



LIDDELL COAL OPERATIONS

INDEPENDENT ENVIRONMENTAL AUDIT REPORT

for

Liddell Coal Operations Pty Limited

July 2016

Hansen Bailey

ENVIRONMENTAL CONSULTANTS

LIDDELL COAL OPERATIONS

INDEPENDENT ENVIRONMENTAL AUDIT REPORT

Prepared by:

HANSEN BAILEY
6/127-129 John Street
SINGLETON NSW 2330

Revised Final
15 July 2016

for:

LIDDELL COAL OPERATIONS PTY LIMITED
PO Box 7
SINGLETON NSW 2333

EXECUTIVE SUMMARY

Hansen Bailey was commissioned by Liddell Coal Operations Pty Limited to conduct an independent environmental compliance audit against Development Consent DA 305-11-01 (as modified) for Liddell Coal Operations. This audit was undertaken for the Department of Planning & Environment for the period 1 July 2012 to 31 December 2015. The audit also assessed compliance with the conditions of Environment Protection Licence 2094, key mining authorities and other licence documents.

This Audit was conducted by Daniel Sullivan (Exemplar Global International Certified Auditor 113202) and Dorian Walsh from Hansen Bailey. Additional input was also provided on rehabilitation and mine closure-related conditions of approvals and associated management documents by Lachlan Crawford of LAMAC. The field visit component of the audit was completed over the period 2 – 5 February 2016.

The audit consisted of a detailed desktop review of documentation, interviews with key Liddell Coal Operations staff and a field inspection of the mining and rehabilitation areas. The audit was conducted generally consistent with '*ISO 14010 - Guidelines and General Principles for Environmental Auditing*', '*ISO 14011 - Procedures for Environmental Auditing*' and the '*Independent Audit Guideline. Post-approval requirements for State significant developments* (Department of Planning and Environment, 2015)'.

Key actions and recommendations from the previous independent environmental compliance audit completed in 2012 have been responded to, as described in **Section 2**.

This audit has concluded that an excellent standard of environmental management is generally being applied at the Liddell Coal Operations with many leading practice initiatives in place, including in the management of air quality and noise impacts. This audit also determined that site operations are undertaken at a consistently high level of compliance against conditions of Development Consent DA 305-11-01 and other licences and approvals held for Liddell Coal Operations. Document control and management in relation to environmental compliance issues at LCO was observed to be maintained to a very high standard and effectively implemented across the site.

The field inspection revealed an excellent level of general maintenance around the Liddell Coal Operations infrastructure areas reviewed during the audit site inspection, especially in and around the workshop, stores and offices. The open cut pit areas assessed during the field inspection were also observed to be well managed, with equipment operators and supervisory personnel demonstrating a good understanding of management actions required to minimise amenity impacts from mining activities. This observation is supported by the results from noise and dust monitoring programs and the small number of community complaints received during the audit period.

Implementation of site rehabilitation during the audit period was found to have been progressing generally in accordance with the commitments and predictions included the supporting documents of the Development Consent DA 305-11-01 and the Mining Operations Plan. A review of rehabilitation during the field inspections completed for this audit found that, in general, rehabilitation areas were being developed and maintained to a high standard.

A review of incidents that occurred at Liddell Coal Operations since the previous audit indicated that the majority were classified as minor, with all being documented in the site register and reported to regulatory agencies as required.

Non-compliances identified during this audit are summarised in **Section 3**. These confirm that the non-compliances that occurred during the audit period were largely administrative or low risk in nature. A series of recommendations arising from a review of environmental management documentation, the audit site inspections and identified non-compliances is provided in see **Section 6**.

At the time of the audit, Liddell Coal Operations' staff were aware of most of the identified non-compliances against development consent conditions, licences and approvals and were working to address a number of the issues identified in this report.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
LIMITATIONS OF REPORT	v
1 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 DOCUMENTS REFERENCED IN AUDIT	2
1.3 SITE DESCRIPTION.....	2
1.4 DEVELOPMENT CONSENT AND SUPPORTING DOCUMENTATION SUMMARY ...	2
1.4.1 DA 305-11-01 Approval.....	2
1.4.2 DA 305-11-01 Modification 1	3
1.4.3 DA 305-11-01 Modification 2	3
1.4.4 DA 305-11-01 Modification 3	3
1.4.5 DA 305-11-01 Modification 4	4
1.4.6 DA 305-11-01 Modification 5	4
1.5 AUDIT REQUIREMENTS.....	5
1.5.1 Development Consent.....	5
1.5.2 Audit Guidelines	5
1.5.3 Consultation with Relevant Agencies	7
1.6 REPORT STRUCTURE	9
2 PREVIOUS AUDIT RECOMMENDATIONS & STATUS	10
3 NON-COMPLIANCES AGAINST APPROVALS & LICENCES	15
4 MANAGEMENT PLANS, PROGRAMS AND STRATEGIES	18
5 ENVIRONMENTAL MANAGEMENT & MITIGATION EFFECTIVENESS	19
5.1 MINING & SITE INFRASTRUCTURE AREAS	19
5.2 REHABILITATION & OFFSETS.....	20
5.2.1 Site Rehabilitation	20
5.2.2 Biodiversity Offsets.....	21
5.3 AIR QUALITY AND NOISE CONTROLS.....	22
5.4 WATER MANAGEMENT	22
5.4.1 Water Licences	22
5.4.2 Water Management Infrastructure	23
5.5 TAILINGS MANAGEMENT	23
5.6 VISUAL & LIGHTING IMPACTS	24

5.7 HERITAGE IMPACTS.....	24
5.7.1 Aboriginal Heritage.....	24
5.7.2 Non-Aboriginal Heritage.....	25
5.8 COMPLAINTS.....	25
5.9 INCIDENTS	26
5.10 ENVIRONMENTAL TRAINING AND DOCUMENT MANAGEMENT	26
6 AUDIT RECOMMENDATIONS.....	27

LIST OF TABLES

Table 1	Independent Environmental Audit Requirements	5
Table 2	Audit Guidelines Requirements.....	6
Table 3	Audit Guidelines Risk Levels for Non-Compliances	7
Table 4	Agency Requirements.....	8
Table 5	2012 Audit Recommendations & Status.....	10
Table 6	Non-Compliances Identified.....	15
Table 7	Audit Recommendations.....	27

LIST OF APPENDICES

Appendix A	DP&E Certification Form (DP&E, 2015)
Appendix B	Regulatory Correspondence
Appendix C	Audit Agenda
Appendix D	Audited Documentation
Appendix E	Liddell Coal Operations Compliance Tables
Appendix F	Rehabilitation and Mine Closure Audit (LAMAC, 2016)
Appendix G	Plates from Site Inspection

LIMITATIONS OF REPORT

In preparing this regulatory compliance audit report, Hansen Bailey has assessed all activities appropriate and necessary to evaluate the environmental status of the site and operations on it. Hansen Bailey has addressed all technical matters which might reasonably be considered to be relevant to such an assessment conducted to standards which apply in NSW. Based on observations of the site, interviews with appropriate staff and a review of available documentation, it is Hansen Bailey's opinion that the potential critical environmental issues associated with the site and operations are those discussed in this report. However, Hansen Bailey can only advise on the basis of the information available to them and therefore cannot dismiss absolutely the possibility that parts of the site, or adjacent properties, may give rise to additional issues.

The conclusions presented in this report are professional opinions based solely upon Hansen Bailey's visual observations of the site and the immediate site vicinity, and upon Hansen Bailey's interpretations of the documentation reviewed, interviews and conversations with personnel knowledgeable about the site and other available information, as referenced in this report. These conclusions are intended exclusively for the purposes stated herein, at the site listed, and for the project indicated.

Opinions presented in this report apply to the site's conditions and features as they existed at the time of Hansen Bailey's site visit on 2 to 5 February 2016, and those reasonably foreseeable. They necessarily cannot apply to conditions and features which Hansen Bailey is unaware of and has not had the opportunity to evaluate.

This report does not, and does not purport to, give legal advice on the actual or potential environmental liabilities of any individual or organisation, or to draw conclusions as to whether any particular circumstances constitute a breach of relevant legislation.

**LIDDELL COAL OPERATIONS
INDEPENDENT ENVIRONMENTAL AUDIT**
for
Liddell Coal Operations Pty Limited

1 INTRODUCTION

1.1 BACKGROUND

Hansen Bailey has been commissioned by Liddell Coal Operations (LCO), to conduct an independent environmental compliance audit (this Audit) against Development Consent DA 305-11-01 (as modified) for the Liddell Colliery (Liddell). The original supporting documentation of DA 305-11-01 is the *Liddell Colliery Continued Operations Environmental Impact Statement* (Umwelt, 2001) (Liddell EIS). Five modifications have subsequently been granted to DA305-11-01, with a summary of the key components provided in **Section 1.4**.

The period to which this Audit applies is from 1 July 2012 to 31 December 2015 (the audit period). This Audit was conducted by Daniel Sullivan (DS) (Exemplar Global International Certified Auditor 113202) and Dorian Walsh (DW) from Hansen Bailey. Additional input was also provided on rehabilitation and mine closure-related conditions of consent and associated management documents by Lachlan Crawford (LC) of LAMAC. The auditing team was approved by the Department of Planning and Environment (DP&E) on 10 November 2015 (see **Appendix B** for correspondence).

The audit consisted of a detailed desktop review of documentation and interviews with key LCO staff (predominantly Ben de Somer (BD), LCO Environment and Community Manager, and with Laura Barben (LB) and Jarith Young (JY), LCO Environment and Community Officers.

The site review component of the Audit was held over the period 2 – 5 February 2016 (see **Appendix C** for the Audit agenda). This included a field inspection of key infrastructure, mining and rehabilitation areas conducted in accordance with *ISO 14010 - Guidelines and General Principles for Environmental Auditing*, and *ISO 14011 - Procedures for Environmental Auditing*. The field inspection was conducted by DS and DW on 3 February 2016. Significant review of additional documentation and interviews with LCO personnel also occurred prior to and following the site component of the audit.

The weather conditions during the site component of this Audit were mild and dry (average temperature of 21.5°C), with moderate humidity. Winds during the audit tended generally south easterly, with speeds of around 6 km/h. In the week preceding the audit conditions were relatively dry, with 2.9 mm of rainfall recorded at the Singleton BoM monitoring station (site: 061397).

An Opening and Closing Meeting for the Audit was held on site, with LCO Environment and Community staff and senior management personnel in attendance.

1.2 DOCUMENTS REFERENCED IN AUDIT

Appendix D provides a list of all information reviewed as part of this audit.

1.3 SITE DESCRIPTION

Liddell is an open cut mine operated by LCO on behalf of the Liddell Joint Venture between Glencore Coal Pty Limited (67.5%) (Glencore) and Mitsui Matsushima Pty Ltd (32.5%) (Mitsui). Liddell is located approximately 25 km north-west of Singleton in the Upper Hunter Valley of NSW and lies within both the Muswellbrook Shire Council (MSC) and Singleton Council (SC) Local Government Areas (LGAs).

Liddell has a long history of mining operations commencing with the development of an underground mine in 1923 with open cut operations following in 1946. The current open cut mining operation has been operational since 1990.

Liddell has approval to extract up to 8 Million tonnes per annum (Mtpa) of Run of Mine (ROM) coal. Approval has also been granted to process up to 8 Mtpa of ROM coal at the Liddell Coal Handling Preparation Plant (CHPP). Mining operations are undertaken using excavator and truck and shovel method of operation. Product coal, both semi-soft and thermal, is transported to the Newcastle Port by rail via the Hunter Valley Rail Loop and Main Northern Railway Line, for sale to the export market.

1.4 DEVELOPMENT CONSENT AND SUPPORTING DOCUMENTATION SUMMARY

Development Consent DA 305-11-01 is held for the operations of LCO. A summary of the Liddell consent and its associated modifications are described below.

The audit focussed on the DA 305-11-01 approval conditions and supporting documents relevant to the activities undertaken by LCO during the audit period. DA 305-11-01 was modified once during the audit period, with the approval of Modification 5 granted on 2 December 2014. The compliance status of relevant aspects of LCO operations during the audit period were therefore reviewed against the version of the development consent that was in force at the time (see **Section 3**).

1.4.1 DA 305-11-01 Approval

Liddell was approved to operate generally in accordance with DA 305-11-01 and the supporting Liddell EIS (Umwelt, 2001). The main components of the Liddell EIS included the following activities:

- Production of 4.5 Mtpa of ROM coal from the Wittingham Coal Measures over 1,326 ha;
- Truck and shovel method of mining with the optional use of a dragline and highwall auger mining;
- The receipt of up to 300,000 tpa of ROM coal from Cumnock No.1 Colliery; transport up to 300,000 tpa of tailings for use in Macquarie Generation Power Stations; and

- ROM coal processed at Liddell CHPP and transported to the Port of Newcastle via the Hunter Valley Rail Loop.

1.4.2 DA 305-11-01 Modification 1

The letter report *Continued Operations of Liddell Colliery – Revised Development Application Area* dated 13 March 2002 supports DA 305-11-01 (MOD1) under Section 96(1) of the *Environmental Planning & Assessment Act* (EP&A Act) and describes the following activities:

- Dam 13B will have a capacity of 5,000 ML;
- Increased off-site water transfers with Howick CHPP and Mt Owen;
- Discharge via Bowmans Creek not required;
- Removal the Ravensworth Dam and associated pipe work from the Mine plan; and
- An overall reduction in environmental impacts a result of the Project.

1.4.3 DA 305-11-01 Modification 2

DA 305-11-01 (MOD2) was undertaken in accordance with Section 75W of the EP&A Act and is supported by the document *Liddell Colliery Modification to Development Consent Environmental Assessment* (Umwelt, 2006), which describes:

- Construction of a new CHPP;
- Increase production to 8 Mtpa of ROM coal;
- Increase mine footprint in three areas totalling additional 47 ha;
- Receive or deliver up to 1.5 Mtpa of ROM coal to or from Cumnock No. 1 Colliery;
- Increase the mining of old tailings up to 0.5 Mtpa;
- New stockpile of 450,000 t;
- Construction of Dam 13 B to 1,500 ML;
- Realignment of Access Road and Services Corridor;
- Relocation of open cut mining offices, workshop and storage areas; and
- The addition of a new desalinisation unit within the CHPP.

1.4.4 DA 305-11-01 Modification 3

DA 305-11-01 (MOD3) is supported by the document *Liddell Coal Operations Pty Limited Statement of Environmental Effects for Liddell Colliery Modification to Development Consent* (Umwelt, 2008). DA 305-1101 (MOD3) provides LCO with approval for:

- Alteration of arrangements in the treatment of effluent from the new workshop and complex area to be placed in Dam 13/13B;
- Realignment of the DA boundary in three locations;
- Modification of the Old New England Highway intersection and access road; and
- The correction of minor numbering errors in the modified consent.

1.4.5 DA 305-11-01 Modification 4

DA 305-11-01 (MOD 4) was undertaken in accordance with Section 96(1A) of the EP&A Act and is supported by the letter report *Modification of Development Consent 305-11-01 for Additions to the Liddell Colliery Mining Infrastructure Area* (Umwelt, 2009). The modification provides approval for LCO to construct and operate the following:

- Administration buildings, amenities, training rooms, crib room building, bath house, first aid room;
- Waste water treatment plant and effluent irrigation area;
- Ambulance access and helipad;
- Muster area and sealed muster car park area;
- Covered walkways and connecting buildings;
- 3 bay, high machinery workshop;
- Water storage tanks;
- Fuel farm including tanker fill and discharge slabs;
- Light vehicle and heavy vehicle washbays;
- Hardstand areas;
- 140 employee and visitor parking area;
- 36 light vehicle car parking spaces; and
- Associated erosion and sediment control works.

1.4.6 DA 305-11-01 Modification 5

DA 305-11-01 (MOD5) was supported by the *Liddell Coal Operations Proposed Modification to DA 305-11-01 Environmental Assessment* (SLR, 2013) prepared under Section 75W of Part 3A the EP&A Act. The main activities approved under DA 305-11-01 (MOD5) included:

Extension of the South and Entrance Pits and the mining of coal resources under the existing Mine Infrastructure Area (MIA) to enable the recovery of an additional volume of approximately 38 Mt ROM coal;

- Construction of a temporary replacement MIA;
- The extension of the LCO life of mine by five years;
- Construction of a tailings emplacement within the final void of the South Pit;
- LCO no longer receiving coal from the Cumnock CHPP for processing at the Liddell CHPP;
- LCO receiving up to 2 Mtpa ROM coal from the Mt Owen Complex for processing at the Liddell CHPP via the existing overland conveyor infrastructure; and
- Minor construction and upgrades to ancillary support infrastructure to support the extended mining areas.

1.5 AUDIT REQUIREMENTS

1.5.1 Development Consent

This assessment and subsequent report has been compiled pursuant to Schedule 5 Condition 4 of DA 305-11-01 (MOD 5). The requirements of Condition 4 are listed below in **Table 1**, along with where each is addressed in this report.

1.5.2 Audit Guidelines

This audit report has also been prepared in accordance with the *Independent Audit Guideline. Post-approval requirements for State significant developments* (Audit Guidelines) (DP&E, 2015). The primary purpose of the Audit Guidelines is to ensure that independent audits of State significant developments in NSW are undertaken in a consistent manner and meet minimum standards expected by the NSW Government.

Table 2 lists key requirements from the Audit Guidelines, the relevant Section of the Guidelines which references the requirement, and indicates where each is addressed in this report.

Table 3 reproduces the “risk levels” from the Audit Guidelines which were attributed to the non-compliances identified during the audit period.

Table 1
Independent Environmental Audit Requirements

Description	Where Addressed
DA 305-11-01 (MOD 5)	
Condition 4 Within a year of the approval of modification application DA 305-11-01 MOD 5, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:	This Audit Report
(a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Secretary;	Appendix B
(b) include consultation with relevant agencies;	Section 1.5.3
(c) assess the environmental performance of the development, and its effects on the surrounding environment;	Section 5
(d) assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;	Sections 3 - 4
(e) review the adequacy of any strategy/plan/program required under this consent; and, if necessary,	Section 4
(f) recommend measures or actions to improve the environmental performance of the development, and/or any strategy/plan/program required under this consent.	Section 6
<i>Note: This audit team must be led by a suitably qualified auditor and include experts in the field of mine rehabilitation and mine closure.</i>	Appendix B

Table 2
Audit Guidelines Requirements

Section	Description	Where Addressed
2	Assess the operator's compliance with the requirements of regulatory approvals, including (as applicable): <ul style="list-style-type: none"> • The Development Consent; • The Environment Protection Licence; • The Mining Lease; and • Water licences and approvals. 	Section 3, Appendix E
2, 3	The scope of the audit and the audit team (including any technical specialists) to be determined by the lead regulator.	Section 1, Appendix B
3.3	The auditor team must be independent of the development being audited and audit findings must be based on verifiable evidence.	Appendix A, Sections 3 - 6
4.1	The compliance status of each requirement or commitment should be assessed in accordance with the compliance assessment criteria and risk levels in the audit guidelines.	Section 1, 3, Appendix E
4.2	Consultation with key regulatory agencies prior to commencement of the audit site inspection.	Section 1.5.3
5.1	The audit outcomes to be documented in a thorough, accessible and accurate audit report that is written in a neutral tone reflecting facts gathered by the audit team.	This Audit Report
5.1	The audit report should include the following sections: <ul style="list-style-type: none"> • Introduction, providing a brief overview of the development, audit scope and objectives; • Methodology, describing the audit team, methodology applied, document reviews, site inspections and interviews; • Audit findings, including documentation of consultation, response to actions from the previous audit, assessment of compliance status against the conditions and commitments in relevant documents and a discussion of environmental incidents and performance; and • Recommendations, identifying any opportunities for improvement identified in the audit. 	This Audit Report
5.2	Audit reports submitted to the lead regulator must be certified by the lead auditor on an attached 'Independent Audit Submission Form'	Appendix A
5.3	Copies of the final audit report to be distributed to regulatory agencies within two weeks of finalisation and placed on the development's website.	LCO Responsibility
6	The operator of the development to respond to the lead regulator responding to the audit findings and recommendations with an action plan within four weeks of receiving the final audit report.	LCO Responsibility

Table 3
Audit Guidelines Risk Levels for Non-Compliances

Risk Level	Colour Code	Description
High		Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium		Non-compliance with: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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)

1.5.3 Consultation with Relevant Agencies

During the preparation for this Audit, input was sought from regulatory agencies to confirm any areas of compliance or environmental management at the Liddell that should be a particular focus. The following agencies were approached for input as part of the scoping phase of this Audit:

- DP&E;
- Environment Protection Authority (EPA);
- NSW Trade and Investment, Department of Resources and Energy (DRE);
- Office of Environment & Heritage (OEH);
- Department of Primary Industries – Water (DPI – Water);
- MSC;
- SC; and
- Liddell Community Consultative Committee (CCC) Chairperson.

