORM RESTORATION ACTIVITIES*

A review of management activities and progress in preliminary landform restoration has been undertaken. DP&E requested an assessment of land restoration works underway to ensure consideration of MCoA 56(b) specific to "*assessing the performance of the revegetation in the rehabilitation area completed to date against the completion criteria in the Rehabilitation Management Plan*".

Whilst it is noted that there is no revegetation of the MCCM site underway, preparatory works, including sub-soil stripping, land-forming and soil stockpiling, have commenced.

The following are preliminary observations and comments following the site visit relating to current landform earthworks:

All relevant landform establishment aspects relating to the project are detailed in the project Mine Site Rehabilitation Management Plan (dated 1st August 2016). The Mining Operations Plan provides the relevant soil management protocol, which documents the original soil balance estimate and determination of available topsoil and subsoil volumes for each stripping area. The protocol also provides the Soil Handling and Management Plan with the location and volume of topsoil removed and where it has been placed. A copy of this Soil Management Protocol has been provided ion Annex A.

The auditor observed soil management and landform shaping activities around the permitter of the northern overburden emplacement onsite at MCCM as part of the site inspection. Soil stockpiles observed as part of the MCCM site inspection included TS01, TS10, TS08 and TS06 (Figure 4).

At the time of site inspection of MCCM rehabilitation activities, the auditor observed that progressive overburden shaping of the northern overburden emplacement at the 300-310RL level had occurred. The progress of rehabilitation activities observed on 14th December 2017 were consistent with the descriptions outlined in both the Mine Site Rehabilitation Management Plan (Table 5-1) and Mining Operations Plan.

Soil stripping works were observed during the site visit. Current practise involves immediately spreading removed soil over reshaped overburden, and establishing drainage and sediment erosion control structures (series of culverts and retention mounds).

The following processes for soil stockpiling were observed, to support minimisation of degradation of stored soil and encourage nutrient stores:

- All stockpiles are currently located away from drainage lines. Drainage is diverted around stockpiles to prevent erosion;

- Sediment controls in the form of sediment fencing or earth mounds are in place and installed downstream from stockpiles to prevent contamination of water;

- Surface of new soil stockpiles has been extensively contour scarified to promote infiltration and minimise erosion; and

- A number of stockpiles that have been in place for an extended period (likely greater than 2 years) had vegetation cover established, including grasses, trees and shrubs, which supports to protect the stockpile from raindrop splash erosion, enhance organic carbon levels, and suppress weeds.

It is understood that all soil stockpile locations, including volumes and date of soil stripping, are recorded in the Soil Handling and Management Plan and GIS database.

The condition and integrity of the seed bank in removed soils has an important influence on success of revegetation works and mine site rehabilitation. The seedbank prolife of the MCCM soil stockpiles is not currently well understood. However, a current Box-Gum Woodland Research Project focusses on soil stockpile management. This project is delivered between WHC and University of New England and is coordinated by a steering committee comprising ecological restoration researchers, academics and practitioners.

The focus of this research will look at the impact of soil stock piling on seed bank viability, including physical and biological characteristics with depth and time. In accordance with the DoEE approved Box-Gum Woodland Research Project Plan; the Soil Stockpile Seed Bank Study is scheduled for completion at end of FY 2019.

MAULES CREEK COAL MINE
Topsoil Stockpiles and Volumes

Figure 4

Drawing Status: Final	WHITEHAVEN COAL	SCALE: 1: 20,000 @ A3	Date: 13/12/2017
0 205 410 820 1,230 1,640 Meters		Requested: Scott Mitchell	Signed:
		Plan #: 000289	Drafted: Matt Baker

4 CONCLUSION

An independent biodiversity audit of MCoA conditions has been completed as well as a check against commitments made in the biodiversity management plan developed as part of MCoA conditions for the site.

Compliance was achieved with the performance criteria that were reviewed and no non-compliance were observed. The compliance with the criteria is summarised in *Table 4.1* below:

Table 4.1 Summary of Audit Findings

Non compliance	Administrative Non - compliance	Observations	Total Conditions
0	0	0	0
High (0), Medium (0), Low (0)			

A summary of key audit findings is included below:

- whilst the security of the NSW offset areas has commenced (via both legal instrument and physical on ground infrastructure), further works is needed to finalise and meet additional EPBC offset area requirements;
- current management practises of the MCCM Biodiversity Offset Areas are consistent with the BMP and appropriately resourced;
- periodic monitoring efforts are in place for both fauna and vegetation (including weed and feral animals);
- further early introduction of salvaged habitat resources would provide early benefit in terms of travelling, nesting and respite features for native fauna, and should be included in ongoing offset activity;
- a register should be developed for erosion areas incorporating the old Teston North quarry and any other known areas of erosion;
- long term success of the translocation program for threatened flora species *Tylophora linearis* and *Pomaderris queenslandica* is unclear with only limited persistence of translocated individuals; and
- current early-phase landforming rehabilitation work of the mine site is consistent with relevant protocols and plans. Further ongoing research efforts are underway to determine condition of the seedbank profile of soil stockpiles profile and best use in ongoing rehabilitation works.

Annex A

Soil Handling Protocol

SOIL MANAGEMENT PROTOCOL

Edition	Rev.	Comments	Author	Authorised By	Date
1	A	Preparation of SMP	Landloch Pty Ltd		12/04/2013
	B	Revised SMP	Landloch Pty Ltd		18/04/13
	C	Update SMP	Landloch Pty Ltd		25/10/13
	D	Revised SMP	G. Gray		26/10/15

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1.0 INTRODUCTION

1.1 Background

The Maules Creek Coal Mine (Project) is located on the northwest slopes and plains of NSW, approximately 18 km north-east of Boggabri within an existing mining precinct centred within and around the Leard State Forest. The Leard State Forest has historically been predominantly utilised for forestry, recreation and more recently, mining related activities.

The Project is operated by Maules Creek Coal (MCC), a joint venture between Aston Coal 2 Pty Limited (Whitehaven Coal Limited (Whitehaven)), ITOCHU Corporation and J-Power Corporation Pty Limited.

In 2010, Aston Coal 2 Pty Limited (a wholly owned subsidiary of Whitehaven) submitted a Project Application to the Department of Planning and Infrastructure (DP&I), for a new project approval under Part 3A of the EP&A Act to enable the construction and operation of an open cut coal mine, with a current mine life of at least 21 years.

The project application was determined by the NSW Planning Assessment Commission (PAC), under delegation by the Minister for Planning and Infrastructure. Project approval was received in October 2012.

Schedule 3, Condition 39(a) of the Project Approval requires the preparation of a Soil Management Protocol (SMP). The SMP will also address Schedule 3, Condition 39(b) and (c) as stated in Table 1-1.