Where issues were raised during consultation, these are listed in **Table 4**. Each has been addressed in this Audit report.

Table 4
Agency Requirements

Ref	Requirement
DP&E	
1.	The audit team must be led by a suitably qualified auditor and include experts in the field of mine rehabilitation and mine closure.
EPA	
2.	Review LCO compliance with Environmental Protection Licence (EPL) 2094 conditions and relevant Pollution Reduction Programs (PRPs).
DRE	
3.	Review the current Mining Operations Plan (MOP) approval status and consultation undertaken.
4.	Confirm consistency of LCO MOP with the mine plans and progressive rehabilitation schedule approved under DA 305-11-01.
5.	Verify that mining operations are being conducted in accordance with the approved MOP (production, mining sequence, etc.).
6.	Consistency of the MOP rehabilitation objectives and completion criteria in accordance with the concept final landform approved under DA 305-11-01.
7.	Confirm a rehabilitation monitoring program and response actions are in place to assess performance against LCO objectives and completion criteria.
8.	Confirm if there are any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation.
DPI – Water	
9.	Review compliance against the conditions of site water licences held under the Water Act 1912 and the Water Management Act 2000.
10.	Reconcile records of take of water with the relevant Water Access Licenses and Property Accounts to determine if take of water from each water source is within the licensed entitlement for each water source.
11.	Review Site Water Management Plan/s and performance against the actions described in each document.
12.	Review of water monitoring (surface water and groundwater). Assess whether water monitoring is being completed in accordance with the project approval and the Site Water Management Plan(s).
13.	Review of water monitoring (surface water and groundwater). Assess whether water monitoring is being completed in accordance with the project approval and the Site Water Management Plan(s).
14.	Assess compliance with the performance criteria trigger levels and associated responses to exceedance and performance indicators.
15.	Review actual impacts of extractions on aquifers, groundwater dependent ecosystems and streams in the area.
16.	Make comparisons between actual and predicted impacts (modelled results).
17.	Provide recommendations as to works that should be performed or additional obligations that should be imposed in order to mitigate impacts on water sources.

Ref	Requirement
MSC	
18.	Review air quality management performance.
SC	
19.	Extent and timing rehabilitation completion and compliance with DA 305-11-01 conditions.
LCO CCC Chairperson	
20.	No additional requirements.

1.6 REPORT STRUCTURE

Section 1 provides an introduction, background, site description and layout of LCO, describes the requirement for this Audit and provides a guide to the structure of this report. This section also provides an overview of approved operations detailed in the EIS and modification documents approved for the development consents held for LCO activities;

Section 2 of this report provides a tabular representation of recommendations made during the previous independent audit and the status of their implementation;

Section 3 outlines the identified non-compliances and the status against LCO approvals and their supporting documents, modifications and other licences / approvals available for review at the time of the audit. This includes ranking of non-compliances risk levels in accordance with the Audit Guidelines;

Section 4 provides a discussion on management plans, programs and strategies available for review at the time of the audit;

Section 5 of this report discusses the effectiveness of the environmental management and mitigation strategies that are currently undertaken at LCO. General environmental performance is also discussed including monitoring results, field inspections performed during the site component of the audit, complaints and incidents; and

Section 6 provides a summary of key recommendations from the audit.

2 PREVIOUS AUDIT RECOMMENDATIONS & STATUS

The key recommendations made in the 2012 Independent Environmental Audit (2012 audit) completed for LCO (Hansen Bailey, 2012) and the status of each as at February 2016 are summarised in **Table 5**.

Table 5
2012 Audit Recommendations & Status

Ref	Recommendation	LCO Status / Response
DA 305-11-01		
1.	Schedule 2, Condition 8: MOD 4 construction certificates were not available at the time of the audit to review.	Construction / occupation certificates for 2009 workshop located in site records. LCO did not seek certificates for the 2012 audit period infrastructure as it was consistent with approved buildings originally constructed in 2007.
2.	Schedule 2, Condition 11: A legal agreement has not been finalised with MSC in relation to financial contributions relevant to the Project. Discussions with DP&I are ongoing in relation to resolving the matter.	Not completed. LCO sought advice on this recommendation from DP&E with no result. Was agreed with MSC to be finalised under DA 305-11-01 (MOD 5) VPA.
3.	Schedule 3, Condition 6: A non-compliance occurred when a blast was not recorded at Scriven on 23 April 2010 due to a faulty monitor. This was reported in the AEMR.	No further action required.
4.	Schedule 3, Condition 8: A blast overpressure exceedance of 138 dBL was recorded on 9 July 2010 at the Chain of Ponds Hotel (against a criterion of 133dBL). This was reported to the then Department of Planning with a response on 2 August 2010 that no further action required to be taken	No further action required.
5.	Schedule 3, Condition 9: one blast was recorded outside of approved blast hours on 28 August 2009, however this blast was due to safety issues. An incident report was provided to EPA (then Department of Environment, Climate Change and Water); It is recommended that on the next modification of the Development Consent this condition be amended to include '(except where there is a public safety risk)' or similar.	Deemed not required. LCO was of the view that this blasting was a rare event and not a business risk. Additional flexibility provided by greater blast frequency approved under DA 305-11-01 (MOD 5) conditions.
6.	Schedule 3, Condition 21: Two overflow events occurred on 12 December 2011 and 2 March 2012 from the Liddell sediment dams into nearby watercourses, both of which were self-reported to EPA.	No further action required.

Ref	Recommendation	LCO Status / Response
7.	Schedule 3, Condition 21(a – b): Faecal coliforms were not measured as required in Table 11. Monthly monitoring of the water quality within the Raw Water Transfer Void was conducted as advised by Ben de Somer however values were subject to external sources. An independent report was provided by Gauge Consultants which provides a scientific explanation for the monthly monitoring of <i>E.coli</i> rather than faecal coliforms at the discharge point which commenced in 2011. An amendment to this condition should be sought when the consent is next modified.	Review included in LCO documents prepared for DA 305-11-01 (MOD 5). EPA approved relevant limits under the condition.
8.	Schedule 3, Condition 39: No approval from the MSC and SC in regards to the Traffic Management Plan.	DP&E provided approval on 5 March 2014 that the condition does not need to be assessed in future audits.
9.	Schedule 3, Condition 47(e): LCO AEMRs do not report waste volumes and minimisation strategies undertaken on site are not clearly identified. It is recommended in the next AEMR waste produced by LCO operations be included.	Waste generation volumes included in audit period AEMRS (2012 – 2014).
Other Licences and Approvals		
10.	EPL 2094 Condition P1.3: Faecal coliforms have not been monitored prior to discharge. Viewed report by Gauge environmental dated 20 July 2012 explaining that <i>E. coli</i> is more representative of water quality which was subject to monthly monitoring at the wastewater treatment discharge point.	EPL 2094 variation submitted on 24 June 2013 to address the recommendation.
11.	EPL 2094 Condition L2: Faecal coliforms have not been monitored. <i>E. coli</i> was monitored in water quality testing at the discharge point.	EPL 2094 variation submitted on 24 June 2013 to address the recommendation.
12.	EPL 2094 Condition L4: Blast event dated 28 August 2009 occurred outside approved operating hours	No further action required.
13.	EPL 2094 Condition L4.2: A blast event on 9 July 2010 recorded 138 dBL which exceeded the site specific overpressure criteria of 133 dB(L). This was reported to DP&I with no further action taken	No further action required.
14.	EPL 2094 Condition L2: Faecal coliforms have not been monitored. <i>E. coli</i> was monitored in water quality testing at the discharge point.	EPL 2094 variation submitted on 24 June 2013 to address the recommendation.
15.	Consent to Destroy #2896: final report on salvage works has not been submitted to OEH.	Salvage report completed and submitted to OEH and RAPs by LCO on 4 December 2013.

General Recommendations		
16.	Management plans should be updated compliant with commitments made within each of the Management Plans which is every 3 years (i.e. generally 2011). These revisions should be made to reflect modifications to mining operations including extensions to the mining footprint and the shift of from contract to a company focused operation, as required.	During the audit period the Environmental Management Strategy (EMS), Environmental Monitoring Plan (EMP) and Land Management Plan were updated and sent to DP&I (now DP&E) for review and approval on 18 January 2013.
17.	Water Management Plan is reviewed to incorporate current regulatory and community expectations in relation to water licencing and accounting of annual water take.	The Water Management Plan was revised as recommended and submitted to DP&I (now DP&E) on 28 March 2013.
18.	During the next review of the Air Quality Monitoring Program include the recently installed TEOMs with an explanation of the specific conditions (or trigger levels) where a modification to mining activities will be required. These measures will need to be consistent between all relevant documents.	The Air Quality Management Plan was revised as recommended and submitted to DP&I (now DP&E) on 18 January 2013.
19.	During the next review of the Noise Monitoring Program include the existing Real Time Noise Monitoring units with an explanation of the specific conditions (or trigger levels) where a modification to mining activities will be required. These measures will need to be consistent between all relevant documents.	The Noise Monitoring Program was revised as recommended and submitted to DP&I (now DP&E) on 18 January 2013.
20.	The Energy Savings Action Plan (ESAP) should be revised as originally proposed to demonstrate current operating conditions at Liddell enabling continual improvement in reducing Liddell's Greenhouse gas emissions.	DP&E email dated 19 December 2012 confirms the revised ESAP is not required until next Modification. The DA 305-11-01 (MOD 5) conditions do not require LCO to implement an ESAP.
21.	Environmental incidents which occur at Liddell and are non-reportable need to be included within each consequent AEMRs following this audit.	Audit period AEMRS (2012 – 2014) include recommended environmental incidents summary sections.
22.	Formalise the mine's intentions in regard to establish connecting bushland corridors. Slashing efforts in the Reservoir Block and Lakeside Drive sites should be focused on proposed tree corridors in order to encourage more rapid tree growth where tube stock are intended to be planted.	Updated LCO rehabilitation strategy targeting greater habitat connectivity and woodland corridors was included in the supporting documents to DA 305-11-01 (MOD 5).
23.	The Completion Criteria in the feedback monitoring process which were provided needs to be refined and integrated into the existing rehabilitation monitoring programs.	Recommended changes incorporated into the rehabilitation monitoring process.
24.	A more systematic clarification of limiting soil characteristics such as pH, EC and ESP across Liddell would be beneficial and will help relate vegetation performance on new areas to soil parameters.	LCO commissioned contractor to complete soil characterisation program in 2013, with further testing programs undertaken as required.

25.	Improvements to the waterside habitat in Reservoir Block can be made through the placement of large logs around the perimeter of water storages. Along with tree plantings, this would greatly enhance the habitat value of the Blue- billed duck and other dams.	Resourcing for dam habitat improvements included in the LCO budget for 2014. Water side habitat improvements were also viewed during the site inspection.
26.	Add two new weed species (African olive and Acacia saligna) to the spraying program in addition to the species already being sprayed.	Both species added to the LCO weeds register and annual management program in 2013.
27.	Removal of existing rocks, erosion control in the Reservoir Block.	LCO contractors removed excessively large rocks from the Reservoir Block and planted shade trees in 2013.
28.	Investigate application of aerial fertilisation (or similar) program to improve rehabilitation efforts.	LCO reviewed aerial seeding potential in 2013. Review determined that aerial seeding was not generally appropriate for Liddell as most dumps were temporary at the time of review. Some aerial seeding was undertaken in June 2014 for select areas of the Reservoir Block, Durham and Mountain Block rehabilitation.
29.	Update the Spontaneous Combustion Management Plan (SCMP) Risk Assessment.	LCO HSEC Committee reviewed SCMP and associated procedures on 26 June 2013.
30.	The SCMP would also benefit from having a clear policy statement; the plan currently indicates its purpose only.	LCO is subject to Xstrata SD Policies, which stipulates the principles and intentions for overall SD performance. Procedures (such as the SCMP) are developed for a specific purpose / issue under the policy framework.
31.	Undertake a trial in consultation with DRE and Macquarie Generation (subject to relevant approvals, as required) to source fly ash product from the neighbouring Power Station(s) to cover burnt areas.	Fly ash trial not undertaken. Instead, LCO reviewed and updated control procedures in March 2013 to mitigate the potential for spontaneous combustion to occur (by de-watering old underground workings as soon as possible in advance of open cut mining).
32.	Consider recommendations in Table A (Appendix C) and Table B (Appendix D) of the 2012 audit and implement where reasonable and feasible as summarised below: <ul style="list-style-type: none"> Schedule 3 Condition 1 - When weather conditions during noise monitoring are not appropriate, consistent with best practice, undertake monitoring again as soon as practical to confirm compliance (see Schedule 3, Condition 6). 	LCO NMP updated 18 January 2013 to include recommended revision.
33.	<ul style="list-style-type: none"> Schedule 3 Condition 10 - Ensure consistency between all published monitoring data as reported in AEMRs and on the internet (if updated at later date). 	LCO prepared LCO SD FRM 0097 to ensure blast data is verified prior to upload to the website.

34.	<ul style="list-style-type: none"> Schedule 3 Condition 16 - LCO should distinguish within the AEMR which dust gauges are on mine owned land (for internal management purposes only) and those that are on privately owned properties or representative of privately owned properties (for compliance monitoring). 	Discussion of dust gauges included in audit period AEMRS (2012 – 2014).
35.	<ul style="list-style-type: none"> Schedule 3 Condition 21a - During the next modification to development consent, that adequate assessment is conducted by appropriately qualified specialists to amend the wastewater monitoring limit to the most appropriate parameter and limit in consultation with OEH. 	Review included in LCO documents prepared for DA 305-11-01 (MOD 5). EPA approved relevant limits under the condition.
36.	<ul style="list-style-type: none"> Schedule 3 Condition 23 - The Water Management Plan is revised by early 2013. 	Revised Water Management Plan submitted to DP&I (now DP&E) on 28 March 2013.
37.	<ul style="list-style-type: none"> Schedule 3 Condition 27 - Ground Water Management Plan is revised by early 2013. 	Revised Water Management Plan submitted to DP&I (now DP&E) on 28 March 2013.
38.	<ul style="list-style-type: none"> Schedule 3 Condition 27 - Recommended that monitoring information detailing regional groundwater levels be reported in the AEMR 	Waste generation volumes included in audit period AEMRS (2012 – 2014).
39.	<ul style="list-style-type: none"> Schedule 3 Condition 37 – Amend this condition to reflect current conditions during the next modification. 	Not required; archival recording completed by LCO as required.
40.	<ul style="list-style-type: none"> Schedule 3 Condition 39 – It is recommended that an approval from DP&I is sought that this condition is satisfied and can be shown as compliant and not further assessed. 	DP&E provided approval on 5 March 2014 that the condition does not need to be assessed in future audits.
41.	<ul style="list-style-type: none"> Schedule 3 Condition 42 – It is recommended that amounts exactly to the 2 decimal places are reported in the AEMR in relation to coal production so that is able to be confirmed that the approved methods are being met. 	Recommended ROM and product coal volumes included in audit period AEMRS (2012 – 2014).
42.	<ul style="list-style-type: none"> Schedule 3 Condition 47 – Include within in the next AEMR volumes of waste generated on site and clearly present waste minimisation methods. 	Waste generation volumes included in audit period AEMRS (2012 – 2014).
43.	<ul style="list-style-type: none"> Schedule 5 – Condition 1 - Update of the EMS as required to reflect management and procedural changes since 2008. 	EMS updated and sent to DP&I (now DP&E) for review and approval on 18 January 2013.
44.	<ul style="list-style-type: none"> Schedule 5 Condition 7 - New members for the CCC be attempted to be sought . 	Additional CCC representative appointed and approved by DP&I (now DP&E) on 24/1/13.
45.	<ul style="list-style-type: none"> Statement of Commitments 1.12 - The Landscape Management Plan was to be reviewed every three years or following any modification to DA 305-11-01. 	LMP updated and sent to DP&I (now DP&E) for review and approval on 18 January 2013.

3 NON-COMPLIANCES AGAINST APPROVALS & LICENCES

This section provides a discussion on the identified non-compliances and status against DA 305-11-01 and other licences approvals available for review at the time of the audit.

Table A of **Appendix E** provides a complete tabulated list of conditions of DA 305-11-01 (MOD 5), noting the compliance status and providing comments against each. Non-compliances identified against the conditions of DA 305-11-01 (MOD 4) which were applicable from the start of the audit period (1 July 2012) through to the approval of DA 305-11-01 (MOD 5) on the 2 December 2014 are also outlined below.

Table B in **Appendix E** provides a list of the other licences and approvals assessed as part of this audit, with the compliance status and comments against each.

Table C in **Appendix E** provides a list of the management commitments included in approved LCO management plans, with notes against the compliance status of each.

A summary of the identified non-compliances against each document is summarised below in **Table 6**. This includes the non-compliances identified in the review of LCO rehabilitation and mine closure-related approval conditions and management performance undertaken by LAMAC (2016), which is included in full as **Appendix F**. Included in **Table 6** is a ranking of the non-compliances risk levels in accordance with the requirements outlined in Table 2 of the Audit Guidelines. Further context around the identified non-compliances is included in **Appendix E**, with any recommendations arising from the non-compliances included in **Section 6**, if required.

Table 6
Non-Compliances Identified

Ref	Non-Compliance	Risk Level
DA 305-11-01 (MOD 5)		
Schedule 3, Condition 1	Exceedance of Project Specific Noise Impact Criteria during attended noise monitoring completed on 4 September 2014.	Low
Schedule 3, Condition 4	Exceedances of agreed blast overpressure criteria for the COPI heritage site on 11 July 2013, 11 April 2014 and 28 April 2014.	Low
Schedule 3, Condition 5	Exceedances of agreed blast overpressure criteria for the COPI heritage site on 11 July 2013, 11 April 2014 and 28 April 2014.	Low
Schedule 3, Condition 11	Minor flyrock damage to Ausgrid powerline insulator on 28 September 2015.	Low
Schedule 3, Condition 11 and 18	Fume generated by a blast at Liddell on 4 September 2013 crossed over the LCO DA Boundary over the Old New England Highway towards mine owned land on Bayswater Creek	Low
Schedule 3, Condition 21A	Discharge from a breached containment windrow on 24 August 2015 to Bayswater Creek following a significant rainfall event.	Medium
Schedule 3, Condition 21A	EPA raised the issue of a non-compliant transfer of credits between Mangoola and LCO on 23 August 2012.	Administrative

Ref	Non-Compliance	Risk Level
Schedule 3, Condition 23(c,i)	Site Water Balance not calibrated during the 2015 calendar year, as required.	Administrative
Schedule 3, Condition 35	LCO bioremediation area observed as not being maintained fully in accordance with the relevant procedure during the site inspection (see Section 5.1).	Low
Schedule 3, Condition 39(e)	45 ha of rehabilitation was completed by LCO in 2015, which did not meet MOP commitment of 61.9 ha for 2015.	Low
DA 20/2008 & ST 18/2008 (SC Sewerage Management System Approval)		
Condition 3	Monitoring results reported to SC on 9/11/15, outside of 7 days of monitoring as required under the approval condition.	Administrative
Condition 6	Monitoring results for free residual chlorine fell outside of the standard range included in the approval.	Low
EPL 2094		
Condition L1, 1.1	Discharge from a breached containment windrow on 24/08/15 to Bayswater Creek following a significant rainfall event.	Medium
Condition L2, 2.1	Exceedance of e. coli criteria at Monitoring Point 5 (Dam 13) from July 2012 – April 2013.	Low
Condition L4, 4.6	Fume generated by a blast at Liddell on 4 September 2013 crossed over the LCO DA Boundary over the Old New England Highway towards mine owned land on Bayswater Creek.	Low
Condition M2, M2.1, 2.3	PM ₁₀ data not measured at Monitoring Point 1 on 30/09/13.	Administrative
Condition M4, M4.1	LCO meteorological monitoring site did not record required data over the period 18/03/15 – 25/03/15.	Administrative
Condition M9, M9.1	Monitoring Point 2 not communicating required data to the “Service provider” as required on 16 – 17/07/12.	Administrative
Condition E2, E2.1 – E2.2	EPA raised the issue of a non-compliant transfer of credits between Mangoola and LCO on 23 August 2012.	Administrative
Aboriginal Heritage Impact Permit (AHIP No. 0000623)		
Condition 18	LCO did not comply with the requirement to notify OEH by written notice at least seven days prior to commencement of an action under the AHIP (salvage works undertaken in 2015).	Administrative
Condition 20	A copy of the AHIP was provided to all LCO Registered Aboriginal Parties outside of the required 14 day notification period.	Administrative
MINING LEASE 1597		
Condition 19	Minor flyrock damage to Ausgrid powerline insulator on 28 September 2015.	Low
20BL172588 (Middle Liddell Bore)		
Condition 12	LCO did not commission an expert independent review within the five yearly timeframe required under the condition.	Administrative

Ref	Non-Compliance	Risk Level
MANAGEMENT PLANS		
MOP Section 3.4.3	MOP commitment to place 100mm of topsoil on all rehabilitation areas, while OGM top-dressed overburden is used in some rehabilitation.	Administrative
MOP Section 3.4.3	A local native seed collection program has not been implemented by LCO, which is inconsistent with the MOP.	Administrative
Water Management Plan Section 7.5	Initial model calibration of the LCO Site Water Balance was not completed by the end of 2015.	Administrative

4 MANAGEMENT PLANS, PROGRAMS AND STRATEGIES

The approvals for LCO require preparation and implementation of a series of management plans and procedures.

All currently approved management plans and associated procedures developed for LCO in accordance with the requirements of DA 305-11-01 (MOD 5) were reviewed during this Audit. Selected documents required under DA 305-11-01 (MOD 4) were also reviewed where they were relevant to activities undertaken during the audit period.

LCO documents reviewed included the following:

- Environmental Management Strategy;
- Blast Management Plan;
- Blast Management Strategy – Chain of Ponds Inn;
- Water Management Plan;
- Biodiversity Management Plan;
- Biodiversity Offset Management Plan;
- Aboriginal Cultural Heritage Management Plan;
- Air Quality Management and Monitoring Plan;
- Mining Operations Plan (MOP) for 2015 – 2022; and
- Rehabilitation Management Plan (DA 305-11-01 requirements included in the approved LCO MOP for 2015 – 2022).

The status of each plan against the development consent requirements is provided in **Table A of Appendix E**, while a detailed review against the key commitments in each plan is provided in **Table C of Appendix E**.

Identified non-compliances are discussed in **Section 3** with any recommendations in relation to each included in **Section 6**.

5 ENVIRONMENTAL MANAGEMENT & MITIGATION EFFECTIVENESS

This section provides a general review of environmental management and mitigation effectiveness at the site. It provides a discussion on the key issues based on the findings of the documentation review and site visit including general environmental management, rehabilitation and mine closure, air quality and noise management, tailings and water management, complaints and incidents summary and environmental monitoring.

5.1 MINING & SITE INFRASTRUCTURE AREAS

The site inspection component of the audit was conducted on 3 February 2016. BD was the main LCO representative present, with other personnel interviewed as relevant to specific areas of the site. The inspections involved a walk-around the administration, workshop and hardstand areas, followed by a drive to various areas around the site operational areas including the Liddell CHPP, main mining areas, water management system and environmental monitoring network.

During the site inspection, the LCO office complex, stores and workshop area were found to be well maintained, with all areas managed to a high standard. During the inspection of the workshop and maintenance area a number of hydrocarbon management measures were being implemented effectively, with spill and containment kits available for use as required (see Plate 1 – 2 of **Appendix G**). Fuel storage areas and fill points adjacent to the LCO workshop were appropriately bunded and maintained, with sumps and drains in a good condition at the time of the site inspection (see Plate 3 - 4 of **Appendix G**).

The status of the vehicle wash-down bays on site were also reviewed during the site inspection. The review confirmed that the wash-down areas were appropriately maintained, with water sumps and oil skimmers operating effectively at the time of audit (see Plate 5 of **Appendix G**).

Segregation of waste was also observed to be well managed and implemented across the site, including for the bulk waste storage areas adjacent to the workshop. The achievement of a waste recycling rate of approximately 92% in 2015 demonstrates leading environmental performance in this area and confirms that waste management and minimisation procedures are being followed by LCO employees and contractors.

As part of the workshop and maintenance area inspection, Andrew Davey (LCO Maintenance Superintendent) gave an overview of the procedures for management of maintenance tasks that related to environmental management. The regular review and maintenance of these areas were clearly allocated to specific LCO employees and contractors on (at least) a daily basis, with evidence of corrective actions or required works (for example spill clean-up or waste removal) documented and followed up by LCO personnel.

Minimal dust emissions were observed from drills and mobile equipment during the inspection of active mining areas, with water carts observed to be in operation in the pit and around the workshop hardstand (see Plates 6 - 7 of **Appendix G**).

Operators were seen to be driving to conditions in order to minimise wheel-generated dust emissions and the regular active management of haul road dust by LCO Mining Supervisors and operators was confirmed during the site component of the audit. Athol Searle (LCO Mining Supervisor) was also interviewed during the audit period and discussed the dust and noise management procedures implemented at LCO and the operational changes that could be made under the LCO Dust Trigger Action Response Plan (TARP) in order to minimise the potential for amenity impacts to neighbouring areas from excessive dust generation.

During the inspection of the Liddell CHPP and stockpiles (see Plate 8 of **Appendix G**), it was observed that the facility was also well maintained. The ROM road containment windrow that had been breached during a significant rainfall event in August 2015 (see **Section 3**) was inspected and the completion of remediation works confirmed. BD (pers comm) confirmed that spray units are in place for all coal stockpile areas and sprays were seen to be operating on stockpile conveyors during the inspection.

BD (pers comm) confirmed that LCO implemented a bioremediation area in late 2014, which was reviewed during the field inspection. The inspection found that the site was not being adequately dewatered and maintained in accordance with the internal LCO Waste Management Bioremediation Area procedure (LCO SD PRO 0079), as shown on Plate 9 of **Appendix G**.

As shown in Plate 9 of **Appendix G**, the bioremediation cells and leachate sump were not being maintained in accordance with the requirements of the Waste Management Bioremediation Area procedure (refer to Figure 1 of the procedure) with the water level in the leachate sump well above the operating height.

While there had been significant rainfall recorded in the weeks prior to the audit, inspection and maintenance frequency, remediation actions and responsibility for the bioremediation area should be reviewed to ensure that the site and emplaced materials are adequately maintained.

5.2 REHABILITATION & OFFSETS

5.2.1 Site Rehabilitation

In general, the review of progressive rehabilitation completed by Hansen Bailey and LAMAC found that the standard of rehabilitation completed by LCO to date was high (see Plates 10 – 11 of **Appendix G**), with internal procedures in place to ensure that adequate forward planning and resourcing is carried out evident at the time of audit.

This included the transition toward clearly defined woodland biodiversity corridors and the establishment of the biodiversity offsets provided by LCO under DA 305-11-01 (MOD 5). To support the additional areas of woodland rehabilitation now targeted for the final landform at

Liddell, LCO were in the planning stages of developing trials at the time of audit that could be used to assess the best methodology for establishing new woodland rehabilitation and converting existing pasture rehabilitation to woodland. Other rehabilitation trials underway included the use of Organic Growth Medium and cattle grazing in selected rehabilitation areas of the site.

Topsoil stockpiles and temporary rehabilitation areas observed during the audit were well maintained and managed, with several examples of leading practice noted by LAMAC (see **Appendix F**). The systematic and relatively large scale recovery and placement of habitat resources such as hollow bearing trees, logs and woody debris and large rocks on rehabilitation areas, augmented by the strategic installation of nest boxes was also observed in the audit field inspections.

A review of current layout of open cut operations found that the extent and progression of mining was generally consistent with conceptual mine plans in the relevant LCO EIS and MOP documents during the period 2012 - 2014. BD (pers comm) confirmed that in 2015, rehabilitation completed (45.5 ha) did not meet the MOP target area for the year (~ 62 ha) due to a lowering of the site production profile in Q1 2015, delays encountered during the approval of DA 305-11-01 (MOD 5) and significant rainfall during November & December 2015 (see **Section 3**). This inconsistency was reported to DRE in December 2015 and BD (pers comm) confirmed that it would also be included in the Annual Review to be completed for 2015.

In reviewing the progression of the site towards the conceptual final landform, LAMAC noted that the RL 195 emplacement appeared to have a very level top profile. This potential issue had been identified by LCO prior to the audit and LAMAC note that the remedial actions proposed will lead to better integration of the final landform with surrounding areas of natural landscape (see **Appendix F**).

The remediation of the Mountain Block area is also an ongoing risk of failure due to the potential for instability and erosion. This risk is acknowledged by LCO and a comprehensive remedial strategy approved by DRE under the LCO MOP was being worked through during the audit period.

5.2.2 Biodiversity Offsets

The management of LCO offsets is described in the approved BOMP and includes the Mountain Block (166 ha) and Bowmans Creek Riparian Corridor (182 ha) offset areas. At the time of the audit, LCO was continuing a process of consultation with state and commonwealth regulatory agencies to determine a suitable mechanism to secure the biodiversity offsets approved under DA 305-11-01 (MOD 5) (see **Appendix E**).

During the site component of the audit, the habitat enhancement measures implemented for waterbird habitat were reviewed. This review confirmed that dam design, habitat resources and vegetation plantings were in place as required, with the sites fenced off and signposted

to prevent unauthorised access (see Plate 12 - 13 of **Appendix G**). The presence of a number of waterbird species on the habitat dams was observed on the site inspection.

5.3 AIR QUALITY AND NOISE CONTROLS

Effective dust management at LCO and in the Upper Hunter Valley more generally presents an ongoing challenge. In this regard during the audit period DP&E issued LCO with a warning following elevated dust levels being observed by DP&E officers on two days in August 2015. LCO responded to the incidents by holding a series of toolbox talks with all crews focussing on dust management and TARP actions commencing on 6 August 2015.

The audit inspection of the mining areas and overburden emplacement areas demonstrated that emissions of visible dust are being minimised with water carts in operation at the time of audit site inspection. Site infrastructure around the Liddell CHPP and conveyors also includes components to minimise potential air quality and noise impacts.

LCO has implemented TARPs for air quality and noise impacts to guide operational responses to elevated impacts. Documentation reviews of completed Mining Supervisor Shift Inspection Reports, Dust Management Inspection Forms and Noise Mitigation Record Forms confirmed examples of management actions put in place during the audit period. Interviews with LCO personnel also confirmed that the TARPs continue to be used as a tool to guide operations and determine responses required. Daily meteorological forecasts are used to provide a summary risk profile, and TARP actions are informed by visual monitoring in the field and notifications derived from triggers generated from the LCO real-time monitoring network. All trigger level notifications are provided to LCO Environment & Community staff as well as Production personnel.

5.4 WATER MANAGEMENT

Water resources at LCO are managed through the Integrated Water Management System (IWMS). The IWMS includes several components that allows for the management of groundwater, surface water, the mine water system (including water stored in the historic underground mine workings on site) and tailings. Water used on site is either sourced from surface water intercept, water in the old underground workings, tailings decant, or neighbouring Glencore operations.

5.4.1 Water Licences

LCO hold a number of water licences as required under the *Water Act 1912* and *Water Management Act 2000* as provided in Table 2.4 (Groundwater) and Table 2.5 (Surface Water) of the approved WMP.

Of these licences, only 20BL172293 (Bore M49) and 20BL172588 (Middle Liddell Bore) are used for the specific purpose of extracting water for use as part of site operations. Accordingly, a detailed review was been undertaken against each of the conditions of these licences and is provided in **Appendix E**. This found that during the audit period, LCO have been well within the required allocations under these licences and that annual reporting has

been completed as required and included in the AEMRs for 2012 - 2014. One non-compliance against the conditions of the Middle Liddell Bore licence was identified. This was against Condition 12 where the required water licence audit was not completed within the five year period required. It is recommended that LCO address this issue with DPI-Water and seek to undertake the required audit as soon as possible.

The remaining bore licences for the site (provided within Table 2.4 of the WMP) cover the predicted groundwater take from the hard rock (coal measures) aquifer as required. With regard to surface water there has been no extraction against any of the Water Access Licences (four aquifer and one Hunter River) as contained in Table 2.5 of the WMP during the audit period (BD, pers comm). These licences are held as required to account for future take (unregulated surface flows and aquifer interference) that has been predicted as part of the Liddell EIS for DA 305-11-01 (MOD 5). During the audit, BD also confirmed that LCO are not at the point in mining where the aquifer take predicted under DA 305-11-01 (MOD 5) has started. The licences have been obtained in advance of this occurring and future monitoring and modelling will be undertaken by LCO as required by the WMP to track and confirm this.

LCO reported annually on the status of all water licences (WALs and bores) and water taken under them in the audit period AEMRs (2012 – 2014).

5.4.2 Water Management Infrastructure

All surface water management structures, dams, sumps and pipelines viewed during the site inspection were well maintained despite significant rainfall received in the weeks prior to the audit, with adequate pumping infrastructure in place to minimise any potential for discharge of water within or from the site.

As discussed in **Section 5.1** the ROM road containment windrow that had been breached in August 2015 was inspected and the completion of remediation works was confirmed by HB.

Hansen Bailey reviewed the LCO inspection reporting and monitoring data gathered from the major water management structures on site, including for the sewage treatment plants approved by SC and MSC (see **Appendix E**). While a water balance model calibration review had been commissioned in 2015 by LCO, it had not been completed as required under DA 305-11-01 (MOD 5) (see **Appendix E**).

At the time of auditing, the WMP was under review by regulatory agencies following an update to the plan to refine groundwater monitoring trigger level values. LCO were also in the process of relocating the existing EPL 2094 discharge point (see Plate 14 of **Appendix G**) to a new location.

BD (pers comm) confirmed that the new location would continue to discharge waters from site to Bayswater Creek under the existing HRSTS approval provisions.

5.5 TAILINGS MANAGEMENT

The ongoing tailings management strategy for LCO is described in the approved MOP and WMP. During the site component of the audit, the main tailings storage dams on site were

inspected. LCO staff are aware of the historic issues associated with the existing Antienne tailings dam and are in consultation with DRE regarding options to recover the area so that it can meet the final landform design objectives.

During the audit period, LCO did not extract or transport any tailings from site as approved under DA 305-11-01. However, at the time of the audit, a Modification application was being prepared to allow the construction of a pipeline and ancillary infrastructure to allow tailings to be sent to the West Pit Void at the Ravensworth East site.

5.6 VISUAL & LIGHTING IMPACTS

The site component of the audit found that site infrastructure areas including the LCO site offices, workshop, CHPP and coal stockpile areas had lighting plant installed to minimise offsite impacts, particularly where there was potential for direct night-lighting impacts to external areas such as the New England Highway. The placement of lighting plant in active dumps and mining areas during night-time operations also considered the potential for offsite impacts to surrounding private residences (LB, pers comm) as per the LCO Lighting Management Procedure (LCO PRO SD 0020). Regular reviews of lighting performance are also undertaken in accordance with DA 305-11-01 (MOD 5) and AS4282 (INT) 1995 requirements (LB, pers comm). As required by Schedule 3, Condition 34 of DA 305-11-01 (MOD 5), a lighting audit against AS4282 (INT) 1995 was completed in June 2015 by EMM (see **Appendix E**).

During the site inspection, Hansen Bailey reviewed the tree plantings established on the visual bund that were put in place as required under DA 305-11-01 (MOD 5) to minimise visual and lighting impacts to motorists on the New England Highway (see Plate 15 of **Appendix G**). It is recommended that LCO continue to support the development of these plantings to ensure that an adequate screen is established on the bund.

5.7 HERITAGE IMPACTS

5.7.1 Aboriginal Heritage

The management of Aboriginal archaeology and cultural heritage on site is detailed in the approved ACHMP (LCO, 2015). Following the approval of DA 305-11-01 (MOD 5), LCO completed a salvage program in 2015 of all Aboriginal artefacts identified in 'Group 2' of the ACHMP and approved under Aboriginal Heritage Impact Permit #c0000623 by OEH. The results of the 2015 salvage are documented in the *Archaeological Salvage, Liddell Coal Operations Development Modification 5* (OzArk, 2015). With completion of the salvage program in 2015, it is recommended that any residual fencing and signage of Aboriginal heritage sites that have been collected is removed to minimise any future uncertainty in this regard.

At the time of audit, contractors were in the process of fencing the boundary of the LID-BC-SAL area as identified in the ACHMP to prevent site access by livestock and unauthorised personnel (see Plate 16 of **Appendix G**).

To support the ACHMP and minimise the potential for unintentional impacts to extant Aboriginal heritage, a component of the LCO Ground Disturbance Permit signoff process includes a requirement to review the location proposed works against known sites (see **Appendix E**). LB provided a summary of the Aboriginal heritage sites register maintained by LCO at the time of the audit, which included a GIS component that maps all known sites. As a further measure, obligations and regulatory requirements for Aboriginal archaeology and cultural heritage issues are also included in the induction and training packages provided to all LCO staff and contractors.

LB confirmed that all Aboriginal artefacts salvaged to date are held by LCO Environment & Community personnel while a long term management strategies for care and control are finalised in consultation with Liddell RAPs and OEH. Artefacts collected during the 2015 program are being stored in the LCO Environment department and were viewed at the time of audit.

5.7.2 Non-Aboriginal Heritage

The key item of Non-Aboriginal heritage requiring monitoring and management by LCO is the Chain of Ponds Inn (COPI), located on Coal & Allied owned land to the south of the site on the Old New England Highway (see Plate 17 of **Appendix G**). DA 305-11-01 (MOD5) requires that LCO has a program of management in place under the *Blast Management Strategy – Chain of Ponds Inn*. LCO prepared the document as required, with approval from DP&E granted in May 2015. The strategy provides a program for the progressive assessment and management of blast overpressure and vibration impacts to the COPI structure from LCO operations.

During the audit period, LCO was progressing through the staged management approach, with the objective of exposing the COPI structures to increasing blast vibration impacts over time, based on verified monitoring results and a program of structural inspections completed by qualified structural and conservation engineers. A review of the COPI Dilapidation Study (EJE Heritage) and Inspection Reports (Bill Jordan & Associates) commissioned by LCO during 2015 confirmed that the integrity and condition of the site was being documented against baseline condition, as required.

5.8 COMPLAINTS

Twelve community complaints have been received by LCO during the audit period, including nine in 2012 and three in 2013; the majority of the complaints were in relation to noise, blasting and dust impacts. No complaints had been made regarding LCO operations since the end of May 2013.

A summary of community complaints received during the audit period is maintained on the LCO website, along with a 24 hour complaints and enquiries line where concerns regarding site operations can be raised. The details for this contact line are regularly advertised in local newspapers and on the LCO website. A summary of community complaints is also included in the audit period AEMR documents.

A review of community complaints response procedures confirmed that all complaints received during the audit period were adequately investigated and response actions documented, where required.

It is noted that the absence of any community complaints since May 2013 provides an indication that environmental management systems and procedures in place are working well and that LCO are effectively managing their operations to reduce environmental and community impacts.

5.9 INCIDENTS

A review of the LCO internal incidents register for the audit period since the previous audit indicated that the majority were classified as minor (Categories 0 – 2 incidents resulting in zero to minor impacts / reversible environmental harm). All incidents are documented in the site register, with responses undertaken for remediation or to minimise potential of similar events occurring in the future. Following the approval of DA 305-11-01 (MOD 5), which included an 'Incident Reporting' condition under Schedule 5, all reportable environmental incidents were communicated to regulatory agencies as required. During the audit period, there were eleven reportable incidents at LCO (see Schedule 5, Condition 11, **Appendix E**).

A summary of incidents was also included in the audit period AEMRs (2012 – 2014).

5.10 ENVIRONMENTAL TRAINING AND DOCUMENT MANAGEMENT

A review of LCO document management procedures and examples of environmental training provided to employees and contractors was completed during the audit. As part of this review, HB also interviewed Tiffany Hunt, LCO Training Officer (TH) during the site component of the audit. TH (pers comm) described the training program in place on site and confirmed that a Training Needs Analysis register is maintained for all LCO personnel / contractors and environment and community aspects are required to be re-visited at least annually (being classified as a 'Critical Control' issue in 2015). LCO also set up an E-Learning program in 2015 that is available to employees and contractors at all times.

BD and TH (pers comm) also noted that regular updates are also provided via toolbox talks and in regular crew / team meetings. These are supported by the responsibilities for supervisors, managers and other technical staff, who are required to demonstrate leadership and review site performance through interactions, internal audits, etc.

It was observed during the audit that document control at LCO with regard to environmental compliance management was of a very high standard with the CMO compliance management system effectively implemented and used by the Environment & Community Department and others across the site.

Further, based on a review of site documentation and correspondence records, it was noted that LCO take a proactive approach to their communications with all key regulatory agencies by keeping them well informed of site performance and in addressing any issues raised in a timely manner.

6 AUDIT RECOMMENDATIONS

Table 7 includes a list of required actions arising from each of the non-compliances from this Audit, along with recommendations related to continuous improvement opportunities identified.

In accordance with the Audit Guidelines, **Table 7** also provides a risk assessment level to assist LCO staff in responding to each recommendation.