Table 1-1 Project Approval 10_0138 Requirements

Applicable Condition	Requirement	SMP reference or other MCC Document
Schedule 3 Condition 39	The Proponent shall: (a) develop a detailed soil management protocol that identifies procedures for • Comprehensive soil surveys prior to soil stripping; • Assessment of top-soil and sub-soil suitability for mine rehabilitation; and • Annual soil balances to manage soil handling including direct respreading and stockpiling;	2.2 2.2 2.3
	(b) maximise the salvage of suitable top-soils and sub-soils and biodiversity habitat components such a bush rocks, tree hollows and fallen timber for rehabilitation of disturbed areas within the site and for enhancement of biodiversity offset areas;	Whole SMP and Biodiversity Management Plan
	(c) ensure that coal reject or any potentially acid forming interburden materials must not be emplaced at elevations within the pit shell or out of pit emplacement areas where they may promote acid or sulphate species generation and migration beyond the pit shell or out of pit emplacement areas;	2.8 and Materials Safety Management Plan
	(e) ensure that no water can drain from an out of pit emplacement area to any watercourse or to any land beyond the lease boundary; and	Water Management Plan

Applicable Condition	Requirement	SMP reference or other MCC Document
	(d) ensure that any coal barrier between the final void and any future surrounding mining operations minimises exchange of any contained groundwaters in the pit shell.	Water Management Plan

Federal approval was granted in February 2013 by the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), under the Environment Protection and Biodiversity Conservation Act 1999.

Condition 26(b) and Conditions 27(c) and (d) from Approval EPBC 2010/5566 outline soil management requirements for the Project, as shown in Table 1-2.

Table 1-2 EPBC Approval Requirements

Applicable Condition	Requirement	SMP reference or other MCC Document
Condition 26	The person taking the action must: b. not replace top soil and sub soil layers at a depth less than the minimum depths determined through pre-stripping soil surveys as described in condition 27(c).	
Condition 27	The *mine site rehabilitation plan* must include, at a minimum, the following information: c. detailed soil depth surveys and analysis to inform the effective placement and restoration of soils underlying the proposed rehabilitation sites; including mapping of soils across the disturbance sites and soil sampling at no less than one sample point per 20 ha of each soil type identified. Sampling must identify; type, depth, water holding capacity, structure and physio-chemical properties of each of the soil and subsoil layers; d. processes and methodology for the removal, storage and re-layering of the top soil and sub layers underlying the disturbed sites being prepared for rehabilitation. These processes and methodologies must ensure the replacement of top soil and sub soil layers: • meet the minimum depth requirements determined from sampling outcomes as identified in condition 27(c); and • replicate other existing soil parameters including, but not limited to, soil type, water holding capacity, structure and physio-chemical properties.	2.2, 2.6, 2.8 2.4, 2.5, 2.6, 2.7, 2.8, 2.9

This SMP has been prepared in accordance with the relevant project approval conditions and provides MCC with a protocol for managing soils requiring relocation as part of approved Project activities. This SMP is a sub plan of the Maules Creek Coal Mining Operations Plan (MOP).

1.2 Objectives of this SMP

The objectives of the SMP are to:

- Provide employees and contractors of MCC with a protocol to manage the clearing and stockpiling of soils as part of mining activities;
- Minimise disturbance to soils within mining areas;
- Ensure that soil health is monitored and maintained in accordance with this protocol and industry best practice;
- Maximise the salvage of suitable top-soils and sub-soils for use in rehabilitation;
- Ensure remaining vegetation is suitably mulched for inclusion on the rehabilitated areas;
- Maintain topsoil and seed viability;
- Address relevant commitments made within the Environmental Assessment: and
- To ensure compliance with the requirements of the Project Approval and EPBC Approval.

2.0 SOIL MANAGEMENT PROTOCOL

This SMP has been developed to ensure that all objectives with respect to soil management are achieved in the approved mine disturbance area.

The following sections provide details on key aspects of topsoil, subsoil, spoil management and soil balance for disturbance areas.

Topsoil stripping plans will be required for each area prior to soil disturbance. As part of this process, a Land Disturbance Protocol is currently in place, to ensure that clearing activities are managed appropriately.

2.1 Soil Profile

Nine soil types were identified within the Project site in the EIS Appendix P. Additional soil testing was conducted to confirm soil types, features and constraints. Detailed soil survey work conducted prior to disturbance will further refine the soil types and their constraints.

The soils types currently identified and their expected constraints and limitations are described in Table 2-1.

The soil attributes in Table 2-1 are defined as:

- Rocky: stony, gravelly and rocky soils. Although not advantageous for a growing medium, the coarse fragments will be beneficial in limiting erosion risk.
- Low Fertility: Loss of organic matter on stripping will be rapid.
- Erosive: A soil with a high potential for erosion if not managed correctly, particularly if placed on rehabilitated areas with gradients greater than its *insitu* environment. This is defined largely by the particle size distribution of the soil and clay mineralogy.
- Sodic/Hardsetting: Soil with an Exchangeable Sodium Percentage (ESP) >6 and appreciable clay content and/or hardsetting characteristics. This is closely linked to erosive attributes.

- Low Water Holding Capacity: A soil with low water holding capacity, particularly in the topsoil. This is closely related to the soil's clay content and type.

Other soil constraints to plant growth, such as salinity, are not used as an indicator as they are not of concern for these soil types.

Table 2-1 Project Soil Constraints

Soil Group	Soil Description	Soil Classification[1]	Rocky	Low Fertility	Erosive	Sodic/ Hardsetting	Low Water Holding Capacity
1	Shallow Gravelly Brown Sandy Loam	Leached Brown Lithic Tenosol	X	X			X
2	Gravelly Fine Brown Sandy Loam	Leached Yellow Kandosol	X	X			X
3a	Gravelly Red Duplex Sandy Clay Loams over Rhyolite	Red Chromosol	X	X		X	X
3b	Self-mulching Brown & Grey Clays over Andesite	Brown and Grey Vertosol		X[2]		X	
4a	Shallow Bleached Redish Brown Sandy Loams	Red & Brown Lithic Tenosol		X	X	X	X
4b	Brown & Grey Duplex Sandy Loams	Brown & Grey Chromosol		X	X	X	
4c	Self-mulching Black Clays over Andesite	Black & Grey Vertosol		X[2]	X	X	
5	Sodic Duplex and Gradational Brown Loams	Sodic Brown Sodosol & Dermosol		X	X	X	
6	Brown Clays and Red Brown Earths	Self-mulching Brown Vertosol		X[2]	X	X	

[1] Australian Soils Classification (Isbell, 1996), [2] - Fertility varies, can be high in some soil types. Soil testing will clarify fertiliser requirements.

Appendix A shows specific soil data for each identified soil type, including recommended stripping depths and indicative soil ameliorant and fertiliser rates. Additional detailed soil survey work conducted prior to stripping will further refine these recommendations.

2.2 Topsoil and Subsoil Testing Procedure

Prior to stripping, topsoil and subsoil will be sampled to:

- identify the soil resource prior to stripping;
- produce a soil map for all proposed disturbed areas;
- assist with the preparation of a soil balance or inventory to assist with rehabilitation planning; and
- determine if the soil requires amelioration to ensure the soils' physical and characteristics are within recommended ranges, as shown in Table 2-2.