Table 7
Audit Recommendations

Ref	Description	Risk Level
DA 305-11-01		
Non-Compliances		
Schedule 3, Condition 23(ci)	Complete the calibration of the Site Water Balance as soon as possible in 2016 (also included as a commitment in Section 7.5 of the WMP).	Administrative
Recommendations		
Schedule 3, Condition 34	Continue to support the development of the plantings on the Old New England Highway bund to ensure that an adequate visual screen is established.	Low
Schedule 3, Condition 37	Commission a visual impact specialist to review the performance of the measures to enhance the natural appearance of the RL 195 emplacement area to ensure integration with surrounding natural landforms.	Low
Schedule 3, Condition 37	Attempt to obtain greater clarification from DP&E and DRE as to their expectations regarding landform integration.	Low
MINING OPERATIONS PLAN		
MOP Section 3.4.3	Amend Section 3.4.3 of the MOP at the next variation to describe the use of OGM top-dressed overburden in some rehabilitation areas.	Administrative
MOP Section 3.4.3	Amend MOP Section 3.4.3 to ensure the commitment that "LCO propose to re-spread 100 mm of topsoil on all rehabilitation areas", is subject to the LCO Soil Distribution Plan.	Administrative
MOP Section 3.4.3	Amend Section 3.4.3 of the MOP at the next variation to describe the current process used by LCO to source local native seed for use in site rehabilitation.	Administrative
MOP Section 7.3.4	Amend MOP Section 7.3.4 at the next variation to provide clarity regarding the source of seed used in LCO rehabilitation.	Administrative
MOP Section 9.2	Assess the ecological and rehabilitation monitoring results against the relevant rehabilitation completion criteria in future Annual Reviews. If required, monitoring results should trigger a management response as described in the MOP TARP. LCO should ensure that there is a clear decision making pathway between monitoring results, completion criteria, the TARP and resulting management measures.	Low

Ref	Description	Risk Level
MOP Appendix F	Continue with investigations under the Mountain Block Remedial Strategy, as outlined in the 2015 MOP, Appendix F.	Medium
MOP (general)	In future MOPs or MOP amendments, consider linking rehabilitation commitments with milestones other than calendar years, such as production or disturbance progress, to ensure rehabilitation commitments match operational progress. Rehabilitation commitments would then reflect fluctuations in operational tempo.	Administrative
DA 20/2008 & ST 18/2008 (SC Sewerage Management System Approval)		
Condition 3	Review contractor reporting procedures to confirm monitoring results are provided to SC within 7 days of testing as required under the approval condition.	Administrative
20BL172588 Middle Liddell Bore		
Condition 12	The water licence audit was not completed within the five year period required under Condition 12. It is recommended that LCO address this issue with DPI-Water and seek to undertake the required audit as soon as possible in 2016.	Administrative
OTHER RECOMMENDATIONS		
Biodiversity Management Plan Section 6	Recommend updating Section 6 of the plan at the next revision to include options for weed control in advance of topsoil stripping in addition to just spraying to align with practices being undertaken.	Administrative
LCO SD PRO 0079	Review remediation actions and responsibility for the bioremediation area to ensure that the site and emplaced materials are adequately maintained.	Low
Aboriginal Cultural Heritage Management	Remove any residual fencing and signage of Aboriginal heritage sites collected during the 2015 archaeological salvage to minimise any future uncertainty in the management of remaining sites.	Administrative
General Rehabilitation	Review areas of bare patches on the ridges of contour banks in the Railway Block rehabilitation and remediate these areas if required.	Low
General Rehabilitation	Reinstate cover on the disturbed face of the topsoil stockpile on the RL 192 overburden emplacement if the dump is not planned for modification during 2016.	Low
General Rehabilitation	Implement a formal review process to assess the immediate and long term success of grazing and slashing trials as a control measure for Rhodes grass dominated pasture, to determine the value of these activities as a long term controls (for biodiversity and woodland corridor areas).	Administrative
General Rehabilitation	Based on those areas with specific biodiversity objectives (such as proposed habitat features or woodland corridors) identified in the 2015 MOP, priorities for the slashing and/or grazing control of Rhodes grass should be documented, and a schedule determined to ensure sufficient time and resources are allocated to achieve the required outcomes.	Administrative

Ref	Description	Risk Level
General Rehabilitation	Continue to review the performance of the Weed Action Plan to reflect corrective actions for high risk locations and the weed species present on site.	Low

* * *

for
HANSEN BAILEY




Dorian Walsh
Senior Environmental Scientist



Daniel Sullivan
Senior Environmental Scientist

APPENDIX A
DP&E Certification Form

Independent Audit Certification Form	
Development Name	Liddell Coal Operations
Development Consent No.	DA 305-11-01 (as modified)
Description of Development	Liddell Coal Operations
Development Address	Old New England Highway, Liddell NSW 2333
Independent Audit	
Title of Audit	Independent Environmental Audit, Liddell Coal Operations
<p><i>I certify that I have undertaken the independent audit and prepared the contents of the attached independent audit report and to the best of my knowledge:</i></p> <ul style="list-style-type: none"> <i>The audit has been undertaken in accordance with relevant approval condition(s) and in accordance with the auditing standard AS/NZS ISO 19011:2014 and Post Approval Guidelines – Independent Audits</i> <i>The findings of the audit are reported truthfully, accurately and completely;</i> <i>I have exercised due diligence and professional judgement in conducting the audit;</i> <i>I have acted professionally, in an unbiased manner and did not allow undue influence to limit or over-ride objectivity in conducting the audit;</i> <i>I am not related to any owner or operator of the development as an employer, business partner, employee, sharing a common employer, having a contractual arrangement outside the audit, spouse, partner, sibling, parent, or child;</i> <i>I do not have any pecuniary interest in the audited development, including where there is a reasonable likelihood or expectation of financial gain or loss to me or to a person to whom I am closely related (i.e. immediate family);</i> <i>Neither I nor my employer have provided consultancy services for the audited development that were subject to this audit except as otherwise declared to the lead regulator prior to the audit; and</i> <i>I have not accepted, nor intend to accept any inducement, commission, gift or any other benefit (apart from fair payment) from any owner or operator of the development, their employees or any interested party. I have not knowingly allowed, nor intend to allow my colleagues to do so.</i> <p>Note.</p> <p>a) <i>The Independent Audit is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.</i></p> <p>b) <i>The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Signature	
Name of Lead / Principal Auditor	Daniel Sullivan
Address	PO Box 473, Singleton NSW 2330
Email Address	dsullivan@hansenbailey.com.au
Auditor Certification (if relevant)	Exemplar Global International Certified Auditor 113202
Date:	15 July 2016

APPENDIX B
Regulatory Correspondence



Contact: Chris Knight
Phone: (02) 6575 3404
Fax: (02) 6575 3415
Email: christopher.knight@planning.nsw.gov.au

Ben de Somer
Environment and Community Manager
Liddell Coal Operations Pty Ltd
PO Box 7
SINGLETON NSW 2330

Our ref: DA 305-11-01

Attention: Ben de Somer

Dear Ben,

Liddell Coal IEA

I refer to your letter dated 5th November 2015 seeking approval of an audit team to undertake an independent environmental audit of Liddell Coal Operations required by the Liddell Colliery Development Approval, DA 305-11-01.

In accordance with Condition 4 of Schedule 5 of the consent, the Secretary has endorsed the following audit team from Hansen Bailey to conduct this audit:

Core Audit Team

- Daniel Sullivan– Lead Auditor
- Dorian Walsh– Auditor
- Lachlan Crawford– Rehabilitation and Closure specialist

Liddell will need to liaise with the relevant agencies including the Department prior to scoping of the audit, to ascertain any issues that the agencies wish the audit to address. Evidence of consultation is to be provided in the audit report.

The Department expects that the audit will be conducted in accordance with the attached audit methodology.

As per condition 5 the audit report together with responses to any recommendations contained in the audit report should be submitted to the Department by 31st **March 2016**.

Should you have any enquiries in relation to this matter, please contact Chris Knight on telephone 6575 3404.

Yours sincerely



Chris Knight
Senior Compliance Officer
As Nominee for the Secretary (Acting)

10/11/2015

Attachment: Audit methodology

Audit methodology

The audit will need to address the following areas:

- Conditions of consent
 - All conditions of consent are to be audited
 - The condition numbers must be included in the report
 - Audit must be sequential (eg: all development consent requirements then EPL then Mining Lease)
- Management plans
 - The commitments in management plans have been implemented
- Requirements of other relevant environmental legislation (where specified by the consent)
 - Environmental Protection Licence conditions
 - Environmental aspects of the Mining Lease
- EA/EIS or SEE predictions and commitments
 - This will include but not be limited to items such as mining phase, dump height, landform, noise attenuation etc.
- Statement/s of commitments
 - The commitments made have been implemented/complied with.
- Monitoring results and trends
 - Including against regulatory limits and EA/EIS/SEE predictions
- Community complaints
 - Community complaints should be reviewed for any trends
 - Identifying the source of an established trend
 - Is additional monitoring required for identified trends?
- Regulatory action
 - Including any letters, penalty notices prosecutions etc
 - What was the outcome of that action?
 - What was committed to following the regulatory action? Was it completed?
 - Are recommendations required to prevent recurrence?
- Annual reviews
 - Annual reviews are to be reviewed to provide the auditor with information as a basis for recommendations regarding ongoing environmental improvement.
 - As far as possible the audit should verify the validity of the annual review
- Any other specific matters raised by relevant agencies or the Department
 - Ensure that all specific matters raised by relevant agencies or the Department are addressed
- Improvement opportunities
 - including opportunities to improve the environmental performance of the mine; and
 - opportunities to improve or update any strategy, plan or program required under the consent. This includes any suggestions to improve management plans.

APPENDIX C
Audit Agenda

**Liddell Coal Operations
Department of Planning & Environment (DP&E)
Development Consent Compliance Audit**

ITINERARY

**Site Component to be held
Tuesday, 2 February to Friday, 5 February 2016**

INVITEES

Ben de Somer (BD)	Glencore	Environment & Community Manager
Laura Barben (LB)	Glencore	Environment & Community Officer
Jarith Young (JY)	Glencore	Environment & Community Officer
David Foster (DF)	Glencore	Operations Manager
Daniel Brogan (DB)	Glencore	Technical Services Manager
Martin Vallender (MV)	Glencore	Manager Mining Engineering
John Martin (JM)	Glencore	Maintenance Manager
Neil Gibbs (NG)	Glencore	CHPP Manager
Daniel Nowak (DN)	Glencore	Health & Safety Manager
Michael Pajkovic (MP)	Glencore	Commercial Manager
Daniel Sullivan (DS)	Hansen Bailey	Lead Auditor
Dorian Walsh (DW)	Hansen Bailey	Auditor
Lachlan Crawford (LC)	LAMAC	Rehabilitation Auditor

DAY 1 – Tuesday, 2 February 2016

Time	Description	Location	Required Attendees
8:00am – 8:30am	Opening Meeting <ul style="list-style-type: none"> • Introductions (BD) • Purpose of Audit (DS) • Confidentiality Arrangements (DS) • Audit Process and Timing (DS) • Confirmation of Planned Meetings and Inspection/s (All) 	Boardroom	All
8:30am – 9:00am	Presentation on Liddell Operations <ul style="list-style-type: none"> • Overview of operations by site personnel 	Boardroom	BD
9:00am – 12:00pm	Liddell Development Consent Compliance Review	Boardroom	Liddell E&C Team

Time	Description	Location	Required Attendees
	<ul style="list-style-type: none"> Individual conditions of DA 305-11-01 (Mod 4 and Mod 5) Supporting EA / EIS key parameters and commitments 		
12:00pm – 12:30pm	Lunch	Boardroom	Liddell E&C Team
12:30pm – 3:00pm	Continue Development Consent Review <ul style="list-style-type: none"> Continue review of DA 305-11-01 and Supporting Documents 	Boardroom	Liddell E&C Team
3:00pm – 4:30pm	Auditors Revision Day 1	Boardroom	DS, DW

DAY 2 – Wednesday, 3 February 2016

Time	Description	Location	Required Attendees
8:00am – 8:15am	Day 2 Overview Meeting <ul style="list-style-type: none"> Confirm arrangements for Day 2 Review list of any outstanding information 	Boardroom	BD, DS
8:15am – 3:00pm	Rehabilitation Audit* <ul style="list-style-type: none"> LAMAC rehabilitation review 	Field	JY, LC
8:30am – 12:00pm	Liddell Development Consent Compliance Review <ul style="list-style-type: none"> Individual conditions of DA 305-11-01 (Mod 4 and Mod 5) Supporting EA / EIS key parameters and commitments Key management plan commitments 	Boardroom	BD, LB
12:00pm – 12:30pm	Lunch	Boardroom	Liddell E&C Team
12:30 pm – 3:00pm	Field Site Inspection <ul style="list-style-type: none"> Main Infrastructure Areas Operations inspection Heritage sites Water & Waste Systems Ecological Offsets Monitoring network: air, noise, water, etc. Any key private neighbour / stakeholder issues 	Field	BD, LB, DS, DW
3:00pm – 4:30pm	Auditors Revision Day 2	Boardroom	DS, DW, LC

* LAMAC rehabilitation review to run concurrently with HB session

DAY 3 – Thursday, 4 February 2016

Time	Description	Location	Required Attendees
8:00am – 8:15am	Day 3 Overview Meeting <ul style="list-style-type: none"> Confirm arrangements for Day 3 Compile outstanding information 	Boardroom	BD, DS
8:30am – 12:00pm	Liddell Licences and Other Approvals Review <ul style="list-style-type: none"> SSC and MSC STP approvals Review of approved MOP against environmental approval documents Review EPL 2094 compliance Review of key mining authority documents 	Boardroom	Liddell E&C Team
12:00pm – 12:30pm	Lunch	Boardroom	-
12:30 pm – 3:00m	Liddell Licences and Other Approvals Review <ul style="list-style-type: none"> Review of water licences AHIP and heritage approvals Radiation and hazardous materials licences 	Boardroom	Liddell E&C Team
3:00pm – 4:30pm	Auditors Revision Day 3	Boardroom	DS, DW

DAY 4 – Friday, 5 February 2016

Time	Description	Location	Required Attendees
8:00am – 8:15am	Day 4 Overview Meeting <ul style="list-style-type: none"> Confirm arrangements for Day 4 Compile list of outstanding information 	Boardroom	BD, DS
8:30am – 12:00pm	Liddell Outstanding Items <ul style="list-style-type: none"> Discussion of outstanding issues and documentation Additional field review (if required) 	Boardroom/Field	BD, LB, DS, DW
12:00pm – 12:15pm	Lunch	Boardroom	-
12:15 pm – 1:00pm	Auditors Revision and Preparation for Closeout Meeting	Boardroom	DS, DW
1:00pm – 2:00pm	Close Out Meeting <ul style="list-style-type: none"> Overview of findings (DS) Confirmation of outstanding items or documents required Confirm Audit Review and Completion Process 	Boardroom	All

APPENDIX D
Audited Documentation

- Clibborn (2013) 2012 Liddell Coal Annual Environmental Management Report
- Clibborn (2014) 2013 Liddell Coal Annual Environmental Management Report
- EJE Heritage (2013) Dilapidation Report, Former Chain of Ponds Inn & Outbuildings, Old New England Highway, Liddell NSW 2333
- EJE Heritage (2015) Dilapidation Report, Former Chain of Ponds Inn & Outbuildings, Old New England Highway, Liddell NSW 2333
- EMM (2015) Compliance Lighting Audit. Prepared for Liddell Coal Operations Pty Limited
- Glencore (2014) CAA-HSEC-PER-0004 Ground Disturbance Permit
- Glencore (2014) Liddell Coal Operations Pty Limited EPL 2094 Pollution Reduction Program U2. Particulate Matter Control Best Practice Implementation – Wheel Generated Dust
- Glencore (2014) Liddell Coal Operations Mining Operations Plan 2008 - 2015
- Glencore (2014) Liddell Coal Operations Pty Limited EPL 2094 Pollution Reduction Program U3. Particulate Matter Control Best Practice Implementation – Disturbing and handling overburden under adverse weather conditions
- Hansen Bailey (2012) Liddell Colliery, Development Consent Compliance Audit Report
- JR Richards (2016) Total Waste Management Report, Glencore Liddell Coal
- LCO (2012) Liddell Coal Operations (LCO) – Development Consent DA 305-11-01 Independent Environmental Audit. Letter to DP&E.
- LCO (2012) LCO TS PRO 0010 Meteorological Assessment, Blast Monitoring and Reporting
- LCO (2013) 2012-13 EPL 2094 Annual Return
- LCO (2013) LCO MIN PLN 0007 Spontaneous Combustion Management Plan
- LCO (2013) LCO SD PRO 0020 Lighting Management
- LCO (2014) 2013-14 EPL 2094 Annual Return
- LCO (2014) LCO SD FRM 0066 Noise Mitigation Record Form
- LCO (2015) 2014 Annual Environmental Management Report
- LCO (2015) 2014-15 EPL 2094 Annual Return
- LCO (2015) LCO SD FWK 0002 Environmental Management Strategy
- LCO (2015) LCO SD PLN 0009 Noise Monitoring Program
- LCO (2015) LCO SD PLN 0025 Pollution Incident Response Management
- LCO (2015) LCO SD PLN 0031 Air Quality Management and Monitoring Plan
- LCO (2015) LCO SD PLN 0038 Aboriginal Cultural Heritage Management Plan
- LCO (2015) LCO SD PLN 0039 Blast Management Strategy – Chain of Ponds Inn
- LCO (2015) LCO SD PLN 0040 Biodiversity Management Plan
- LCO (2015) LCO SD PLN 0041 Water Management Plan

- LCO (2015) *LCO SD PRO 0030 Road Closure*
- LCO (2015) *LCO SD PRO 0079 Waste Management Bioremediation Area*
- LCO (2016) *LCO CCC Minutes*. Minutes for the period July 2012 – December 2015; viewed on LCO website
- LCO (2016) *LCO Environment Monitoring Results*. Monthly reporting for the period July 2012 – December 2015; viewed on LCO website
- LCO (2016) *LCO SD PLN 0045 Blast Management Plan*
- LCO (2016) *LCO SD PLN 0046 Biodiversity Offset Management Plan*
- LCO (2016) *Train Loading Report, 1/01/2015 to 31/12/2015*
- NSW Department of Planning & Environment (2014) *DA 305-11-01, as modified in December 2014*
- NSW Department of Planning & Environment (2015) *Independent Audit Guideline, Post-approval requirements for State significant developments*.
- NSW Department of Primary Industries (2007) *Mining Lease No. 1597*
- NSW Environment Protection Authority (2015) *Environment Protection Licence 2094*
- NSW Office of Environment & Heritage (2014) *Aboriginal Heritage Impact Permit; AHIP number: C0000623*
- MSC (2014) *Approval to operate an on-site sewage management system, WTA 2/2006*
- OzArk (2015) *Archaeological Salvage, Liddell Coal Operations Development Modification 5*
- SC (2008) *On site sewerage management system, PTL Lot 40 Sec B, DP 6842, Antiene Road Hebden*
- SLR (2013) *Liddell Coal Operations, Proposed Modification to DA 305-11-01 Environmental Assessment*
- SLR (2014) *Liddell Coal Operations, Proposed Modification to DA 305-11-01 Response to Submissions*
- SLR (2015) *Glencore Liddell Coal Operations, Mining Operations Plan 16 March 2015 – 16 March 2022*
- SNC-Lavalin (2015) *Office of Environment and Heritage Field Audit Report AHIP 0000623, Liddell Coal Operations, Ravensworth*
- Umwelt (2006) *Liddell Colliery Modification to Development Consent Environmental Assessment*
- Umwelt (2007) *Response to Submissions, Environmental Assessment for Liddell Colliery Modification to Development Consent*
- Xstrata Coal (2008) *Energy Savings Action Plan, Liddell Colliery*
- Xstrata Coal (2012) *LCO SD FWK 0006 Coal Mine Particulate Matter Best Management Practice Determination*

APPENDIX E
Liddell Coal Operations Compliance Tables

Table A
Development Consent DA 305-11-01 (MOD 5) Compliance

Key

Red – July 2007 Modification

Blue – May 2008 Modification

Green – October 2009 Modification

Orange – December 2014 Modification

Section	Sub-section	Requirement	Status	Comments
SCHEDULE 2				
ADMINISTRATIVE CONDITIONS				
Obligation to Minimise Harm to the Environment	1.0	In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.	Compliant	
Terms of Consent	2.0	The Applicant shall carry out the development generally in accordance with the:	Compliant	
		(a) Development application 305-11-2001	Compliant	
		(b) Liddell Colliery Continued Operations Environmental Impact Statement, dated October 2001 and prepared by Umwelt (Australia) Pty Limited;	Compliant	Provided approval for: <ul style="list-style-type: none"> produce 4.5Mtpa of ROM coal; mining to be conducted over 1,326 ha; truck and shovel method of mining with the optional use of a dragline and highwall auger mining; mining in the Wittingham Coal Measures; receive up to 300,000tpa of ROM coal from Cumnock No.1 Colliery; transport up to 300,000 tpa of tailings for use in Macquarie Generation Power Stations; and ROM coal processed at Liddell CHPP and transported to the Port of Newcastle via the Hunter Valley Rail Loop.