Soil sampling will determine if the soil requires amelioration to ensure the soils physical and chemical characteristics are suitable for revegetation purposes. Levels for soil nutrients will be established on the basis of site data and reviewed following annual sampling and analysis.

Soil exchangeable sodium levels and potential for clay dispersion will be assessed, with data on exchangeable cations being used to calculate gypsum requirements (if any) to reduce Exchangeable Sodium Percentage to <4%. (Presence of dispersive clays will significantly increase erosion risk, and also reduce vegetation establishment and growth.)

Removal of vegetation will effectively reduce ecosystem nutrient stores. Some elements such as Nitrogen will be eventually replaced by growth of leguminous species (particularly Acacias), but elements (generally Phosphorous) that are in extremely low levels may well become limiting to ecosystem recovery. Consequently, it would be most straightforward to adopt an application of fertiliser to address any losses of nutrient due to removal of the standing biomass and nutrient cycling, and to assist in rapid regeneration of the natural vegetation. However, where soils are stockpiled for periods longer than 3 months, nutrient requirements are likely to be higher, and should be determined on the basis of specific sampling and analysis.

Soil sampling prior to stripping is essential to determine whether the soils require amelioration, and also to provide guidance on maximum depths of stripping (for situations where topsoil may be in short supply). As well, the sampling data will provide useful baseline information on the ranges of specific soil properties relevant to ecosystem recovery.

Additional soil sampling will also be undertaken if soils have been stockpiled for periods of longer than 3 months as soil fertility will be significantly reduced compared to direct returned soils.

The soil parameters to be measured are listed in Table 2-2. Subsoils will not be assessed for fertility, as fertility for subsoils is typically low and plant nutrition is primarily obtained from the topsoils.

Table 2-2 Physical and Chemical Soil Parameters (Rayment GE *et al*, 2011).

Soil Analyses	Abbreviation	Units	Methodology
Topsoil			
pH	pH	-	Field and Lab 1:5 soil:water
Electrical Conductivity	$E.C_{1:5}$	dS/m	Field and Lab 1:5 soil:water
Exchangeable Cations	Ex (Ca^{2+}, Mg^{2+}, Na^{+}, K^{+}, Al^{3+})	meq/100g	NH_4Cl
Dispersion Potential	EAT	Value 1-8	Emerson Index
Total Nitrogen	Total N	mg/kg	Kjeldahl
Total Phosphorous	Total P	mg/kg	Nitric/Perchloric
Available Phosphorous	Av P	mg/kg	Colwell
Available Potassium	Av P	mg/kg	Colwell
Available Sulfur	Av S	mg/kg	KCl-40
Texture	-	-	Field hand texture[b]
Effective Cation Exchange Capacity	*ECEC*	meq/100g	NH_4Cl
Exchangeable Sodium Percentage	*ESP*	%	NH_4Cl
Bulk density	*BD*	g/cm^3	
Organic Carbon	*OC*	%	LECO
Water Holding Capacity	*WHC*	mm/cm^3	
Subsoil			
pH	pH	-	Field and Lab 1:5 soil:water
Electrical Conductivity	$E.C_{1:5}$	dS/m	Field and Lab 1:5 soil:water
Exchangeable Cations	Ex (Ca^{2+}, Mg^{2+}, Na^{+}, K^{+})	meq/100g	NH_4Cl
Effective Cation Exchange Capacity	*ECEC*	meq/100g	NH_4Cl
Exchangeable Sodium Percentage	*ESP*	%	NH_4Cl
Dispersion Potential	EAT	Value 1-8	Emerson Index
Water Holding Capacity	*WHC*	mm/cm^3	
Bulk density	*BD*	g/cm^3	
Texture	-	-	Field hand texture[b]

[b] (McDonald, 1998)

Additional assessment of topsoil for the presence of weeds will be undertaken as part of soil sampling. Soil testing will assist in coordinating the storage or direct application of topsoil to rehabilitation areas. The suitability of the topsoil and subsoil for reuse or disposal by burial will be assessed after receipt of soil sampling results. Any soils deemed unsuitable for use in rehabilitation will be disposed of subsurface.

Soil sampling will be undertaken at a minimum sampling frequency of approximately one sample per 20 hectares of each soil type and will include an assessment of the soil profile (topsoil and subsoil). This will include key soil survey assessment criteria, as per McDonald, 1998, which include but is not limited to type, depth, structure and chemical characteristics. Sampling will be performed from pits using a backhoe (or similar) to create suitable pits where needed, or a suitable soil sampling coring device.

The soil sampling survey will be used to develop a 1: 10 000 scaled soil map as outlined in Guidelines for Surveying Soil and Land Resources, 2nd Edition (McKenzie et al. 2008). The soil map will be used in conjunction with the Soil Handling and Management Plan.

2.3 Soil Balance

Soil testing will determine the available topsoil and subsoil volumes for each stripping area, assist with soil balance preparation and rehabilitation resource planning.

Table 2-3 shows the volume of harvestable topsoil and subsoil within the mine disturbance area (excluding the construction footprint which will require minimal stripping), based on the stripping depths recommended in Appendix A. Excluding the final void in the mine disturbance area, 1,570ha will require rehabilitation requiring 3,140,000m^3 of growing medium to be spread at a depth of 0.2m. The topsoil resource required for rehabilitation is deficient and 864,350m^3 of subsoil will be required for rehabilitation. The subsoil will be subject to the same testing that is outlined in Table 2-2 to identify soil ameliorant rates required.

Table 2-3 Indicative topsoil and subsoil balance

Resource	Volume (m^3)
Topsoil required for rehabilitation	3,140,000
Topsoil	2,275,650
Deficit	864,350
Subsoil	996,300

Topsoil stored for long durations is likely to undergo structural degradation and death of seeds and micro-organism. Significant topsoil degradation typically occurs after a period of approximately 3 months. It is therefore preferential to use freshly stripped topsoil instead of stockpiled topsoil for rehabilitation purposes.

Soil Handling and Management Plan (Appendix B) will include:

- Location and volume of topsoil removed and where it has been placed, either directly onto an area for rehabilitation or stockpiled;
- Update of topsoil stockpiles register and map; and
- Ameliorates applied to removed topsoil.

2.4 Clearing and Grubbing

During the clearing and grubbing process the mixing of topsoil and subsoil will be minimised.

A record will be kept of the nature and quantities of salvaged bush rocks, timber etc. This is to ensure that the salvage of these items is maximised, in accordance with protocols outlined in the Biodiversity Management Plan (BMP).

The vegetation remaining, will either be stored for biodiversity purposes or will be mulched and respread over the stripped area following application of soil ameliorants (if applicable) and stockpiled in accordance with measures outlined in Section 2.7.

2.5 Soil and Spoil Amelioration

Site soils and mine spoils have generally poor fertility, low organic carbon, are sodic and dispersive. The soil testing as discussed previously will be undertaken to determine amelioration requirements and rates.

If gypsum is required it is preferable to mix it in with the topsoil as part of the stripping operation (ameliorates applied to topsoil surface prior to stripping), irrespective if the topsoil is to be placed in storage or directly applied to a rehabilitation area.

Application of ameliorants as part of the topsoil stripping process is cost effective, and gives the ameliorants additional time to react and modify the soil to assist in the maintenance of soil conditions suitable as a stable growing medium.

Soil testing of the stockpiles prior to spreading will identify if any further gypsum is required for amelioration.

Soil sampling will determine the application rates of ameliorates as discussed in section 2.2. Indicative rates are shown in Appendix A.

Additional applications of ameliorates may be required to ensure an optimum growing medium. It is generally not possible to correct soil deficiencies by a single application of fertiliser. It is possible, however, to slowly build up a bank of available elements in the soil from which vegetation is able to draw and which is replenished by the eventual death and decay of the plants. ie. the nutrients are continually recycled through the soil and the vegetation. Since many of the available nutrients are held in the organic soil fraction, this recycling condition cannot be achieved until adequate levels of organic matter have accumulated in the soil (Hannan 1995).

Fertiliser is not expected to be required annually, however, by not applying fertiliser in the initial stages it can impede the rapid development of vegetation which is required for erosion control and key component to the soil biology development for nutrient cycling. The soil, particularly if stockpiled for long periods of time, will have lost large amounts of its natural nutrient store. It is expected that an initial application is required prior to seeding and possibly (most likely) a second application the following season. The requirement to apply a rate of fertiliser application will be determined following soil sampling undertaken as part of the annual rehabilitation monitoring to ensure that application rates are suitable for the rehabilitation stage.

2.6 Soil Stripping

The surface 0.15 m of *in situ* soil is biologically active and contains almost all of the nutrients, seeds, and beneficial organisms. The biologically active layer is likely to be shallower than 0.15 m. However, stripping soil in layers thinner than 0.15 m is generally not possible with available machinery. All soils below the topsoil are defined as subsoils. Recommended soil stripping depths are outlined in Appendix A.

The Shallow Gravelly Brown Sandy Loam soil type dominates the mine disturbance area. This soil type will be suitable for re-use in rehabilitation areas that will not have a high agricultural land use following amelioration. High stone content topsoil is suitable for re-use for low land capability classes VI and VII, such as waste landform rehabilitation.

2.6.1 Planning and Permitting

A Soil Handling and Management Plan will be developed for each area that is to be stripped. Appendix B shows the details required to be collected for this plan. As part of the development of the Soil Handling and Management Plan, the Land Disturbance Protocol Form must be completed. All staff and contractors are required to obtain the relevant approval prior to clearing activities.

2.6.2 Stripping Methods

Earthmoving plant operators will be supervised to ensure that stripping operations are conducted in accordance with the stripping plan and in situ soil conditions. This will ensure that all suitable soil resources are salvaged and that the quality of the stripped soil is not reduced through contamination with unsuitable soils.

The process of soil stripping will also involve the continual evaluation of soil throughout the depths of the profile as areas and layers are exposed. Management of soils and stripping depths during this process is dynamic and generally require soil observations to be made on site on the day topsoil stripping is occurring. This enhances decision making and operational modifications can be adopted to best utilise the soil resources available.

The process outlined below for stripping topsoil should be followed:

- The area to be stripped of topsoil will be clearly demarcated and surveyed;
- Topsoil will be in a slightly moist condition during stripping;
- Topsoil will not be stripped during excessively wet or dry conditions;
- Where practical, stripped material will be placed directly onto reshaped overburden and spread immediately (if mining sequences, equipment scheduling and weather conditions permit) to avoid the requirement for stockpiling and costs with double handling;
- As part of the planning process, sufficient area for stockpiling, placement or burial of topsoil will have been identified and these areas will be accessible;
- As part of the planning process, temporary drainage, sediment control and structures to prevent erosion will be developed for each area if required;
- Soil collection by open bowl scrapers or loading into rear dump trucks by front-end loaders are the preferred less aggressive soil handling systems.

Over-stripping can result in the stored seeds being buried too deep, which will reduce germination. It will be important to monitor topsoil stripping closely to ensure that over stripping does not occur. Recommended stripping depths for each soil is shown in Appendix A.

Topsoil stripped from each vegetation community will ideally used in areas identified for rehabilitation for the corresponding vegetation community however this may not always be possible. Where topsoil cannot be used for rehabilitation immediately it will be stockpiled with consideration to vegetation community type.

2.7 Soil Stockpiling

The topsoil seed bank is an important reserve of indigenous plant seeds and soil microflora, which will assist with the preservation of local genetic material and the reestablishment of a similar range and mix of species of the original vegetation in the rehabilitation area.

The Soil Handling and Management Plan will indentify where the stripped soil will be placed, based on its suitability for reuse and the soil balance. Suitability will be determined following soil testing. Soil stockpile locations, vegetation community volumes and date of soil stripping will be recorded in the Soil Handling and Management Plan and GIS database as outlined in Appendix B.

Where possible, topsoils will be directly placed onto prepared rehabilitation areas. This will help to ensure the health and viability of stripped soils.

Where stockpiling is unavoidable, the following process for soil stockpiling will be followed to minimise degradation of stored soil and encourage nutrient stores:

- Where possible, stockpiles will be located in areas away from drainage lines. Drainage will be diverted around stockpiles to prevent erosion;
- Sediment controls will be installed downstream from stockpiles to prevent contamination of clean water;
- Stockpiles will be limited to a maximum height of 4m;
- Initial stockpiled material (stockpiles created in first 5-10 years) will be stored for use when all other topsoil material has been utilised (refer to section 2.3);
- More erodible materials will be placed on flatter areas to minimise the potential for erosion;
- The surface of soil stockpiles shall be contour scarified in order to promote infiltration and minimise erosion until vegetation is established;
- Stockpiles intended to be used within 5 years will be seeded with grass cover crops to protect the stockpile from raindrop splash erosion, aerate the soil to reduce anaerobic conditions, enhance organic carbon levels and suppress weeds;
- Stockpiles intended to be in place for greater than 5 years will be seeded with cover crops, grass, tree or shrub species to protect the stockpile from raindrop splash erosion, aerate the soil to reduce anaerobic conditions, enhance organic carbon levels, suppress weeds and to create a via seed resource;
- Material will be stripped from the top layer of the stockpile to take advantage of the benefits of the cover crops.; and
- Following removal of the top layer of stockpiled material, the stockpile will be contour scarified and seeded with the appropriate cover crop.

2.8 Characterisation

Characterisation of subsoil and spoil for erosion (primarily dispersion) and agronomic (pH, EC, CEC, and metals) parameters will be undertaken. Sampling will determine if the subsoil and spoil is suitable for rehabilitation use or if it requires amelioration or selective handling and placement. Characterisation of spoil for use as structural fill will also be undertaken, however this is not covered by this protocol.

Unsuitable subsoil and spoil parameters are detailed in Table 2-4.