Section	Sub-section	Requirement	Status	Comments
		<i>(c) Response to NPWS Request for Further Information in Relation to the Archaeological Assessment, Liddell EIS prepared by Umwelt (Australia) Pty Limited and dated December 2001, as supplemented by the additional information dated 20 February 2002;</i>	Compliant	Previous audit confirmed compliance.
		<i>(d) correspondence submitted to the Department and SSC in response to the request for addition information from SSC and dated 20 December 2001;</i>	Compliant	Previous audit confirmed compliance.
		<i>(e) Response to Submissions Liddell Colliery Environmental Impact Statement, prepared by Umwelt (Australia) Pty Limited and dated March 2002;</i>	Compliant	Previous audit confirmed compliance.
		<i>(f) Response to EPA request for further information Liddell Colliery Continued Operations Environmental Impact Statement prepared by Umwelt (Australia) Pty Limited and dated March 2002;</i>	Compliant	Previous audit confirmed compliance.
		<i>(g) Continued Operations of Liddell Colliery – Revised Development Application Area prepared by Umwelt (Australia) Pty Limited and dated 13 March 2002;</i>		Previous audit noted that construction of Dam 13B (an expansion of the existing Dam 13) has not yet commenced. (BD pers comm.)
		<i>(h) additional air quality contours provided to the Department by Umwelt (Australia) Pty Limited relating to PM10 concentrations on 7 May 2002;</i>		
		<i>(i) Liddell Colliery Modification to Development Consent Environmental Assessment, prepared by Umwelt (Australia) Pty Limited and dated December 2006;</i>		Previous audit noted that Dam 13B, new stockpile and desalination unit not yet progressed.
		<i>(j) Response to Submissions Environmental Assessment for Liddell Colliery Modification to Development Consent, prepared by Umwelt (Australia) and dated March 2007; and</i>		Desalination unit has not been constructed in the audit period (BD pers comm).
		<i>(k) Response to Submissions from the Roads and Traffic Authority and the Hunter Regional Development Committee Environmental Assessment for Liddell Colliery Modification to Development Consent, prepared by Umwelt (Australia) Pty Limited and dated April 2007;</i>	Compliant	Previous audit confirmed compliance.
		<i>(l) Revised Statement of Commitments for the Liddell Development Consent Modification, prepared by Umwelt (Australia) Pty Limited and dated July 2007 (see Appendix 5);</i>	Compliant	Previous audit confirmed compliance.
		<i>(m) Modification application DA305-11-01 Mod 3 and accompanying Statement of Environmental Effects, titled Liddell Coal Operations Pty Limited Statement of Environmental Effects for Liddell Colliery Modification to Development Consent, prepared by Umwelt Australia Pty Limited and dated February 2008; and</i>	Compliant	Construction of Dam 13B has not commenced (BD, pers comm). Other elements of the modification have been completed generally in accordance with this condition.

Section	Sub-section	Requirement	Status	Comments
		(n) modification application DA305-11-01 – Mod 4 and accompanying document and site plans prepared by Umwelt Australia Pty Limited, and dated 7 October 2009; and	Compliant	Modification document 4 details the addition of: <ul style="list-style-type: none"> • Administration buildings, amenities, training rooms, crib room building , bath house, first aid room; • Waste water treatment plant and effluent irrigation area; • Ambulance access and helipad; • Muster area and sealed muster car park area; • Covered walkways and connecting buildings; • 3 bay, high machinery workshop; • Water storage tanks; • Fuel farm including tanker fill and discharge slabs; • Light vehicle and heavy vehicle washbays; • Hardstand areas; • 140 employee and visitor parking area; • 36 light vehicle car parking spaces; and • Associated erosion and sediment control works.
		(o) modification application DA305-11-01 – Mod 5 and accompanying document and site plans prepared by SLR, and dated September 2013;	Compliant	Modification document 5 details the addition of: <ul style="list-style-type: none"> • South and Entrance Pit extensions; • Mining of coal under the MIA and relocation of the MIA during this time; • Extension to mine life from 2023 to 2028; • Tailings emplacement area in the South Pit void; • Cessation of coal transport to or from the Cumnock CHPP; • Construction of transfer point, coal stockpile and conveyor connection to the existing Mt Owen/Glendell/Macquarie Generation conveyor; and • Associated minor changes to ancillary infrastructure.
		(p) conditions of this consent.	Compliant	LCO activities from DA 305-11-01 (MOD 5) conditions following approval in December 2014.
	3.0	If there is any inconsistency between the above documents, the latter document shall prevail over the former to the extent of the inconsistency. However, the conditions of this consent shall prevail over all other documents to the extent of any inconsistency.	Compliant	

Section	Sub-section	Requirement	Status	Comments
	4.0	The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:	Compliant	Reviewed LCO correspondence with the DP&E during the audit period. All requirements of the DP&E (including for blast fume, dust management and notifications and data request) were responded to and examples of LCO notifications to DP&E on environmental monitoring and management actions were reviewed. No issues were noted by DP&E during consultation with Hansen Bailey (HB) prior to the site review component of the audit.
		(a) any strategies, programs, reviews, audits, reports, plans or correspondence that are submitted in accordance with this consent;	Compliant	
		(b) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; and	Compliant	
		(c) the implementation of any actions or measures contained in these reports, plans or correspondence.	Compliant	Viewed DRE correspondence dated 19/09/13 notifying LCO of a sink hole in the Pikes Gully Diversion identified by Coal & Allied and requesting detailed information and response from LCO. LCO responded to DRE via letters dated 23/09/13, 30/09/13 and 11/10/13. A further letter to DRE dated 20/11/13 seeks to notify the department that the remediation works required for the sink hole have been completed.
Mining, Processing and Transport Limits or Consent	5.0	Mining operations may take place on the site until 31 December 2028.	Compliant	Audit period occurs within the approval period of the consent.
		<i>Note: Under this consent, the Applicant is required to rehabilitate the site to the satisfaction of either the Secretary and DRE. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.</i>		
	6.0	The Applicant shall not:		
		(a) extract more than 8 million tonnes of ROM coal per annum from the site; or	Compliant	ROM tonnes extracted during the audit period: <ul style="list-style-type: none"> • 2012 AEMR: 6.87 Mt ROM; • 2013 AEMR: 7.12 Mt ROM; • 2014 AEMR: 6.69 Mt ROM; and • 2015: LCO production summary table (2015): 6.22 Mt ROM.
		(b) process more than 8 million tonnes of ROM coal per annum at the Liddell	Compliant	Product coal tonnes during the audit period:

Section	Sub-section	Requirement	Status	Comments
		CHPP, including up to 2 million tonnes per year of ROM coal from Mt Owen; or		<ul style="list-style-type: none"> 2012 AEMR: 4.51 Mt; 2013 AEMR: 4.71 Mt; 2013 AEMR: 4.27 Mt; and 2015: LCO production summary table (2015): 4.10 Mt. <p>No Mt Owen coal was received for processing at the Liddell CHPP during the audit period (AEMRs, BD (pers comm)).</p>
		(c) transport more than 1.5 million tonnes of ROM coal per annum to Ravensworth Central Coal Processing Facility for processing; or	Compliant	<p>Transport to RCT during the audit period:</p> <ul style="list-style-type: none"> 2012 AEMR– no transport undertaken; 2013 AEMR– no transport undertaken; 2014 AEMR - no transport undertaken; and 2015: no transport undertaken (BD pers comm).
		(d) Extract more than 0.5 million tonnes of coal tailings per annum with residual energy content from the site for transport to Liddell and Bayswater Power Stations.	Compliant	No extraction of coal tailings undertaken during the audit period (AEMRs, BD (pers comm)).
	7.0	The Applicant shall ensure that all product coal from the site is transported by rail.	Compliant	<p>Product coal transport by rail:</p> <ul style="list-style-type: none"> 2012 compliant (AEMR Section 2.5.3); 2013 compliant (AEMR Section 2.5.3); 2014 compliant (AEMR Section 2.5.3); and 2015: compliant (BD, pers comm). HB also reviewed LCO rail transport register for 2015.
Structural Adequacy	8.0	The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with:	Compliant	No construction or occupation certificates were required (BD pers comm). All construction works associated with the MIA and workshop upgrades were within approved footprint and in accordance with approved layout.
		(a) the relevant requirements of the BCA;		See Schedule 2, Condition 8 above.
		(b) the relevant requirements of AS3959-2009 Construction of buildings in bushfire-prone areas; and		See above.
		(c) any additional requirements of the MSB.	Compliant	MSB did not require any specific measures to be implemented during the audit period (BD, pers comm).
		<p>Notes:</p> <ul style="list-style-type: none"> Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works. Part 8 of the EP&A Regulation sets out the requirements for the certification of development. 		
Demolition	9.0	The Applicant shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.	Not triggered	No demolition of infrastructure reported in the 2012, 2013, 2014 AEMRs. BD (pers comm) confirmed no demolition work undertaken in 2015.

Section	Sub-section	Requirement	Status	Comments
Operation of Plant Equipment	10.0	The Applicant shall ensure that all plant and equipment used at the site, and equipment used off-site to monitor the performance of the project is:		
		(a) Maintained in a proper and efficient condition; and	Compliant	<p>HB reviewed LCO maintenance and monitoring records for the mining fleet, including:</p> <ul style="list-style-type: none"> • Sound power testing records from Global Acoustics during the audit period (2012 – 2015). Dynamic and stationary tests measure the compliance of specific equipment types against modelled sound power; • Examples of completed maintenance work orders and equipment servicing records (2014 – 2015); and • Schedule of noise inspections planned for 2016. <p>Viewed copies of monthly reports and statements from monitoring network contractors. Documents include calibration statements / certificates for monitoring instruments.</p>
		(b) Operated in a proper and efficient manner.	Compliant	<p>Viewed examples of training packages provided to operators and Mining Supervisors during the audit period, including:</p> <ul style="list-style-type: none"> • Noise and Dust Alarm Training and attendance register (January 2014); • LCO Supervisor Training Meeting (November 2014). Presentation documents recent LCO environmental performance, provides an update on regulatory regime, licence to operate, key compliance issues and examples of relevant incidents from other Glencore sites; • LCO Supervisor PIRMP Training (July 2015); • Environmental Awareness Training LCO SD PRES 0003 and attendance register (October 2015). Presentation outlines environmental responsibilities for all personnel, incident response, and measures for management of environment and community aspects; <p>HB reviewed monitoring reporting and management plans; the network is regularly checked and calibrated to ensure efficient operation.</p>
Protection of Public Infrastructure	11.0	Unless the Applicant and the applicable authority agree otherwise, the Applicant shall:	Not triggered	No requirement for repairs to public infrastructure in 2012, 2013 and 2014 AEMRs. BD (pers comm) confirmed no requirement to repair or relocate public infrastructure during 2015.

Section	Sub-section	Requirement	Status	Comments
		(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and		
		(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development,		
		however this condition does not apply where the Applicant has entered into an agreement with the owner of such public infrastructure that covers the repair and/or maintenance of the infrastructure.		
Updating and Staging of Strategies, Plans or Programs	12.0	With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.	Compliant	BD (pers comm) confirmed that the blast management strategy for the Chain of Ponds Inn (COPI) was the only activity that was progressively updated during the audit period (see Schedule 3, Condition 5). Viewed letter from LCO to DP&E on Interim Blasting Operating Conditions (for COPI) dated 20/03/15 and response from DP&E approving the proposed approach via email dated 13 April 2015.
		To ensure the strategies, plans or programs under the conditions of this consent are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval.		
		With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.		
		Notes: <ul style="list-style-type: none"> While any strategy, plan or program may be submitted on a progressive basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program. 		
Planning Agreements	13.0	By the end of May 2015, or as otherwise agreed by the Secretary, the Applicant shall enter into a planning agreement with Singleton Council (SC) in accordance with the general terms in Appendix 8.	Compliant	Viewed a copy of the SC VPA as executed, dated 5/2/15. Viewed payment confirmation to SC dated 24/12/15.
	14.0	By the end of May 2015, or as otherwise agreed by the Secretary, the Applicant shall enter into a planning agreement with Muswellbrook Shire Council (MSC) in accordance with the general terms in Appendix 9.	Compliant	Viewed a copy of the MSC VPA as executed, dated 4/06/15. Executed document notes that the terms of the MSC VPA were agreed on 11/05/15. Viewed payment confirmation to MSC dated 30/09/14.

Section	Sub-section	Requirement	Status	Comments
SCHEDULE 3				
SPECIFIC ENVIRONMENTAL CONDITIONS				
NOISE				
Impact Assessment Criteria	1.0	The Applicant shall ensure that the noise generated by the development does not exceed the noise impact assessment criteria in Table 1 at any residence.	Not Compliant	<p>Reviewed attended monitoring results for the audit period (available in monthly monitoring reports and in LCO AEMRs)::</p> <ul style="list-style-type: none"> 2012: no exceedances (from June '12); 2013: no exceedances; 2014: Two sites in network from Q2 2014 as LCO moved to monthly attended monitoring as per revised NMP; <p>Two potential exceedances in August and September 2014 at two locations. August 2014 exceedance (36 dB) found to be low frequency affected. 4/09/14 exceedances of 2dB at 1317 Hebden Road, 3dB at 1426 Hebden Road. Viewed Global Acoustics LCO September 2014 Environmental Noise Monitoring Report and notification letter from BD to DP&E dated 11 September 2014. DP&E responded via letter dated 12/09/14, noting that the results were not considered to be development consent non-compliances and requiring LCO to notify affected landowners and tenants (see Condition 2, Schedule 4);</p> <ul style="list-style-type: none"> 2015: No exceedances. Potential exceedance of 1dB recorded on 28/07/15 was excluded due to meteorological conditions at the time of assessment. Re-measure on 4/08/15 in accordance with the INP was compliant with noise criteria.

Section	Sub-section	Requirement	Status	Comments																															
		<p><i>Table 1: Noise impact assessment criteria dB(A)</i></p> <table border="1"> <thead> <tr> <th>Assigned residential location number</th> <th>Day (L_{Aeq} (15min))</th> <th>Evening (L_{Aeq} (15min))</th> <th>Night (L_{Aeq} (15min))</th> <th>Night (L_A (1min))</th> </tr> </thead> <tbody> <tr> <td>1,5,6,7,8,9,10,11,12,14</td> <td>35</td> <td>35</td> <td>35</td> <td>45</td> </tr> <tr> <td>2</td> <td>35</td> <td>35</td> <td>36</td> <td>45</td> </tr> <tr> <td>3</td> <td>36</td> <td>35</td> <td>37</td> <td>45</td> </tr> <tr> <td>4</td> <td>36</td> <td>35</td> <td>36</td> <td>45</td> </tr> <tr> <td>All other privately-owned land</td> <td>35</td> <td>35</td> <td>35</td> <td>45</td> </tr> </tbody> </table> <p><i>Note: To interpret the locations referred to in Table 1, see Appendix 5</i></p>			Assigned residential location number	Day (L _{Aeq} (15min))	Evening (L _{Aeq} (15min))	Night (L _{Aeq} (15min))	Night (L _A (1min))	1,5,6,7,8,9,10,11,12,14	35	35	35	45	2	35	35	36	45	3	36	35	37	45	4	36	35	36	45	All other privately-owned land	35	35	35	45	
Assigned residential location number	Day (L _{Aeq} (15min))	Evening (L _{Aeq} (15min))	Night (L _{Aeq} (15min))	Night (L _A (1min))																															
1,5,6,7,8,9,10,11,12,14	35	35	35	45																															
2	35	35	36	45																															
3	36	35	37	45																															
4	36	35	36	45																															
All other privately-owned land	35	35	35	45																															
		Noise generated at the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.	Compliant	Section 3.1 – 3.3 of the approved NMP confirm assessment methodology. Viewed monthly attended noise monitoring surveys completed by Global Acoustics during the audit period.																															
		However, these criteria do not apply if the Applicant has an agreement with the owner(s) of the relevant residence or land to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.	Not triggered	BD (pers comm) confirmed no agreements with private receivers entered into during the audit period.																															
Operating Conditions	2.0	The Applicant shall:																																	
		(a) implement all reasonable and feasible measures to minimise the construction, operational, road and rail noise of the development;	Compliant	Noise monitoring, management and corrective action procedures are described in Sections 3.1 – 3.3 of the approved LCO Noise Monitoring Program (NMP) (see Schedule 3, Condition 3, below). LCO operates a TARP for noise impacts and a program of monthly attended monitoring to verify compliance against noise criteria. See comments on Schedule 2, Condition 10 regarding the implementation and maintenance of noise controls for operational equipment.																															
		(b) operate a noise management system on site that uses attended noise monitoring data to ensure compliance with the relevant conditions of consent;	Compliant	Sections 3.1 – 3.3 of the approved NMP describe attended monitoring assessment methods. HB reviewed examples of Noise Mitigation Record Forms (LCO SD FRM 0066) and Shift Inspection Reports completed by E&C personnel and Mining Supervisors																															

Section	Sub-section	Requirement	Status	Comments
				during the audit period. Documents describe issues and actions / controls put in place to respond to noise impacts.
		(c) evaluate the effectiveness of the noise management system;	Compliant	Sections 3.3, 5 and 6 of the approved NMP outline the review process for noise management on site. HB review of noise monitoring results, internal LCO records for mobile equipment sound power testing and the low number of community complaints during the audit period also confirms the effectiveness of noise management on site.
		(d) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent does not apply (see Appendix 6); and	Compliant	Noise impact mitigation measures are described in Section 3.2.3 of the approved NMP. HB review confirmed these measures were regularly considered during the audit period. HB also viewed examples of LCO SD FRM 0066 Noise Mitigation Record Form completed during the audit period, as signed off by Mining Supervisors in Statutory Shift Reports. Records reviewed by HB included those from August 2012, June 2013, September 2013, May 2014 and the period December 2014 – September 2015
		(e) monitor and report on compliance with the relevant noise conditions of this consent, to the satisfaction of the Secretary.	Compliant	Monthly attended noise monitoring results (including for 2015) are available on the LCO website and in the AEMRs for 2012, 2013 and 2014. Exceedance and potential exceedances of the noise impact criteria were reported to DP&E during the audit period in accordance with the requirements of Schedule 5, Condition 11 of DA 305-11-01 (see below). BD (pers comm) confirmed that the DP&E had not raised any issues in relation to LCO monitoring and reporting of noise compliance during the audit period.
Monitoring Program	3.0	The Applicant shall update and subsequently implement the Noise Monitoring Program for the development to the satisfaction of the Secretary. This program must be submitted to the Secretary by the end of May 2015, and must include regular attended monitoring in accordance with Appendix 6, and a noise monitoring protocol for evaluating compliance with the noise impact assessment criteria in this consent.	Compliant	Viewed the LCO NMP as approved by DP&E letter dated 13/08/15; the document outlines the site noise monitoring program. The draft NMP was submitted to DP&E on 14/05/15 (by letter and email from BD). Attended noise monitoring undertaken following approval of DA 305-11-01 is undertaken in accordance with Appendix 6.
BLASTING AND VIBRATION				

Section	Sub-section	Requirement	Status	Comments
Impact Assessment Criteria	4.0	The Applicant shall ensure that blasts on site do not exceed the criteria in Table 2.	Not Compliant	<p>BD (pers comm) confirmed that the LCO Blast Management Plan was under regulatory review at the time of audit.</p> <p>Reviewed blast monitoring results for the audit period (available in monthly monitoring reports and in LCO AEMRs):</p> <ul style="list-style-type: none"> • 2012: no exceedances of vibration criteria; one overpressure result at Scriven monitor of 116.2 dB overpressure (within 5% threshold); • 2013: overpressure exceedance on 11/07/13. Result of 134.1 dB in exceedance of COPI criteria under DA 305-11-01 (MOD 4). No regulatory action was taken on the 11/07/13 result; • 2014: no exceedances of vibration criteria at private residences; one result at the Burlings monitor of 117.6 dB overpressure (within 5% threshold). • Elevated blast overpressure results at the COPI on 11/04/14 and 28/04/14 was reported to DP&E as required under Schedule 5, Condition 11. Follow up investigations by LCO determined that the 136 dBL result of the 11/04/14 blast (an exceedance of the COPI criteria of 133 dBL) was not wind-influenced. DP&E issued a PIN for the 11/04/14 blast. No regulatory action was taken on the 28/04/14 blast as an exceedance of overpressure criteria could not be confirmed. LCO investigations of the two elevated blast results confirmed that there had been no adverse impacts to the structural integrity or heritage values of the COPI; and • 2015: no exceedances of impact criteria.

Section	Sub-section	Requirement	Status	Comments																						
		<p><i>Table 2: Blasting impact assessment criteria</i></p> <table border="1"> <thead> <tr> <th>Location</th> <th>Airblast overpressure level (dB(Lin Peak))</th> <th>Ground vibration (mm/s)</th> <th>Allowable exceedance</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Residence on privately-owned land</td> <td>115</td> <td>5</td> <td>5% of the total number of blasts over a period of 12 months</td> </tr> <tr> <td>120</td> <td>10</td> <td>0%</td> </tr> <tr> <td rowspan="2">Newdell zone substation</td> <td>-</td> <td>20 (interim)</td> <td>10% of the total number of blasts over a period of 12 months</td> </tr> <tr> <td>-</td> <td>25 (interim)</td> <td>0%</td> </tr> <tr> <td>Other public infrastructure</td> <td>-</td> <td>50</td> <td>0%</td> </tr> </tbody> </table>	Location	Airblast overpressure level (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance	Residence on privately-owned land	115	5	5% of the total number of blasts over a period of 12 months	120	10	0%	Newdell zone substation	-	20 (interim)	10% of the total number of blasts over a period of 12 months	-	25 (interim)	0%	Other public infrastructure	-	50	0%		
Location	Airblast overpressure level (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance																							
Residence on privately-owned land	115	5	5% of the total number of blasts over a period of 12 months																							
	120	10	0%																							
Newdell zone substation	-	20 (interim)	10% of the total number of blasts over a period of 12 months																							
	-	25 (interim)	0%																							
Other public infrastructure	-	50	0%																							
		However these criteria do not apply if the Applicant has:																								
		(a) a written agreement with the relevant owner to exceed these criteria, and has advised the Department in writing of the terms of this agreement; or	Not triggered	BD (pers comm) confirmed no agreements with private receivers entered into during the audit period.																						
		(b) in the event that the Applicant is unable to secure a written agreement with an infrastructure owner, demonstrated to the satisfaction of the Secretary that blasting can be carried out at levels in excess of the criteria without causing any damage to the infrastructure. Notes: <ul style="list-style-type: none"> The interim criteria for the Newdell zone substation are based on consultation with the substation owner (Ausgrid). It is acknowledged that alternative criteria may be agreed as part of the blast management strategy for the substation (see condition 15A). An alternate limit for public infrastructure may be agreed to by the Secretary if it can be justified in accordance with the structural design methodology in AS2187.2-2006, or another methodology agreed to by the Secretary.	Not triggered	See above.																						
Chain of Ponds Inn	5.0	The Applicant shall ensure that blasting at the development does not cause any exceedances of the following performance measures at the Chain of Ponds Inn, to the satisfaction of the Secretary:	Not Compliant	Reviewed LCO SD PLN 0039 Blast Management Strategy – Chain of Ponds Inn approved by DP&E on 11/05/15. Blast monitoring results at the COPI monitoring at the COPI from LCO operations confirm: <ul style="list-style-type: none"> 2012: no exceedances; 2013: overpressure exceedance on 11/07/13. Result of 134.1 dB in exceedance of COPI criteria 																						

Section	Sub-section	Requirement	Status	Comments
				<p>under DA 305-11-01 (MOD 4) Schedule 3 Condition 8) This best aligns with this condition in MOD 5 and has accordingly been marked Not Compliant. . No regulatory action was taken on the 11/07/13 result;</p> <ul style="list-style-type: none"> • 2014: overpressure exceedance on 11/04/14. Result of 136dB in exceedance of COPI criteria under DA 305-11-01 (MOD 4) Schedule 3 Condition 8) This best aligns with this condition in MOD 5 and has accordingly been marked Not Compliant. DP&E issued a Penalty Infringement Notice (PIN) for the exceedance; • 2014: overpressure exceedance on 28/04/15. Result of 134.9 dB in exceedance of COPI criteria under DA 305-11-01 (MOD 4) Schedule 3 Condition 8) This best aligns with this condition in MOD 5 and has accordingly been marked Not Compliant. No regulatory action was taken on the 28/04/15 result; and • 2015: no exceedances ('Stage 2' vibration and overpressure criteria were adopted in 2015, as described in Section 6.2.2 of the COPI).
		(a) negligible loss of heritage value; and	Compliant	<p>BD (pers comm) confirmed that visual inspections are commissioned by LCO on at least a quarterly basis or post-blasting events with the potential to impact the structural integrity of the COPI.</p> <p>Reviewed the most recent example of an inspection report prepared for the COPI by Bill Jordan & Associates (Structural and conservation engineers) dated 23/12/15. Report reviews the site against previous inspections and the documented baseline condition.</p>
		(b) negligible impact on structural integrity of the internal and external fabric of the Inn, having regard to the existing condition and structural integrity of the Inn at November 2014.	Compliant	<p>Reviewed the following documents, which assess the integrity of the COPI:</p> <ul style="list-style-type: none"> • Dilapidation Report, Former Chain of Ponds Inn and Outbuildings, Old New England Highway, Liddell NSW 2333 (EJE Heritage, dated May 2015). This document re-assessed the condition of the COPI following the approval of DA 305-11-01 MOD5; and • Inspection report prepared for the COPI by Bill Jordan & Associates (structural and conservation engineers) dated 23/12/15.
		Notes: a) The Applicant will be required to define more detailed performance		

Section	Sub-section	Requirement	Status	Comments
		<p><i>indicators (including impact assessment criteria) in the Blast Management Plan.</i></p> <p><i>b) Measurement and/or monitoring of compliance with performance measures and indicators is to be undertaken using generally accepted methods that are appropriate for the heritage item. These methods are to be fully described in the Blast Management Plan.</i></p> <p><i>c) The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date that consent is granted to DA 305-11-01 MOD 5.</i></p>		
BLASTING AND VIBRATION				
	6.0	DELETED	N/A	Condition deleted.
	7.0	DELETED	N/A	Condition deleted.
	8.0	DELETED	N/A	Condition deleted.
Blasting Hours	9.0	The Applicant shall carry out blasting at the development only between 9 am and 5 pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Secretary.	Compliant	Blasting times: <ul style="list-style-type: none"> • 2012 AEMR: 150 blast events, all within blasting approved hours. • 2013 AEMR: 133 blast events, all within blasting approved hours. • 2014 AEMR: 154 blasts, all within blasting approved hours. • 2015: reviewed blast monitoring data for 2015. 197 blasts, all within approved hours.
Blasting Frequency	10.0	The Applicant may carry out a maximum of:	Compliant	Blasting frequency: <ul style="list-style-type: none"> • 2012 AEMR: compliant. Blasts in compliance with maximum frequency; • 2013 AEMR: compliant. Blasts in compliance with maximum frequency; and • 2014 AEMR: compliant. Blasts in compliance with maximum frequency. • 2015: reviewed blast monitoring data for 2015. Blasts in compliance with maximum frequency.
		(a) 3 blasts a day; and		
		(b) 8 blasts a week, average over a calendar year on the site.		
		This condition does not apply to blasts that generate ground vibration of 0.5mm/s or less at any residence on privately-owned land, blast misfires or blasts required to ensure the safety of the mine, its workers or the general public.		
		<i>Note: For the purposes of this condition, a blast refers to a single blast event, which may involve a number of individual blasts fired in quick succession in a discrete area of the mine.</i>		

Section	Sub-section	Requirement	Status	Comments
Operating Conditions	11.0	During mining operations, the Applicant shall:		
		(a) implement all reasonable and feasible management measures to: <ul style="list-style-type: none"> • protect the safety of people and livestock in the area surrounding blasting operations; • protect public or private infrastructure/property in the area surrounding blasting operations from blasting damage; and • minimise the dust and fume emissions from blasting at the mine; 	Not Compliant	<p>Measures are documented in LCO TS PRO 0010 Meteorological Assessment, Blast Monitoring and Reporting (2012). Includes a summary of monitoring required for local infrastructure based on proximity buffers.</p> <p>Incident on 4/09/13 due to fume crossing over the LCO DA Boundary over the Old New England Highway towards mine owned land on Bayswater Creek (was non-compliant under DA 305-11-01 MOD 4 Schedule 3 Condition 8) This best aligns with this condition in MOD 5 and has accordingly been marked Not Compliant. Incident report confirming LCO management actions provided to DP&E. Response received from DP&E 9/12/13, with no additional actions required.</p> <p>On 28 September 2015 a blast resulted in minor flyrock damage to Ausgrid powerline insulator. This was rectified to Ausgrids satisfaction (BD pers comm).</p>
		(b) operate a suitable system to enable the public to get up-to-date information on the proposed blasting schedule on site; and	Compliant	Hotline details provided on LCO website (1800 number). BD (pers comm) confirmed regular public advertisements placed in local papers; viewed copies of blast notification contacts advertised in the Singleton Argus and Hunter Valley News in April 2015.
	(c) monitor and report on compliance with the relevant blasting conditions in this consent, to the satisfaction of the Secretary.	Compliant	Viewed copies of monthly environmental reports provided on the LCO website. Annual summaries of blasting data are also provided in the 2012 – 2014 AEMRs.	
	11A.0	The Applicant shall not undertake blasting on site within 500 metres of any public road or any land outside the site that is not owned by the Applicant unless the Applicant has:	Compliant	<p>Viewed email from BD to DP&E dated 26/01/16. The email provided a revised copy of the Blast Management Plan and updated DP&E on consultation with service providers. Email notes that ARTC had not provided comment on the Liddell Blasting Deed sent in September 2015 and Ausgrid remained in consultation with LCO on the Newdell Substation Blast Management Strategy.</p> <p>Viewed latest correspondence from Ausgrid to LCO dated 16/12/15 confirming mitigation works required for blast vibration impacts on the Newdell Substation.</p> <p>DP&E approved the Blast Management Plan by letter dated</p>

Section	Sub-section	Requirement	Status	Comments
				<p>28/01/16 and confirmed that the Secretary was satisfied that LCO blasting can be carried out as per Condition 11A(a) – 11(b).</p> <p>Prior to 26/01/16 LCO operated under Schedule 2 Condition 12 (Updating and Staging of Strategies, Plans or Programs) and submitted interim blast management plan information to allow blasts to continue until the Blast Management Plan was approved</p> <p>Viewed letter from LCO to DP&E on Interim Blasting Operating Conditions (for COPI) dated 20/03/15 and response from DP&E approving the proposed approach via email dated 13 April 2015.</p>
		(a) demonstrated to the satisfaction of the Secretary that the blasting can be carried out closer to the infrastructure or land without comprising the safety of people or livestock or damaging the infrastructure and/or other buildings and structures; and	Compliant	See Schedule 3, Condition 11A above.
		(b) updated the Blast Management Plan to include specific measures that would be implemented while blasting is being carried out within 500 metres of infrastructure or land; or	Compliant	See Schedule 3, Condition 11A above.
		(c) a written agreement with the relevant landowner to allow blasting to be carried out closer to the infrastructure or land, and the Applicant has advised the Department in writing of the terms of this agreement.	Compliant	DP&E letter of 28/01/16 confirms the Secretary does not require LCO to enter into an agreement for blasting within 500m of Coal & Allied land due to successful history of blast management by LCO in proximity to neighbouring land and assets.
Public Notice	12.0	By the end of February 2015, the Applicant shall:	Compliant	<p>BD (pers comm) confirmed re-notification provided to all private landholders with residences within 2km of the DA Boundary in January and February 2015 (8 residents / tenants).</p> <p>HB viewed examples of notification letters, which included details of the LCO blasting information line and the entitlement of landowners to a structural property inspection.</p>
		(a) re-notify the landowner / occupier of any residence within 2 km of the development that they are entitled to register an interest in being notified of the blasting schedule of the mine; and	Compliant	See Schedule 3, Condition 12 above.
		(b) re-notify the landowner / occupier of any residence within 2 km of the development of the blasting schedule at the mine, if that landowner / occupier registers an interest in being so notified;	Compliant	See Schedule 3, Condition 12 above.
		To the satisfaction of the Secretary.		

Section	Sub-section	Requirement	Status	Comments
Property Inspections	13.0	By the end of February 2015, the Applicant shall advise all landowners of privately owned land within 2 km of the development that they are entitled to a structural property inspection.	Compliant	See Schedule 3, Condition 12 above. Re-notification letters provided to landowners in January and February 2015 referred to this condition and landholder entitlements for an inspection on request.
	14.0	If the Applicant receives a written request for a structural inspection from any landowner from of privately owned land within 2 km of the development, the Applicant shall within 3 months of receiving this request:	Not triggered	BD (pers comm) confirmed no structural inspections requested or undertaken during the audit period.
		(a) Commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to inspect the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and		
		(b) Give the landowner a copy of the inspection report		
Property Investigations	15.0	If any landowner of privately-owned land within 2 km of the site claims that buildings and / or structures on his / her land have been damaged as a result of blasting at the development, the Applicant shall within 3 months of receiving this request:	Not triggered	BD (pers comm) confirmed no structural inspections requested or undertaken during the audit period.
		(a) Commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to investigate the claim; and		
		(b) Give the landowner a copy of the investigation report		
		If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant shall repair the damages to the satisfaction of the Secretary.		
		If the Applicant or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Secretary for resolution.		
		If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process (see Appendix 4).		
Blast Management Plan	15A.0	The Applicant shall prepare and implement a Blast Management Plan for the development to the satisfaction of the Secretary, this plan must:	Not triggered	Blast Management Plan not approved during the audit period. The Blast Management Plan (LCO SD PLN 0045) was approved by DP&E in January 2016 (see comments on Schedule 3, Condition 11A above on consultation undertaken during revision of the document).
		(a) be submitted to the Secretary for approval by the end of May 2015, unless otherwise agreed by the Secretary;	Compliant	Viewed email from Laura Barben (LB) submitting the draft LCO Blast Management Plan to DP&E on 28/05/15. Viewed letter dated 11/03/15 submitting the LCO Blast Management Strategy – Chain of Ponds Inn (COPI Blast Management Strategy) to DP&E.
		(b) describe the measures that would be implemented to ensure compliance with the blasting criteria and operating conditions of this consent;	Not triggered	Section 4 of the Blast Management Plan.

Section	Sub-section	Requirement	Status	Comments
		(c) propose and justify any alternative ground vibration limits for any public infrastructure in the vicinity of the site (if required);	Not triggered	Section 3.1.2 of the Blast Management Plan. Blast Management Plan includes consultation with Ausgrid and incorporates their comments regarding management for the Newdell Substation.
		(d) include a monitoring program for evaluating and reporting on compliance with the blasting criteria and operating conditions;	Not triggered	Section 5 of the Blast Management Plan.
		(e) include a specific <u>Blast Management Strategy for the Chain of Ponds Inn</u> . This Strategy must:	Compliant	Viewed email from SB at DP&E in response to BD email of 11/03/15. Email approves continuation of the blast impact criteria for the COPI of 10mm/s (vibration) and 140 dBL (overpressure) while the COPI Blast Management Strategy is under review. Viewed DP&E letter approving the COPI Blast Management Strategy dated 11/05/15.
		<ul style="list-style-type: none"> be prepared in consultation with the Heritage Council and Coal & Allied, and endorsed by the Heritage Council; incorporate the recommendations of the Former Chain of Ponds Inn Buildings – Investigation of Blast Vibration and Vulnerability Report (Bill Jordan and Associates, 2013) and Blast Management Strategy (Enviro Strata, 2013); provide details on the management of potential flyrock impacts on the Chain of Ponds Inn; provide details on how the stabilisation measures will be implemented and a timetable for implementation; provide details of the ongoing monitoring and maintenance procedures for the Chain of Ponds Inn; repair any damage to the Chain of Ponds (should any damage occur) within 6 months of the damage occurring; provide and submit an annual report on the condition of the Chain of Ponds Inn to the Heritage Council; and 	Compliant	Sections 4.1, 4.2, 5.2, 7.1 – 7.3 of the approved COPI Blast Management Strategy describe required management measures for the site. Coal & Allied and the NSW Heritage Council confirmed that the COPI Blast Management Strategy was adequate via letters dated 13/02/15 and 14/04/15, respectively. BD (pers comm) confirmed that LCO blasting had not resulted in any damage to the COPI. The timing requirement for annual reporting of condition to the Heritage Council was not triggered during the audit period. Viewed a copy of the 2013 reports on the COPI referred to in the condition. BD (pers comm) confirmed the schedule of works in ERM report was being undertaken by Coal & Allied as owners of the COPI site and land.
		(f) include a specific <u>Blast Management Strategy for the Newdell Zone Substation</u> . This Strategy must: <ul style="list-style-type: none"> be prepared in consultation with the owner of the substation; if alternative criteria to those in Table 2 are proposed, include detailed justification for the criteria based on investigations by a suitably qualified expert(s) whose appointment has been endorsed by the Secretary in consultation with the owner of the substation; 	Compliant	BD (pers comm) confirmed consultation with Ausgrid was ongoing at the time of audit. LCO blast monitoring at the Newdell Substation site is also continuing. BD also noted that approval of alternative criteria would be sought from DP&E, based on advice from Ausgrid and Terrock Consulting Engineers. Viewed latest correspondence from Ausgrid to LCO dated

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> provide details on the management of potential ground vibration and flyrock impacts to ensure that blasting does not affect the structural integrity or serviceability of the substation; include a monitoring program for blast vibration and structural integrity at the substation; and include a protocol for repairing any damage to the substation in the event that this occurs. 		16/12/15 confirming mitigation works required for blast vibration impacts proposed on the Newdell Substation.
AIR QUALITY				
Impact Assessment Criteria	16.0	The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate emissions generated by the development do not exceed the air quality impact assessment criteria listed in Tables 3, 4, and 5 at any residence on privately-owned land.	Compliant	<p>LCO completed the PRP U3 Particulate Matter Control Best Practice Implementation – Disturbing and handling overburden under adverse weather conditions in 2014 as required under EPL 2094 (see Table B).</p> <p>Viewed the LCO Dust Management TARP and examples of LCO SD FRM 0239 Dust Management Inspection completed by the environment personnel during the during the audit period. BD (pers comm) confirmed Mining Supervisors are also required to document environmental issues including dust generation inspections, TARP rankings and actions taken in statutory Inspection Reports. HB reviewed examples of shift inspection reports signed off by Mining Supervisors during September and October 2015.</p> <p>BD provided examples of air quality alarms/triggers for action as generated by results from the real-time meteorological and air quality (TEOM and EBAM) network. Alarms under the Dust Management TARP are generated as automated text / emails to Management, Environment and Production personnel. Mining Supervisors are required to document responses to any air quality alarms.</p> <p>BD (pers comm) confirmed three additional boundary EBAMs were installed in 2015 to provide supplementary air quality data for review and response.</p> <p>Two incidents of elevated dust generation were noted by DP&E officers on 5/08/15 and 6/08/15 and communicated to LCO. BD (pers comm) confirmed LCO took action in response to DP&E notification and recorded the occurrences as near misses on the LCO incidents database. Follow-up actions by LCO included toolbox talks</p>

Section	Sub-section	Requirement	Status	Comments									
				with all crews starting 6/0815 on dust management and TARP actions.									
		<p><i>Table 3: Long term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>^dCriterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>^a90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>Annual</td> <td>^a30 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging period	^d Criterion	Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³	Compliant	<p>TSP results (3 TSP monitors in the LCO network (one (HVAS 13) on a mine owned property)):</p> <ul style="list-style-type: none"> 2012 AEMR: no exceedance at Scriven and Antienne monitors (HVAS 11 and HVAS 20). Ravensworth Farm monitor (HVAS 13) reported results of 120 µg/m³, however the monitor is located on mine-owned land; 2013 AEMR: no exceedance at Scriven and Antienne monitors (HVAS 11 and HVAS 20). Ravensworth Farm monitor (HVAS 13) reported results of 122 µg/m³, however the monitor is located on mine-owned land. 2014 AEMR: no exceedance at Scriven and Antienne monitors (HVAS 11 and HVAS 20). Ravensworth Farm monitor (HVAS 13) reported results of 107 µg/m³, however the monitor is located on mine-owned land. 2015: Reviewed 2015 monitoring data. No exceedances of TSP criteria recorded. <p>BD (pers comm) confirmed Ravensworth Farm monitoring results was reported as a background site due to historic data recorded.</p>
Pollutant	Averaging period	^d Criterion											
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³											
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³											