Table 2-4 Unsuitable Subsoil and Spoil Parameters

Parameter	Unsuitable Range
pH	<5.0 or >8.5
Exchangeable sodium percentage	>6% if clay content >10%
Electrical conductivity (1:5 suspension)	>1.0dS/m

If not able to be ameliorated, unsuitable spoil and subsoil, including Potentially Acid Forming (PAF) material, will be capped with a minimum of 5.0m of suitable spoil (compacted depth) or, more appropriately, capped to a depth greater than the minimum rooting depth of the vegetation. Capping spoil will need to be ameliorated and contour ripped prior to the placement of the ameliorated topsoil. The Soil Handling and Management Plan will identify where unsuitable spoil and subsoil has been placed.

2.9 Soil Respreading

Prior to re-spreading of stockpiled soil, an assessment of weed infestation will be undertaken to determine if additional weed control measures are required prior to reuse of the topsoil .

The following will be considered during soil respreading:

- Topsoil requirements for rehabilitation areas will be balanced against stored stockpile inventories, vegetation communities and proposed respreading depths;
- During the removal of soils from the stockpiles, care will be taken to minimise structural degradation of the soils;
- Material will be spread in even layers at an appropriate thickness. Soil sampling will determine the optimal topsoil depth in support of available resources and to meet the rehabilitation goals of the area being rehabilitated;
- All topsoils are to be lightly ripped (maximum tyne width 1m) prior to seeding. This is to be conducted on the contour and care taken not to bring unsuitable spoil material to the surface; and
- Fertiliser application should be conducted prior to seeding while the surface is being lightly scarified to create an optimal seed bed.

Further detail on rehabilitation methods are discussed in the MOP.

3.0 MONITORING

The soil management process will be monitored through each step to ensure that the health of the soil is maintained and the rehabilitation and biodiversity objectives can be achieved.

The Soil Handling and Management Plan (Appendix B) sets out the requirements for each step of the soil management process.

Soil parameters in rehabilitated areas will be monitored during the annual rehabilitation monitoring program. A suite of soil parameters will be used at key stages of the rehabilitation to track its stability and

sustainability. Rehabilitation monitoring will allow for adaptive management by reviewing substandard performance from a rehabilitation area and evaluate the probability of an event occurring; evaluating the consequence; and using a risk-based approach to determine trigger levels (both upper and lower) where response or action is required.

4.0 RESPONSIBILITY

The responsibility for overall soil management at the Project belongs to the Environment department. However, all staff and contractors have a responsibility to follow the processes and procedures for managing soils, as outlined in this protocol and the MOP. All staff and contractors must ensure that they have the necessary permits and approvals in place, including a topsoil management plan, prior to undertaking works which will disturb soils.

5.0 REPORTING

Soil stripping and placement for each stripping area will be documented in the Soil Handling and Management Plan which will be prepared following soil and subsoil testing and updated following stripping activities to confirm the location of either stockpiled material or the direct placement of material.

Soil stockpiling and rehabilitation will be assessed and reported annually as part of the Annual Review (AR)/Annual Environmental Management Report (AEMR). Results of the assessments will be incorporated into future reviews of this SMP and the MOP.

6.0 REFERENCES

Hansen Bailey (2013) Draft Materials Safety Management Plan, prepared for Maules Creek Coal

Hansen Bailey (2011) Maules Creek Project Environmental Assessment, prepared for Aston Coal 2 Pty Ltd

Landloch (2013) Draft Rehabilitation Management Plan, prepared for Hansen Bailey

Isbell, R.F. (1996) The Australian Soil Classification. Australian Soil and Land Survey Handbook, CSIRO, Australia.

McDonald, R.C., Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. (1998) Australian Soil and Land Survey Field Handbook. 2nd edition, Inkata Press, Melbourne.

McKenzie N.J., Gundy M.J., Webster R., and Ringrose-Voase A.J. 2008, *Guidelines for surveying soil and land resources. 2nd edition, Volume 2 Australian Soil and Land Survey Handbook Series*, CSIRO Publishing.

Rayment, G.E., and Lyons, D.J., 2011, *Soil Chemical Methods - Australasia,* CSIRO Publishing, Collingwood.

7.0 TERMS AND ABBREVIATIONS

The terms and abbreviations used within this report are listed in Table 7-1.

Table 7-1 Terms and Abbreviations

Term/Abbreviation	Meaning
Acid soil	Soil with a pH of less than 6.5 (Rayment and Lyons 2011)
CEC	Cation Exchange Capacity
Dispersion potential	The dispersion potential of subsoil is an indicative rating based on factors including ESP, Ca:Mg ratios, salinity, particle size, Emerson Class numbers and clay mineralogy where available.
EA	Environmental Assessment
EC	Electrical Conductivity
EP&A Act	*Environmental Planning and Assessment Act* 1979
ESP	Concentration of exchangeable sodium cations expressed as a percentage of the cation exchange capacity.
Fertility	Soil fertility (the capacity of the soil to support plant growth in a given climatic regime) is a function of the physical, chemical and biological characteristics of the soil. Indices used include Organic Carbon, Cation Exchange Capacity (CEC), Available Macro and Mirco Nutrients
MCC	Maules Creek Coal Pty Ltd
Microbes	A general term for microorganisms such as bacteria, fungi and protozoa that cannot be seen with the naked eye.
MOP	Mining Operations Plan
OC	Organic Carbon
PA	Project Approval
PAC	Planning Assessment Commission
PAF	Potential Acid Forming
RMP	Rehabilitation Management Plan
Sodicity	The proportion of exchange sites in a soil or soil layer occupied by sodium ions, expressed as the exchangeable sodium percentage (ESP). Soil with an ESP exceeding 6 is referred to as being sodic and tends to be dispersive
Soil structure	Soil structure refers to the distinctness, size and shape of natural soil aggregates and voids.

Soil type	A general term used to describe the features of particular soils in terms of fertility, colour, texture and parent material.
Subsoil	Subsoil is a commonly used term used to identify soil material below the topsoil (A horizons) and is usually comprised of B horizons
the Project	Maules Creek Coal Mine Project
Topsoil	Topsoil is a commonly used term to identify soil horizons designated as A horizon(s) and is described as the mineral horizon at or near the soil surface with some accumulation of humified organic matter, usually darker in colour than underlying horizons with maximum biologic activity for any given soil profile; for the purposes of this report, topsoil is defined as that proportion of the soil profile that is suitable for stockpiling and rehabilitation.
Whitehaven	Whitehaven Coal Limited

APPENDIX A

BASE SOIL BALANCE

Soil Type	Soil Description	Stripping Depth (m)		Mine Disturbance Area (ha)[c]	Volume (m^3) [b]		Gypsum (t/ha)		Fertiliser [a] (kg/ha)
		TS	SS		TS	SS	TS	SS	TS
1	Shallow Gravelly Brown Sandy Loam	0 - 0.1	NR	865	778,500	0	-	-	150
2	Gravelly Fine Brown Sandy Loam	0 - 0.15	NR	198	267,300	0	-	-	150
3a	Gravelly Red Duplex Sandy Clay Loams over Rhyolite	0 - 0.15	0.15 – 0.6	175	236,250	787,500	2	3	100
3b	Self-mulching Brown & Grey Clays over Andesite	0 - 0.15	0.15 – 0.6	17	22,950	76,500	2	3	100
4a	Shallow Bleached Reddish Brown Sandy Loams	0 - 0.15	NR	393	530,550	0	-	-	100
4b	Brown & Grey Duplex Sandy Loams	0 - 0.15	NR	241	325,350	0	2	-	100
4c	Self-mulching Black Clays over Andesite	0 - 0.15	0.1 – 0.4	49	66,150	132,300	2	3	50