Section	Sub-section	Requirement	Status	Comments								
		<p><i>Table 4: Short term impact assessment criterion for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>^dCriterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>24 hour</td> <td>^a50 µg/m³</td> </tr> </tbody> </table>	Pollutant	Averaging period	^d Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³	Compliant	<p>PM₁₀ results (3 HVAS monitors in the LCO network (one on a mine owned property) in operation 2012 - 2014):</p> <ul style="list-style-type: none"> 2012 AEMR: Annual average PM₁₀ in compliance at private receivers. One exceedance of 24 hour PM₁₀ criteria at HVAS 6 (Ravensworth Farm) not a private residence. 2013 AEMR: Annual average PM₁₀ in compliance at private receivers. Four exceedances of 24 hour PM₁₀ criteria at HVAS 6 (Ravensworth Farm) not a private residence. 2014 AEMR: Annual average PM₁₀ in compliance at private receivers (HVAS monitors). 2015: Reviewed 2015 monitoring data. Annual average PM₁₀ in compliance at private receivers. Three exceedances of 24 hour PM₁₀ criteria at HVAS 6 (Ravensworth Farm) not a private residence. <p>Four TEOMs were installed in 2011 and three boundary EBAMs were installed in 2015. BD (pers comm) confirmed that the TEOM units were not used to determine compliance with consent criteria, instead as a supplementary management and monitoring tool.</p>		
Pollutant	Averaging period	^d Criterion										
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³										
		<p><i>Table 5: Long term impact assessment criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td>^eDeposited dust</td> <td>Annual</td> <td>^b2 g/m²/month</td> <td>^a4 g/m²/month</td> </tr> </tbody> </table> <p><i>Notes to Tables 3-5:</i></p>	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	^e Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month	Compliant	<p>Dust deposition results (10 dust gauges in the LCO network, sites D56 and D62 are representative of private receivers):</p> <ul style="list-style-type: none"> 2012 AEMR: no exceedances at gauges representative of private receivers; 2013 AEMR: no exceedances at gauges representative of private receivers; and 2014 AEMR: no exceedances at gauges representative of private receivers. 2015: Reviewed 2015 monitoring data. No exceedances at gauges representative of private receivers.
Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level									
^e Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month									

Section	Sub-section	Requirement	Status	Comments
		<p><i>Notes to Tables 3-5:</i></p> <p><i>a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources;</i></p> <p><i>b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);</i></p> <p><i>c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS3580.10:2003: Methods for Sampling and Analysis of Ambient Air Determination of Particulate Matter – Deposited Matter – Gravimetric Method; and</i></p> <p><i>d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.</i></p>	Compliant	Viewed monthly air quality monitoring reporting, which confirms impacts are assessed in accordance with the requirements of this condition.
	17.0	DELETED	N/A	Condition deleted.
Operating Conditions	18.0	The Applicant shall:		
		(a) implement all reasonable and feasible air quality management measures to minimise odour, fume and dust emissions from the development;	Not Compliant	<p>Viewed LCO MIN PLN 0007 Spontaneous Combustion Management Plan dated 31/01/13 and approved LCO Air Quality Management and Monitoring Plan (AQMMP) (see Schedule 3, Condition 19 below). Documents reference LCO procedures and guidelines for the management of spontaneous combustion and air quality impacts. A summary of air quality impacts against relevant criteria is included under Schedule 3, Condition 16 above.</p> <p>Odour / spon com issues during audit period:</p> <ul style="list-style-type: none"> • 2012: No incidents or complaints (during audit period); • 2013: Review and update of LCO spontaneous combustion management practice in 2013 to prevent occurrence rather than manage events once detected; Incident on 4/09/13 due to fume crossing over the site boundary over the Old New England Highway towards mine owned land on Bayswater Creek (was non-compliant under DA 305-11-01 MOD 4 Schedule 3 Condition 8) This also aligns with this condition in MOD 5 and has accordingly been marked Not Compliant. An incident report confirming LCO follow up management actions was provided to DP&E. A response was received from DP&E 9/12/13, with no additional actions required;

Section	Sub-section	Requirement	Status	Comments
				<ul style="list-style-type: none"> 2014: no incidents or complaints; and 2015: no incidents or complaints. <p>BD (pers comm) noted that changes made to mining methods and water management in the de-watering of old underground mine workings immediately in advance of LCO open cut mining had significantly reduced the occurrence of spontaneous combustion during the audit period.</p> <p>These changes in operational management were acknowledged in a letter from DP&E dated 23/12/13. The letter also confirmed that the flyash emplacement trial recommended in the LCO 2012 Independent Environmental Audit was no longer necessary to manage spontaneous combustion.</p>
		(b) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site;	Compliant	The management of greenhouse gas emissions at LCO is described in Section 3 of the approved AQMMP and in the LCO Energy Savings Action Plan (the requirement for LCO to implement an Energy Savings Action Plan was superseded under DA 305-11-01 MOD5).
		(c) minimise any visible air pollution generated by development;	Compliant	Section 7.2 of the approved AQMMP.
		(d) minimise surface disturbance on the site;	Compliant	Section 7.3 of the approved AQMMP.
		(e) operate an air quality management system that uses a combination of high volume samplers and dust deposition gauges to ensure compliance with the relevant conditions of consent; and	Compliant	Section 2.11 of the approved AQMMP.
		(f) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events To the satisfaction of the Secretary.	Compliant	Section 2.11 of the approved AQMMP.
Air Quality Monitoring	19.0	The Applicant shall update and subsequently implement the Air Quality Monitoring Program for the development to the satisfaction of the Secretary. This program must be submitted to the Secretary by the end of May 2015, and must include a combination of real-time air quality monitors and supplementary monitors to monitor the dust emissions of the development; and an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this consent.	Compliant	Viewed LCO AQMMP dated 18/08/15, as approved by DP&E by letter dated 13/08/15. Draft AQMMP document provided to DP&E on 14/05/15, prior to end of May 2015 submission date.
METEOROLOGICAL MONITORING				
Meteorological Monitoring	20.0	The Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the development in accordance with the requirements in <i>Approved Methods for sampling of Air Pollutants in New South Wales</i> , and to the satisfaction of the EPA and Secretary.	Compliant	Previous audit confirmed compliance of the site meteorological monitor with the Approved Methods. BD confirmed no changes to the site during the audit period. Data from the site meteorological station was not available

Section	Sub-section	Requirement	Status	Comments
				from 18/03/15 to 25/03/15. Outage occurred as a result of damage to the site meteorological station mast from high wind conditions (storm event) and the need to source a new mast. Data from surrounding Glencore operations was available to LCO during the outage.
SURFACE AND GROUND WATER				
Water Supply	21.0	The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of mining operations to match its available water supply, to the satisfaction of the Secretary.	Compliant	Reviewed water licences and water balance results for 2012 – 2014. BD (pers comm) confirmed site was in water surplus at the time of audit due to high rainfall recorded since late 2015. HB viewed HECONS scope for the 2015 water balance model and calibration review for LCO as commissioned by Jarith Young.
		<i>Note: The Applicant is required to obtain all necessary water licences and approvals for the development under the Water Act 1912 and/or Water Management Act 2000.</i>	Compliant	Reviewed water licences held by LCO. BD (pers comm) confirmed the licences that had been submitted to NSW Office of Water (now DPI-Water), with regulatory approval pending.
	21A.0	Unless an EPL or the EPA authorises otherwise, the Applicant shall comply with Section 120 of the POEO Act and the <i>Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002</i> .	Not Compliant	The following water incidents in relation to the POEO Act and EPL were recorded during the audit period: <ul style="list-style-type: none"> • Malfunction in the primary communications equipment for HRSTS discharge point (LDP2 in EPL 2094), resulting in conductivity and flow data not being provided the EPA. This was reported by LCO on 21/08/12 and EPA issued a PIN for the incident (under DA 305-11-01 (MOD 4)); • Discharge from a breached containment windrow on 24/08/15 to Bayswater Creek following a significant rainfall event. The incident was reported to EPA on 25/08/15 and a detailed report provided by LCO on 31/08/15 after water quality testing was completed in receiving waters and LCO response actions confirmed. BD (pers comm) confirmed no response had been received from EPA as at the time of audit. <p>A review of EPL 2094 condition, including a summary of HRSTS discharges during the audit period) is presented in Table B.</p>

Section	Sub-section	Requirement	Status	Comments										
	21B.0	The Applicant shall ensure that treated effluent from the wastewater treatment plant does not exceed the discharge limits in Table 6, unless otherwise agreed by the EPA.	Compliant	JY and BD (pers comm) confirmed monitoring and treatment regime for wastewater generated on site and provided records for HB verification. A summary of compliance with the SC (DA 20/008) and MSC (WTA 2/2006) approval conditions is provided in Table B .										
	21C.0	The Applicant shall monitor the quality of treated effluent to be discharged from the wastewater treatment plant (by sampling and obtaining results by analysis) as specified in Table 6, or as otherwise agreed by the EPA.	Compliant	Treated water monitoring during the audit period confirmed water from the treatment plants was in accordance with ecoli limits.										
		<p><i>Table 6: Wastewater treatment plant discharge limits</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Units of Measure</th> <th>Frequency</th> <th>Sampling Method</th> <th>Concentration Limit (100 percentile)</th> </tr> </thead> <tbody> <tr> <td>E.coli</td> <td>Colony forming units per 100 millilitres</td> <td>Monthly</td> <td>Representative sample</td> <td>100</td> </tr> </tbody> </table>			Pollutant	Units of Measure	Frequency	Sampling Method	Concentration Limit (100 percentile)	E.coli	Colony forming units per 100 millilitres	Monthly	Representative sample	100
Pollutant	Units of Measure	Frequency	Sampling Method	Concentration Limit (100 percentile)										
E.coli	Colony forming units per 100 millilitres	Monthly	Representative sample	100										
Desalination Unit	22.0	Prior to the construction of the desalination unit, the Applicant shall conduct investigations and identify options concerning the most appropriate method for the treatment and/or disposal of brine, to the satisfaction of the Secretary, NOW and EPA.	Not triggered	BD (pers comm) confirmed that the desalination unit has not been constructed.										
Water Management Plan	23.0	The Applicant shall prepare and implement a Water Management Plan for the development to the satisfaction of the Secretary. This Plan must:	Compliant	Viewed LCO Water Management Plan (WMP) dated 18/08/15 as approved by DP&E letter of 13/08/15. HB also reviewed an updated WMP under revision at the time of the audit. BD and JY (pers comm) noted that the document was being updated to refine groundwater monitoring trigger values. The updated WMP was approved by DP&E on 20/01/16.										
		(a) be prepared in consultation with NOW and EPA by suitably qualified and experienced persons whose appointment has been approved by the Secretary;	Compliant	Viewed email from DP&E approving SLR Consulting personnel as appropriate to prepare the WMP. Viewed consultation letters from NOW dated 12/05/15 and 22/05/15. Viewed EPA letter dated 18/05/15 confirming no comments on the WMP.										
		(b) be submitted to the Secretary for approval by the end of May 2015, unless the Secretary agrees otherwise;	Compliant	Draft WMP submitted to DP&E on 13/03/15.										
		(c) this plan must include a:	Administrat	Section 7 of the approved WMP describes the Site Water										

Section	Sub-section	Requirement	Status	Comments
		<p>(i) <u>Site Water Balance</u> that:</p> <ul style="list-style-type: none"> includes details of: <ul style="list-style-type: none"> sources and security of water supply, including contingency planning for future reporting periods; water use and management on site; reporting procedures, including the preparation of a site water balance for each calendar year; describes the measures that would be implemented to minimise clean water use on site; 	ive Non-Compliance	<p>Balance.</p> <p>Site Water Balance not calibrated during the 2015 calendar year, as per commitment made in the approved Water Management Plan. The calibration work had been commissioned but not completed at the time of audit.</p>
		<p>(ii) <u>Erosion and Sediment Control Plan</u> that:</p> <ul style="list-style-type: none"> is consistent with the requirements of <i>Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, 2004</i> (Landcom), or its latest version; identifies activities that could cause soil erosion, generate sediment or effect flooding; describes measures to minimise soil erosion and the potential for the transport of sediment to downstream waters, and manage flood risk; and describe what measures would be implemented to maintain the structures over time; 	Compliant	Section 8 of the approved WMP.
		<p>(iii) <u>Surface Water Management Plan</u>, that includes:</p> <ul style="list-style-type: none"> reference to detailed baseline data on water flows and quality contained in the EA; a detailed description of the water management system on site; design objectives and performance criteria for the: <ul style="list-style-type: none"> design and management of final voids; design and management for sodic and dispersible soils and acid or sulphate generating materials; reinstatement of drainage lines on the rehabilitated areas of the site; and control of any potential water pollution from the rehabilitated areas of the site; surface water assessment criteria, including trigger levels for investigating any potentially adverse impacts for the following: <ul style="list-style-type: none"> the water management system, including mine water storages and sediment dams; downstream surface water quality; and stream and riparian vegetation health; a program to monitor and report on: <ul style="list-style-type: none"> the effectiveness of the water management system; surface water flows and quality, stream and riparian vegetation health in the watercourses that could be affected by the development; and 	Compliant	Section 9.1 of the approved WMP.

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> - stream health and channel stability; • reporting procedures for the results of the monitoring program; • a plan to respond to any exceedances of the performance criteria, and mitigate any adverse surface water impacts of the development including: <ul style="list-style-type: none"> - a protocol for the investigation, notification and mitigation of any exceedances; - measures to mitigate and/or compensate potentially affected landowners for the loss of surface flows in Bowmans Creek downstream of the development resulting from the development; and - the procedures that would be followed if any unforeseen impacts are detected during the development. 		
		<p>(iv) <u>Groundwater Management Plan</u>, that includes:</p> <ul style="list-style-type: none"> • reference to baseline data on groundwater levels, yield and quality contained in the EA; • a detailed description of the groundwater management system on site; • design objectives and performance criteria, for the: <ul style="list-style-type: none"> - emplacement areas for tailings, acid forming and potentially acid forming materials, and saline and sodic materials; - final voids; • groundwater assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts beyond those predicted in the EA for Mod 5; • measures to minimise, prevent or offset groundwater leakage from the Bowmans Creek alluvial aquifer in excess of the drawdown predicted in the EA for Mod 5; • measures to mitigate any direct hydraulic connection between the backfilled open cuts and the Bowmans Creek alluvium if the potential for adverse impacts is detected; • a program to monitor and report on: <ul style="list-style-type: none"> - groundwater inflows to the mining operations; - the seepage/leachate from water storages, emplacements and final voids; - background changes in groundwater yield/quality against mine-induced changes; - impacts of the development on: <ul style="list-style-type: none"> o regional and local (including alluvial) aquifers; o groundwater dependent ecosystems and riparian vegetation; o the seepage/leachate from water storages, emplacements, backfilled voids and final voids; o impacts on the Bowmans Creek alluvial aquifer; • procedures for the verification of the groundwater model; 	Compliant	Section 9.2 of the approved WMP.

Section	Sub-section	Requirement	Status	Comments												
		<ul style="list-style-type: none"> a review of existing network to identify additional monitoring locations for the alluvial system focusing on areas where additional drawdown is predicted; reporting procedures for the results of the monitoring program and model verification; a plan to respond to any exceedances of the predicted groundwater impacts, and mitigation of any unpredicted adverse groundwater impacts of the development; 														
		(v) a program to validate the water balance and groundwater model for the development every 3 years, and compare monitoring results with modelled predictions; and	Compliant	Sections 7.4, 12 and 14 of the approved WMP												
		(vi) a protocol that has been prepared in consultation with the owners of any nearby mines to: <ul style="list-style-type: none"> minimise cumulative water quantity and quality impacts; review opportunities of water sharing between the mines; share water monitoring data where practicable; undertake joint investigations/studies in relation to complaints/exceedances of trigger levels where cumulative impacts are considered likely; and where practicable, co-ordinate modelling programs for validation, re-calibration and re-running of water models. 	Compliant	Section 10 of the approved WMP.												
BIODIVERSITY																
Biodiversity Offset Strategy	24.0	The Applicant shall implement the biodiversity offset strategy described in the EA, summarised in Table 7 and conceptually shown in Appendix 7.	Compliant	Viewed LCO Biodiversity Offset Management Plan (BOMP) approved by DP&E letter dated 20/01/16. OEH provided comment on the draft plan on 5/06/15.												
		<p><i>Table 7: Summary of the Biodiversity Offset Strategy</i></p> <table border="1"> <thead> <tr> <th>Area</th> <th>Offset Type</th> <th>Minimum Size (ha)</th> </tr> </thead> <tbody> <tr> <td>Mountain Block Offset</td> <td>Existing vegetation and vegetation to be established</td> <td>166</td> </tr> <tr> <td>Bowmans Creek Riparian Corridor</td> <td>Existing vegetation and vegetation to be established</td> <td>182</td> </tr> <tr> <td>Total</td> <td></td> <td>348</td> </tr> </tbody> </table> <p><i>Note: To identify the areas referred to in Table 7 refer to the applicable figures in Appendix 7.</i></p>			Area	Offset Type	Minimum Size (ha)	Mountain Block Offset	Existing vegetation and vegetation to be established	166	Bowmans Creek Riparian Corridor	Existing vegetation and vegetation to be established	182	Total		348
Area	Offset Type	Minimum Size (ha)														
Mountain Block Offset	Existing vegetation and vegetation to be established	166														
Bowmans Creek Riparian Corridor	Existing vegetation and vegetation to be established	182														
Total		348														
	25.0	The Applicant shall ensure that the offset strategy and/or rehabilitation strategy is focused on the reestablishment of:														
		(a) significant and/or threatened plant communities, including:	Compliant	Sections 3.8 – 3.10 of the approved BOMP.												

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> Central Hunter Box – Ironbark Woodland EEC; Narrow-Leaved Ironbark – Spotted Gum Woodland EEC; Narrow-Leaved Ironbark – Bullock Open Forest EEC; 		
		(b) significant and/or threatened plant species; and	Compliant	Sections 3.8 – 3.10 of the approved BOMP.
		(c) habitat for significant and/or threatened animal species including the Spotted-tailed Quoll.	Compliant	Sections 3.11 of the approved BOMP.
Spotted-Tailed Quoll Contribution	26.0	The Applicant shall contribute \$200,000 over 5 years towards the implementation of recovery actions under OEH's <i>Saving Our Species Action Statement</i> and/or <i>Final Draft National Recovery Plan for the Spotted-tailed Quoll 2008</i> for the Spotted-tailed Quoll. The initial payment of at least \$50,000 must be made by the end of June 2015, unless otherwise agreed by the Secretary. The timing and quantum of the subsequent payments is to be determined in consultation with OEH.	Not triggered	Viewed letters from BD to DP&E seeking and extension to the date of the initial payment towards the Spotted-tailed Quoll Recovery Plan and was approved by SB of DP&E on 26/01/15. A second extension was requested by BD via letter on 13/10/15. The letter from DP&E acknowledges LCO efforts to finalise the BOMP in consultation with the required stakeholders and grants an extension for LCO to make the initial payment by 31/03/16.
Long Term Security of Offsets	27.0	By the end of December 2015, unless the Secretary agrees otherwise, the Applicant shall make suitable arrangements to provide appropriate long term security for the land within the biodiversity offset strategy identified in Table 7, to the satisfaction of the Secretary.	Compliant	Section 2.2 of the approved BOMP notes the ongoing consultation between LCO, DP&E, DoE and OEH to confirm an appropriate mechanism to provide long term security for biodiversity offset lands. HB viewed DP&E letter dated 9/12/15 approving a 12 month extension to the date to secure the biodiversity offset properties (i.e. to December 2016).
Waterbird Habitat	28.0	Prior to the construction of Dam 13B, the Applicant shall undertake habitat enhancement measures to Dam 3 to increase habitat for water birds to the satisfaction of OEH and the Secretary. The applicant shall in addition establish a dam in the Mountain Block area to provide habitat for waterbird species to the satisfaction of OEH and the Secretary. Where achievable, the habitat enhancement measures for each dam shall include: (a) A maximum water depth of 5 metres over at least half the surface area; (b) Gently sloping banks (apart from the dam wall) of less than 10 degrees; (c) Areas of shallow back waters around the dams; (d) Appropriate levels of vegetation; and (e) Appropriate fencing and signposting.	Compliant	Section 4.14 of the approved Biodiversity Management Plan (BMP) describes habitat enhancement measures for waterbird species in onsite dams. Enhancements include the construction of two dams adjacent to Dam 3 in accordance with the requirements of this condition. Water levels in the dams were monitored for two years to inform vegetation plantings. Viewed letter to JY confirming costs and scope of work for planting of shrubs and rush species at Dam 3 and Habitat Dams. HB reviewed the waterbird habitat dams during the site component of the audit and observed the presence of a number of waterbird species and the establishment of suitable habitat.
Biodiversity Management Plan	29.0	The Applicant shall prepare and implement a detailed Biodiversity Management Plan for the site to the satisfaction of the Secretary. This plan must:		
		(a) be prepared in consultation with OEH and be submitted to the Secretary	Compliant	Viewed correspondence from OEH dated 27/04/15 and

Section	Sub-section	Requirement	Status	Comments
		for approval by the end of May 2015, unless otherwise agreed by the Secretary;		11/05/15 confirming OEH satisfaction with the BMP (attached as Appendix C of the approved BMP). Viewed letter dated 18/05/15 submitting the BMP to DP&E. The BOMP was approved to be prepared as a separate document to address regulatory and management requirements for LCO offset properties. In their approval letter dated 20/01/16, DP&E note that the BOMP requirements come into force on 1/02/16.
		(b) describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site (see below);	Compliant	Section 2 of the approved BOMP.
		(c) include:		
		(i) a description of the short, medium and long term measures that would be implemented to: <ul style="list-style-type: none"> • implement the offset strategy; and • manage the remnant vegetation and habitat on the site in the offset areas; 	Compliant	Section 2 of the approved BOMP.
		(ii) detailed performance and completion criteria for the implementation of the offset strategy;	Compliant	Sections 2.6 and 3 of the approved BOMP.
		(iii) a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for: <ul style="list-style-type: none"> • implementing revegetation and regeneration with the disturbance areas and offset areas, including establishment of canopy, sub-canopy (if relevant), understorey and ground strata; • protecting vegetation and soil outside the disturbance areas; • rehabilitating creeks and drainage lines that occur on the site; • managing salinity; • conserving and reusing topsoil; • undertaking pre-clearance surveys; • managing impacts on fauna; • collecting and propagating seed; • salvaging and reusing material from the site for habitat enhancement; • salvaging, transplanting and/or propagating threatened flora in accordance with the Guidelines for the Translocation of Threatened Plants in Australia (Vallee et al., 2004); • controlling weeds and feral pests including investigating alternate technologies to reduce poisoning of non-target species; • managing grazing and agriculture; • controlling access; 	Compliant	Sections 4.3 – 4.17, 5 and 6 of the approved BMP. Sections 3 – 5 of the approved BOMP.