Soil Type	Soil Description	Stripping Depth (m)		Mine Disturbance Area (ha)[c]	Volume (m^3) [b]		Gypsum (t/ha)		Fertiliser [a] (kg/ha)
		TS	SS		TS	SS	TS	SS	TS
5	Sodic Duplex and Gradational Brown Loams	0 - 0.15	NR	36	48,600		2	-	100
6	Brown Clays and Red Brown Earths	0 - 0.15	NR	0	0	0	2	-	100
Total				1,974	2,275,650	996,300			

[a] Pasture Starter (N(6.7):P(13.5):K(0):S(7.9):Ca(9.1)), [b] including a 10% handling loss, [c] Source: EIS Appendix P, TS: Topsoil, SS: Subsoil, NR: Not Recommended

APPENDIX B

SOIL HANDLING AND MANAGEMENT PLAN

Soil Handling and Management Plan

Stage	Soil handling and management tasks
Topsoil/Subsoil Testing	Date: _____ Survey Area: _____ha Was soil testing completed: + Yes + No If yes, attached results. Testing Location(s) (attach plan with coordinates GDA 94): _____ Does the soil meet suitable material criteria (Table 2-2 of SMP): + Yes + No If no, this material must be stored separately or ameliorated. Vegetation Community type: _____ Average Topsoil Depth: _____mm Average Subsoil Depth: _____mm Topsoil Volume Resource: _____m^3 Subsoil Volume Resource: _____m^3 Form completed by: _____ Comments:
Pegging, Clearing and Grubbing, Soil Amelioration and Mulch Application	Date: _____ Survey Area: _____ha Stripping Location (attach plan with coordinates GDA 94): _____ Has the area been pegged in accordance with the design requirements: + Yes + No If no, provide justification for not doing so. Has the mixing of topsoil and subsoil been minimised during grubbing: + Yes + No If no, provide justification for not doing so. Has soil ameliorants been applied based on soil testing results: + Yes + No If no, attach evidence for no application. If yes, what were the products, rates and depth incorporated: _____ Has mulch been spread over the proposed stripping are: + Yes + No Form completed by: _____ Comments:

Stage	Soil handling and management tasks
Topsoil/Subsoil Stripping	Date: _____ Strip Area: _____ha Is the area to be cleared weed infested: + Yes + No If yes, this material must be stored separately Average Topsoil Depth: _____mm Average Subsoil Depth: _____mm Topsoil Volume Recovered: _____m^3 Subsoil Volume Recovered: _____m^3 Strip Method: + Dozer + Grader + Loader + Shovel + Scraper Destination (attach plan with coordinates GDA 94): _____ Form completed by: _____ Comments:
Topsoil Stockpile Destination	Date Placed: _____ Stockpile ID: _____ Stockpile Location: _____ Approved Stockpile Location: + Yes + No Total Volume: Topsoil_____m^3 Subsoil_____m^3 Stockpile Constructed as per the Soil Management Protocol: + Yes + No If no, provide justification for not doing so Appropriate erosion and sediment control actions implemented: + Yes + No If no, provide justification for not doing so Stockpile on Site GIS Layer: + Yes + No Site GIS Layer Updated: + Yes + No Stockpile Signed (Topsoil, Subsoil, ID): + Yes + No Stockpile Seeded: + Yes + No Seeding Details (eg. species, rate etc.): _____ Form completed by: _____ Comments:

Stage	Soil handling and management tasks
Topsoil Rehandle (ie. stockpile relocation)	Date: _____ Reason for Rehandle: _____ Initial Location (attach plan with coordinates GDA 94): _____ Stockpile ID: _____ Final Location (attach plan with coordinates GDA 94): _____ Stockpile ID: _____ Rehandle Volume: Topsoil: _____m^3 Subsoil: _____m^3 Is this unsuitable material: + Yes + No If yes, this material must be stored separately Note: Please also complete the Stockpile Destination section above if relocating a stockpile. Form completed by: _____ Comments:
Rehabilitation	Date: _____ Topsoil Application Area: _____ha Application Area Location (attach plan with coordinates GDA 94): _____ Topsoil Application Depth: _____ mm Subsoil Application Depth: _____ mm Topsoil Volume Used: _____ m^3 Subsoil Volume Used: _____ m^3 Topsoil/Subsoil Source Location (attach plan with coordinates GDA 94): _____ Source Stockpile ID: _____ GIS Layer / Register Updated: + Yes + No Form completed by: _____ Comments:

Annex B

Departmental Correspondence

Guy Williams

From: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>
Sent: Tuesday, 19 December 2017 8:58 AM
To: Guy Williams
Cc: Tony Dwyer; Andrew Wright; Heidi Watters
Subject: RE: MCCM IBA | Stakeholder feedback
Attachments: RE: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Guy – see attached email I sent Tony Dwyer requesting the audit give consideration to landform establishment components of rehabilitation – particularly soil handling consistent with soil handling protocols.

This is a fundamental component in the success of any subsequent revegetation in the rehabilitation of the mine site.

While the ecosystem establishment phase of rehabilitation has not commenced, landform establishment phase is particularly relevant as part of 56(d) and any observations/ recommendations for improvements.

In relation to offset areas and management restoration – particular focus on the actions proposed as part of the implementation plans for box gum woodland and threatened species (as part of 56(d), ensure you consider progress towards completion criteria via performance criteria interim targets.

Regards

Steve

Stephen O'Donoghue
Team Leader – Resource and Energy Assessments
Planning Services
T 0477 345 626

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From: Guy Williams [mailto:Guy.Williams@erm.com]
Sent: Friday, 15 December 2017 8:34 PM
To: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>; Heidi Watters <Heidi.Watters@Planning.nsw.gov.au>
Cc: Tony Dwyer <tdwyer@whitehavencoal.com.au>; Andrew Wright <AWright@whitehavencoal.com.au>
Subject: MCCM IBA | Stakeholder feedback

Dear Stephen & Heidi,

We are currently completing an independent biodiversity audit on Condition 56 Schedule 3 of the Project Approval (10_0138) issued to Whitehaven Coal for the Maules Creek Coal Mine. This condition states that that by the end of December 2017 (and then every 5 years) Whitehaven is required to commission a suitably qualified, experienced and independent person/s, to undertake an audit of the revegetation of the rehabilitation area, management and restoration within the Biodiversity Offset Strategy areas to the satisfaction of the Secretary.

As the Principal Ecologist with ERM I have been approved and appointed by the Secretary of the NSW Department of Planning and Environment to undertake this audit.

The audit involves an assessment of performance of management and restoration in off-site Biodiversity Offset Strategy areas completed to date; and identifying any measures that should be implemented to improve performance of rehabilitation, management and restoration within the rehabilitation and biodiversity offset area(s).

One of the requirements of the audit is that it be undertaken in consultation with relevant agencies. To that end, this email invites the NSW Department of Planning and Environment to raise any comments or queries regarding biodiversity offset management aspects of this project.

The site inspection was completed on 14th December 2017, and therefore it would be appreciated if you could provide your feedback via email as soon as possible to contribute to the audit and related reporting.

I can be contacted at the details listed below to discuss further.

Kind regards

Guy

Guy Williams
Principal Consultant | Ecology

ERM
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T +61 2 49035543 | **M** +61 404344402
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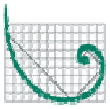

ERM *The business of sustainability*

Guy Williams

From: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>
Sent: Monday, 20 November 2017 2:24 PM
To: Tony Dwyer
Cc: Rose-Anne Hawkeswood; Andrew Wright
Subject: RE: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Tony – given that there is no revegetation at Maules at this time, the Department would still prefer to see some consideration / advice from the auditors on landform establishment aspects – even if provided as observations – particularly around top-soil/ sub-soil stripping and soil handling protocols/ soil inventories given that a substantial area of soil has now been stripped with the extent of clearing to date.

Regards

Steve

Stephen O'Donoghue
Team Leader – Resource and Energy Assessments
Planning Services
T 0477 345 626

NSW GOVERNMENT | Planning & Environment

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From: Tony Dwyer [mailto:TDwyer@whitehavencoal.com.au]
Sent: Monday, 20 November 2017 1:09 PM
To: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>
Cc: Rose-Anne Hawkeswood <Rose-Anne.Hawkeswood@planning.nsw.gov.au>; Andrew Wright <AWright@whitehavencoal.com.au>
Subject: RE: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Hi Steve,

We experienced a delay with audit commencement and are scheduled to undertake our inception meeting with the auditor later this afternoon.

Did you have any further thoughts on the audit scope that we can communicate in the inception meeting?

Regs,

Tony

Tony Dwyer
Group Manager - Approvals and Biodiversity

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231 Conadilly Street, Gunnedah NSW 2380 Australia
Tel: +61 2 6741 9316 **Mobile:** +61 475 830 292
Email: TDwyer@whitehavencoal.com.au www.whitehavencoal.com.au

From: Tony Dwyer
Sent: Wednesday, 8 November 2017 2:04 PM
To: 'Steve O'Donoghue' <Stephen.ODonoghue@planning.nsw.gov.au>
Cc: Rose-Anne Hawkeswood <Rose-Anne.Hawkeswood@planning.nsw.gov.au>; Andrew Wright <AWright@whitehavencoal.com.au>
Subject: RE: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Thanks Steve,

I have reproduced conditions 56(b) and 56(d) of PA 10_0138 below:-

> *56 (b) assess the performance of the revegetation in the rehabilitation area completed to date against the completion criteria in the Rehabilitation Management Plan;*
> *56 (d) identify any measures that should be implemented to improve the performance of rehabilitation, management and restoration within the rehabilitation and biodiversity offset areas;*

It is clear that condition 56(b) is specific to "revegetation in the rehabilitation area" which, as noted, MCCM are yet to commence.

Similarly, condition 56(d) is specific to "performance of rehabilitation, management and restoration within the rehabilitation…. area" in which no final landform shaping, final topsoil placement etc has yet been undertaken by MCCM.

Agree that the aspects you have noted are relevant to the ultimate success of revegetation, and they will be addressed by MCCM as required, however they do not appear to clearly fit within the scope of Condition 56 as written.

Regs,

Tony

Tony Dwyer
Group Manager - Approvals and Biodiversity

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Email: TDwyer@whitehavencoal.com.au www.whitehavencoal.com.au

From: Steve O'Donoghue [mailto:Stephen.ODonoghue@planning.nsw.gov.au]
Sent: Wednesday, 8 November 2017 1:34 PM
To: Tony Dwyer <TDwyer@whitehavencoal.com.au>
Cc: Rose-Anne Hawkeswood <Rose-Anne.Hawkeswood@planning.nsw.gov.au>
Subject: RE: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Thanks Tony, will review and confirm.

Note the audit scope will still need to cover 56(b) and 56(d). There are rehabilitation aspects (soil management/ soil depths/ soil volumes stockpiled/ landform preparation/ management sodic/ acid materials) relevant to the ultimate success of revegetation.

Regards

Steve

Stephen O'Donoghue
Team Leader - Resource Assessments
Department of Planning & Environment
M 0477 345 626
E stephen.odonoghue@planning.nsw.gov.au

From: Tony Dwyer [mailto:TDwyer@whitehavencoal.com.au]
Sent: Tuesday, 7 November 2017 2:32 PM
To: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>
Subject: MCCM - PA 10_0138 - Condition 56 - Biodiversity Audit

Steve,

In accordance with Condition 56 of PA 10_0138 please find attached the CV of Guy Williams (ERM Principal Consultant | Ecologist) for DP&E review and approval as a suitably qualified, experienced and independent person to undertake a biodiversity audit for MCCM.

Please note with respect to the scope of the audit required under Condition 56, that no revegetation has been undertaken to date in the mines rehabilitation areas and as such relevant audit scope components of Conditions 56 (b) and 56 (d) are not applicable.

The audit is proposed to commence the 14th November 2017 so the Department's earliest response would be appreciated.

Regs,

Tony

Tony Dwyer
Group Manager - Approvals and Biodiversity

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Guy Williams

From: Heidi Watters <Heidi.Watters@Planning.nsw.gov.au>
Sent: Friday, 9 March 2018 2:02 PM
To: Andrew Wright
Cc: Leah Cook; Steve O'Donoghue
Subject: RE: [16.50] Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for DPE comment

Hi Andrew

Thanks for the opportunity to review the draft Maules Creek Coal Mine Independent Biodiversity Audit Report.

Following a review of the draft report, the Department makes the following comments:

- Section 2.2 – page 10 – Reference made to NSW Department of Environment and Energy – DoEE is a federal government department.
- Section 2.2 – page 10 – It appears that OEH and the CCC were not consulted prior to the audit inspection, and thus did not have any opportunity to comment on the scope, unlike other agencies listed, as required by Schedule 3 condition 56(a).
- The auditor has made a number of statements that suggest they were not verified for compliance during the audit inspection and interviews e.g:
    - Section 3.2.1 – page 21 – *It is understood that a further extension for submission of the bond has been granted to 14th February 2018.*
    - Section 3.2.4 – page 24 – *It is understood that the construction of rock habitat structures has commenced in several locations close to flora and fauna monitoring sites.*
    - Section 3.2.8 – page 27 – *It is understood that the area nominated as erosion is an old quarry on Teston North, that is for the most part a contained runoff area*.
    - Section 3.2.9 – page 28 – *It is understood that some livestock have previously entered into offset areas, with all attempts having been made to restrict access. All new fencing bordering agricultural properties has been designed to reduce harm to native animals whilst ensuring livestock are appropriately excluded*.
    - Section 3.4 – page 45 – *It is understood that all soil stockpile locations, including volumes and date of soil stripping, are recorded in the Soil Handling and Management Plan and GIS database.*
- The auditor has made a number of statements that require further information for clarification and verification of compliance e.g.
    - Section 3.2.12 – page 30 – *It is understood that Dr Colin Driscoll has been commissioned to undertake monthly site visits…current monitoring has been undertaken by WHC staff* – what date was Dr Driscoll engaged to commenced monitoring? Should monitoring that was undertaken by WHC Biodiversity staff been undertaken by Dr Driscoll?
    - Section 3.4 – page 44 – *Whilst it is noted that there is no revegetation of the MCCM site underway, preparatory works, including topsoil stripping, land-forming and soil stockpiling, have commenced* – what is the current status of rehabilitation at the time of the site inspection? Where have the preparatory works been undertaken? How does it compare to the indicative rehabilitation schedule (Table 5-1 of the Mine Site Rehabilitation Plan)?
    - Section 3.4 – page 45 – *It was unclear to what extent available topsoil is currently being transported for use in rehabilitation areas. The priority for stripped soil should be for immediate use in such areas which would help to ensure both the health and viability of stripped soils* – the auditor should make a recommendation for improvement
    - Section 3.4 – page 45 – *It is understood that this is a two year project and final results may not be known for quite some time* – when is the research component part of project due to be complete?

The above comments should be addressed in the final audit report, along with all comments from other agencies and the CCC.

Please submit the final audit report to compliance@planning.nsw.gov.au, along with an action plan to address any non-compliances and auditor recommendations (this may be included in Table 3.2 of the audit report).

Please call if you have any questions.

Regards

Heidi Watters
Senior Compliance Officer
Planning Services
Suite 14, Level 1, 1 Civic Ave | PO Box 3145 | Singleton NSW 2330
T 02 6575 3401 M 0472 820 374

Planning & Environment

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From: Andrew Wright [mailto:AWright@whitehavencoal.com.au]
Sent: Friday, 9 February 2018 11:41 AM
To: Steve O'Donoghue <Stephen.ODonoghue@planning.nsw.gov.au>; Rose-Anne Hawkeswood <Rose-Anne.Hawkeswood@planning.nsw.gov.au>
Cc: Tony Dwyer <tdwyer@whitehavencoal.com.au>; DSwain@whitehavencoal.com.au; Scott Mitchell <SMitchell@whitehavencoal.com.au>
Subject: [16.50] Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for DPE comment

Rose-Anne and Steve

In accordance with Schedule 3 Condition 56 of Maules Creek Coal Mine's Project Approval 10_0138; ERM (appointed as auditors by DPE dated 8th November 2017) undertook the Biodiversity Audit in December 2017 inspecting both Biodiversity Offset Areas for the project and landform establishment works underway at the Mine.

Find attached the Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for DPEs review. If there are any comments, it would be appreciated if they could be returned to WHC by 11th March 2018 (30 days). The consultation required by Condition 56 has been ongoing since December; with stakeholders (including the CCC) to be provided the Draft Audit Report next week and also given 30 days to comment.

Regards

Andrew Wright
Group Superintendent – Biodiversity

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Email: AWright@whitehavencoal.com.au www.whitehavencoal.com.au

WHITEHAVEN COAL

Guy Williams

From: Renee Shepherd <Renee.Shepherd@environment.nsw.gov.au>
Sent: Tuesday, 13 March 2018 9:47 AM
To: Andrew Wright
Cc: Stephen Shoesmith; Heidi Watters; John Trotter
Subject: RE: APPROVED: [16.50] Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for Regulator comment

Hi Andrew,

Thank you for providing OEH with a copy of the Draft Maules Creek Coal Mine Independent Biodiversity Audit Report.

Given that OEH was not invited to contribute to the audit brief and was not involved in the audit process we will not be commenting on the content of the report.

Regards,
Renee.

Renee Shepherd
Senior Conservation Planning Officer
North West Branch
Regional Operations Division
Office of Environment & Heritage

48-52 Wingewarra Street, Dubbo 2830
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Please note that I work part-time: Mon, Tues, Wed

From: Andrew Wright [mailto:AWright@whitehavencoal.com.au]
Sent: Monday, 12 February 2018 2:58 PM
To: Peter Christie <Peter.Christie@environment.nsw.gov.au>
Cc: John Trotter <john.trotter@industry.nsw.gov.au>; Tony Dwyer <tdwyer@whitehavencoal.com.au>; DSwain@whitehavencoal.com.au; Scott Mitchell <SMitchell@whitehavencoal.com.au>
Subject: [16.50] Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for Regulator comment

Peter

In accordance with Schedule 3 Condition 56 of Maules Creek Coal Mine's Project Approval 10_0138; ERM (appointed as auditors by DPE dated 8th November 2017) undertook the Biodiversity Audit in December 2017 inspecting both Biodiversity Offset Areas for the project and landform establishment works underway at the Mine.

Find attached the Draft Maules Creek Coal Mine Independent Biodiversity Audit Report for your review. If there are any comments, it would be appreciated if they could be returned to WHC by 14th March 2018 (30 days).

Regards

Andrew Wright
Group Superintendent – Biodiversity

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Annex C

Photolog

Photograph 1

Offset Area Signage

Photograph 2

Activity Signage

Photograph 3

Fencing

Photograph 4

Gates

Photograph 5

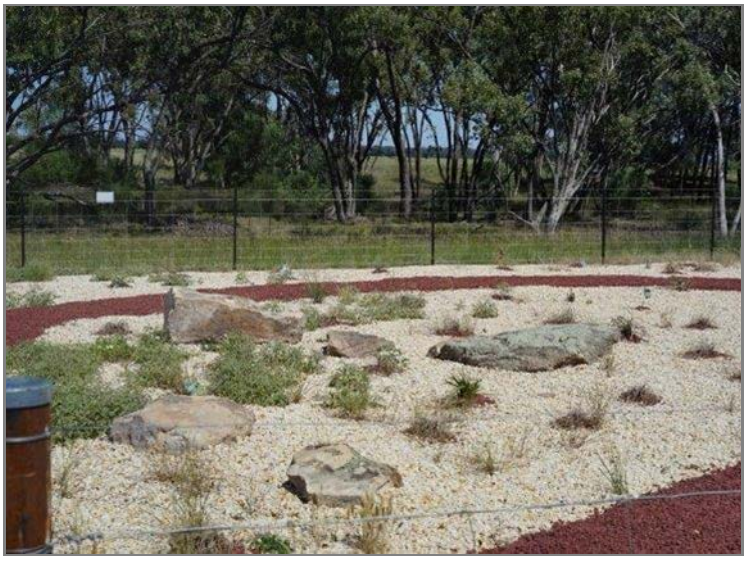
Weed Control

Photograph 6

Pest Control

Photograph 7

Replanting



Photograph 8

Heritage Site

Photograph 9

Monitoring Plot

Photograph 10

Tylophora Translocation

Photograph 11

Pomaderris Translocation

Photograph 12

Soil Stockpiling

Photograph 13

Revegetation on Stockpile

Photograph 14

Landform Drainage

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