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> bushfire management; habitat enhancement works; seasonal monitoring of in-stream and riparian ecological condition; survey of stygofauna in Bowmans Creek alluvial aquifer (prior to predicted drawdown); and monitoring of stygofauna populations every 6 months following the occurrence of the predicted drawdown; 		
		(iv) a seasonally-based program to monitor the effectiveness of these measures, and progress against the performance and completion criteria;	Compliant	Section 5 of the approved BMP. Section 4 of the approved BOMP.
		(v) a description of the potential risks to successful revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and	Compliant	Section 7 of the approved BMP.
		(vi) details of who would be responsible for monitoring, reviewing and implementing the plan.	Compliant	Section 1.4 of the approved BMP. Section 1.5 of the approved BOMP.
Conservation Bond	30.0	<p>Within 6 months of the approval of the Biodiversity Management Plan, the Applicant shall lodge conservation and biodiversity bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan. The sum of the bond shall be determined by:</p> <p>(a) calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and</p> <p>(b) employing a suitably qualified consultant to verify the calculated costs, to the satisfaction of the Secretary.</p> <p>The calculation of the Conservation Bond must be submitted to the Department for approval at least 1 month prior to lodgement of the final bond.</p> <p>If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond.</p> <p>If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary will call in all, or part of the conservation bond, and arrange for the satisfactory completion of the relevant works.</p> <p>Notes:</p> <ul style="list-style-type: none"> Alternative funding arrangements for long term management of the biodiversity offset strategy, such as provision of capital and management funding as agreed by OEH as part of a Biobanking Agreement or transfer to conservation reserve estate can be used to reduce the liability if the conservation bond. The sum of the bond may be review in conjunction with any revision to the biodiversity offset strategy or completion of major milestones within the approved plan. 	Not triggered	Conservation bond required six months from approval of the BOMP (i.e. 20 July 2016).

Section	Sub-section	Requirement	Status	Comments
ABORIGINAL CULTURAL HERITAGE				
Aboriginal Cultural Heritage Management Plan	31.0	By the end of May 2015, the Applicant shall revise and subsequently implement its Aboriginal Cultural Heritage Management Plan to include management measures as identified in Table 7.16 of the EIS, in consultation with relevant Aboriginal stakeholders and OEH and to the satisfaction of the Secretary.	Compliant	<p>Viewed LCO Aboriginal Cultural Heritage Management Plan (ACHMP) dated 22/01/15 as approved by DP&E letter of 16/01/15.</p> <p>Appendices 1 and 2 of the ACHMP include a discussion of previous management strategies and records of consultation with the local Aboriginal community stakeholders (19 RAPs) and OEH.</p> <p>Section 4.2 of the ACHMP includes those measures identified in Table 7.16 of the EIS (SLR, 2013). HB review of ACHMP commitments is provided in Table C.</p> <p>BD and LB (pers comm) confirmed the archaeological salvage required for DA 305-11-01 (MOD5) was completed in January and February 2015, in accordance with Aboriginal Heritage Impact Permit #C0000623 (the AHIP), in consultation with RAPs.</p> <p>HB reviewed the report documenting the salvage program: Archaeological Liddell Coal Operations Development Consent Modification 5 (OzArk Environmental and Heritage Management, April 2015).</p> <p>HB also reviewed a report dated 7/08/15 documenting a field audit of the AHIP. The audit was completed by SNC-Lavalin on behalf of the OEH, with BD and LB representing LCO. One low risk issue was identified, with a delay in providing a copy of the final AHIP to all RAPs within 14 days of approval. This did not occur due to the timing of approval of the LCO ACHMP.</p> <p>A second low risk issue against the conditions of the AHIP occurred prior to the 2015 salvage program. LCO did not notify OEH in writing at least seven days prior to commencement of an action under the AHIP (salvage works undertaken in 2015) (see Table B).</p>
TRAFFIC AND TRANSPORT				
Road Transport	32.0	The Applicant shall:		
		(a) ensure that transport of:		

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> coal tailings by truck along the New England Highway is restricted to old tailings with residual energy content and at a rate of no more than 114 truck movements per day (i.e 57 loaded trucks), 5 days per week; and transport of ROM coal to and from Ravensworth Central Coal Processing Facility is restricted to internal mine haul roads, Pikes Gully Road and Liddell Station Road. 	Compliant	<ul style="list-style-type: none"> 2012 AEMR: no tailings sales or truck movements on the New England Highway; 2013 AEMR: no tailings sales or truck movements on the New England Highway; 2014 AEMR: no tailings sales or truck movements on the New England Highway; and 2015: BD (pers comm) confirmed no tailings sales or truck movements on the New England Highway.
		(b) use its reasonable endeavours to close Liddell Station Road as a public road to the satisfaction of SC, by the end of December 2015 unless otherwise agreed by the Secretary.	Compliant	BD (pers comm) noted that Glencore had been in consultation with SC over the closure of Liddell Station Road, which was ongoing. Documents reviewed by HB included: <ul style="list-style-type: none"> LCO letter to SC dated 18/11/15 regarding the potential for Glencore to close the road and use it as a services corridor. This letter follows up on an initial meeting between Glencore and SC on the matter, held 11/03/15; Notes of meeting between Glencore and SC representatives held 5/12/15; and SC Meeting Minutes dated 21/12/2015. SC resolved that the proposed closure of Liddell Station Road would be advertised for a 28 day period and that affected landholders and service providers be notified.
Monitoring of Coal Transport	33.0	The Applicant shall:		
		(a) keep records of the:		
		<ul style="list-style-type: none"> amount of coal transported from the site each year; and number of coal haulage train movements generated by the development (on a daily basis); and 	Compliant	<ul style="list-style-type: none"> 2012 AEMR: discussed in Section 2.5.3 and Appendix A 2013 AEMR: discussed in Section 2.5.3 and Appendix A 2014 AEMR: discussed in Section 2.5.3 and Appendix A 2015: JY provided a copy of LCO Train Loading Report for 2015, which includes required records.
		(b) include these records in the Annual Review.	Compliant	See above; required information provided in 2012 – 2014 AEMRs.
VISUAL IMPACT				
Visual Amenity and	34.0	The Applicant shall:		

Section	Sub-section	Requirement	Status	Comments
Lighting				
		(a) implement all reasonable and feasible measures to mitigate visual and off-site lighting impacts from the development;	Compliant	Viewed LCO SD PRO 0020 Lighting Management dated 13/03/13. Document identifies lighting management strategies for the site and sensitive receptor locations. Lighting management identified in LCO reporting includes: <ul style="list-style-type: none"> • 2012 AEMR: summary of lighting management provided in Section 3.13. Two lighting complaints received in October and November 2012 (Section 4.1, AEMR). • 2013 AEMR: No issues. Nightly inspection of lighting by Mining Supervisor. Light managed to minimise direct light to Hebden Road, Antiene Road, New England Highway, Main Northern Rail Line and residences; • 2014 AEMR: No issues. Nightly inspection of lighting by Mining Supervisor.
		(b) ensure no outdoor lights shine above the horizontal;	Compliant	LCO SD PRO 0020 Lighting Management (2013) includes procedures to minimise direct lighting to residences and other sensitive areas offsite.
		(c) undertake screen plantings along the western boundary of the proposed office and workshop area to further minimise potential visual impacts on the New England Highway; and	Compliant	Viewed email from Carbon Based Environmental to LB dated confirming the scope of works completed for the planting of the visual bund on 24/09/15.
		(d) ensure that all external lighting associated with the development complies with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting, to the satisfaction of the Secretary.	Compliant	LCO SD PRO 0020 Lighting Management (2013) refers to AS4282 1995 in management of lighting impacts from the site. HB reviewed the EMM Compliance Lighting Audit dated 10 June 2015. Audit reviews the performance of LCO against the requirements of Schedule 3, Condition 34.
WASTE MINIMISATION				
	35.0	The Applicant shall:	Compliant	Viewed waste management and reporting for the audit period: <ul style="list-style-type: none"> • 2012 AEMR: Section 2.6 described LCO waste management system and waste /recycling volumes • 2013 AEMR: Section 2.7 described LCO waste management system and waste /recycling volumes; and • 2014 AEMR: Section 2.7 described LCO waste management system and waste /recycling volumes. • 2015: JY provided the waste management reporting

Section	Sub-section	Requirement	Status	Comments
				summary for 2015 prepared by the LCO waste management contractor.
		(a) monitor the amount of waste generated by the development;	Compliant	HB reviewed examples of monthly waste management reporting provided by JR Richards & Sons (LCO waste management contractor).
		(b) investigate ways to minimise waste generated by the development;	Compliant	LB (pers comm) confirmed a recycling rate of 92% of all waste produced on site during 2015.
		(c) implement reasonable and feasible measures to minimise waste generated by the development;	Not Compliant	LB (pers comm) confirmed waste minimisation and management targets are reviewed on an annual basis. Reviewed Liddell waste contractor report for 2015 (JR Richards), which confirmed 92% recycling rate. An onsite bioremediation area was re-established in late 2014. During the site visit this was inspected and found to not be maintained fully in accordance with the LCO Waste Management Bioremediation Area Procedure (LCO SD PRO 0079). There was no evidence of regular dewatering and aeration of materials as required by LCO SD PRO 0079. Further detail is provided in Section 5.1 of audit report.
		(d) ensure irrigation of treated wastewater is undertaken in accordance with EPA's <i>Environmental Guideline for the Utilisation of Treated Effluent</i> ; and	Compliant	See comments on the SC and MSC STP approvals in Table B .
		(e) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	Compliant	Audit period AERMs (2012-2014) include reporting on LCO waste management and minimisation.
BUSHFIRE MANAGEMENT				
	36.0	The Applicant shall:		
		(a) ensure that the development is suitably equipped to respond to any fires on site; and	Compliant	Viewed a copy of LCO SD PLN 0008 Emergency Management Plan (2014). The plan includes management procedures for fire response and evacuation. Section 4.17 of the approved BMP commits to the revision of the existing Liddell Bushfire Management Plan (Umwelt, 2011) and provides recommended management actions for consideration.
		(b) assist the RFS and emergency services as much as practicable if there is a fire in the vicinity of the site.	Compliant	No bushfire incidents occurred on site during the audit period. BD (pers comm) confirmed that LCO provided a small watercart to support fire fighting operations on an adjacent Coal & Allied landholding in 2013.
REHABILITATION				
	37.0	The Applicant shall rehabilitate the site to the satisfaction of DRE. The rehabilitation must comply with the objectives in Table 8, and be consistent	Not Triggered	Rehabilitation not yet at this stage. See the LAMAC Rehabilitation and Mine Closure Audit

Section	Sub-section	Requirement	Status	Comments														
		with the final landform plan shown in Appendix 3.		Report (Appendix F).														
		<p><i>Table 8: Rehabilitation Objectives</i></p> <table border="1"> <thead> <tr> <th>Feature</th> <th>Objective</th> </tr> </thead> <tbody> <tr> <td>Mine site (as a whole)</td> <td> <ul style="list-style-type: none"> Safe, stable and non-polluting Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms Constructed landforms drain to the natural environment (excluding the final voids) Minimise visual impact of final landforms as far as reasonable and feasible </td> </tr> <tr> <td>Final voids</td> <td> <ul style="list-style-type: none"> Minimise to the greatest extent practicable: <ul style="list-style-type: none"> the size and depth of final voids the drainage catchment of final voids </td> </tr> <tr> <td>Surface infrastructure</td> <td> <ul style="list-style-type: none"> To be decommissioned and removed, unless DRE agrees otherwise </td> </tr> <tr> <td>Revegetation</td> <td> <ul style="list-style-type: none"> Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems that is comprised of at least: <ul style="list-style-type: none"> 731 hectares of Central Hunter Box-Ironbark Woodland 1,247 hectares of grassland suitable for grazing use Establish areas of self-sustaining habitat for threatened flora and fauna species including corridor habitat for the Spotted-tailed Quoll </td> </tr> <tr> <td>Community</td> <td> <ul style="list-style-type: none"> Ensure public safety Minimise the adverse socio-economic effects associated with mine closure </td> </tr> <tr> <td>Final land use</td> <td> <ul style="list-style-type: none"> Restore or maintain land capability generally as described in the EA and as shown conceptually in Appendix 3. </td> </tr> </tbody> </table>	Feature	Objective	Mine site (as a whole)	<ul style="list-style-type: none"> Safe, stable and non-polluting Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms Constructed landforms drain to the natural environment (excluding the final voids) Minimise visual impact of final landforms as far as reasonable and feasible 	Final voids	<ul style="list-style-type: none"> Minimise to the greatest extent practicable: <ul style="list-style-type: none"> the size and depth of final voids the drainage catchment of final voids 	Surface infrastructure	<ul style="list-style-type: none"> To be decommissioned and removed, unless DRE agrees otherwise 	Revegetation	<ul style="list-style-type: none"> Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems that is comprised of at least: <ul style="list-style-type: none"> 731 hectares of Central Hunter Box-Ironbark Woodland 1,247 hectares of grassland suitable for grazing use Establish areas of self-sustaining habitat for threatened flora and fauna species including corridor habitat for the Spotted-tailed Quoll 	Community	<ul style="list-style-type: none"> Ensure public safety Minimise the adverse socio-economic effects associated with mine closure 	Final land use	<ul style="list-style-type: none"> Restore or maintain land capability generally as described in the EA and as shown conceptually in Appendix 3. 		
Feature	Objective																	
Mine site (as a whole)	<ul style="list-style-type: none"> Safe, stable and non-polluting Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms Constructed landforms drain to the natural environment (excluding the final voids) Minimise visual impact of final landforms as far as reasonable and feasible 																	
Final voids	<ul style="list-style-type: none"> Minimise to the greatest extent practicable: <ul style="list-style-type: none"> the size and depth of final voids the drainage catchment of final voids 																	
Surface infrastructure	<ul style="list-style-type: none"> To be decommissioned and removed, unless DRE agrees otherwise 																	
Revegetation	<ul style="list-style-type: none"> Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems that is comprised of at least: <ul style="list-style-type: none"> 731 hectares of Central Hunter Box-Ironbark Woodland 1,247 hectares of grassland suitable for grazing use Establish areas of self-sustaining habitat for threatened flora and fauna species including corridor habitat for the Spotted-tailed Quoll 																	
Community	<ul style="list-style-type: none"> Ensure public safety Minimise the adverse socio-economic effects associated with mine closure 																	
Final land use	<ul style="list-style-type: none"> Restore or maintain land capability generally as described in the EA and as shown conceptually in Appendix 3. 																	
Progressive Rehabilitation	38.0	The Applicant shall carry out rehabilitation progressively, that is, as soon as reasonably, practicable following disturbance. All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time. Interim rehabilitation strategies shall be employed when areas prone to dust generation cannot yet be permanently rehabilitated.	Compliant	BD (pers comm) stated that it is an internal Glencore requirement to prepare a rehabilitation plan for the site on an annual basis to ensure resourcing is available for progressive rehabilitation. HB viewed an example of an internal rehabilitation planning report for 2016.														
		<i>Note: It is accepted that parts of the site that are progressively rehabilitated may be subject to further disturbance in the future.</i>																
Rehabilitation Management Plan	39.0	The Applicant shall prepare and implement a Rehabilitation Management Plan for the development to the satisfaction of DRE, This plan must:	Compliant	<p>The Rehabilitation Management Plan requirement was addressed under the current MOP, as approved by DRE. The LCO MOP 2008 - 2015 (as modified) LCO MOP 16 March 2015 – 16 March 2022 were reviewed by HB is relevant to the rehabilitation activities undertaken during the audit period.</p> <p>The current version of the MOP (2015 – 2022 version) was approved by DRE via letter dated 24/03/15 and satisfies the</p>														

Section	Sub-section	Requirement	Status	Comments
				requirement to hold a Rehabilitation Management Plan under this condition.
		(a) be submitted to DRE for approval by the end of June 2015;	Compliant	The current version of the MOP was submitted to DRE for approval on 18/03/15.
		(b) be prepared in consultation with the Department, NOW, OEH, MSC and SC;	Compliant	See Schedule 3, Condition 39(a) above for DRE consultation. Required consultation with other agencies was completed, with DP&E (28/01/15), OEH (4/02/15), NOW (2/02/15) SC (9/02/15) and MSC (confirmed no comments on the document to LB in response to an email dated 19/01/15) providing responses.
		(c) be prepared in accordance with relevant DRE guidelines;	Compliant	Section 1.2 of the approved MOP.
		(d) describe how the rehabilitation of the site would be integrated with the implementation of the biodiversity offset strategy;	Compliant	Section 3.3.7 of the approved MOP.
		(e) include a detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);	Not Compliant	Sections 6 - 7 of the approved MOP. Annual rehabilitation areas during the audit period: <ul style="list-style-type: none"> • 2012 AEMR: 33.4 ha of rehabilitation; • 2013 AEMR: 61 ha of rehabilitation (including 10 ha already shaped in 2012); • 2014 AEMR: 62 ha of rehabilitation; • 2015: 45.5 ha of rehabilitation (BD, pers comm). This was inconsistent with the area of approximately 62 ha targeted for 2015 in the MOP. BD (pers comm) confirmed that the 2015 rehabilitation did not meet the projected MOP target due to a lowering of the site production profile in Q1 2015, constraints encountered in the approval of DA 305-11-01 (MOD 5) and significant rainfall during November & December 2015. DRE officers were notified via email from LCO dated 19/12/15 of the 2015 rehabilitation not meeting the target of 62 ha. BD (pers comm) stated that the result would be discussed in the LCO Annual Review for 2015.
		(f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform including final voids and final land use;	Compliant	Sections 5 – 9 of the approved MOP.
		(g) include interim rehabilitation where necessary to minimise the area exposed for dust generation;	Compliant	Section 3.3 and Sections 5 – 7 of the approved MOP.

Section	Sub-section	Requirement	Status	Comments
		(h) include a program to monitor and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and	Compliant	Sections 8 – 10 and 12 of the approved MOP.
		(i) build to the maximum extent practicable on other management plans required under this consent.	Compliant	Section 3 of the approved MOP.
SCHEDULE 4				
ADDITIONAL PROCEDURES				
NOTIFICATION OF LANDOWNERS				
	1.0	By 31 October 2007, the Applicant shall notify the landowners of the land listed in Table 1 that they have the right to an independent review in accordance with Condition 4 of Schedule 4 if they consider that the development is exceeding the relevant impact assessment criteria at any stage during the life of the development.	Compliant	Previous audit confirmed compliant.
	2.0	If the results of monitoring required in Schedule 3 identify that impacts generated by the development are greater than the impact assessment criteria, except where this is predicted in the EA, and except where a negotiated agreement has been entered into in relation to that impact, then the Applicant shall notify the Secretary and the affected landowners and/or existing or future tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the development is complying with the criteria in Schedule 3.	Compliant	Viewed notifications provided to the DP&E (4/09/14) and representative private landowners / tenants (15/09/14) of a 'noise affected night' recorded during Global Acoustics monthly attended noise monitoring in September 2014. Provision of quarterly noise monitoring results to affected landholders was not required by DP&E. Monthly noise monitoring results are also available on the LCO website.
	3.0	The Applicant shall send a copy of the NSW Health fact sheet entitled 'Mine Dust and You' (as may be updated from time to time) to advise landowners and/or existing or future tenants (including tenants of mine owned properties) of the possible health and amenity impacts associated with exposure to particulate matter, to the satisfaction of the Secretary where the predictions in the EA identify that the dust emissions generated by the development are likely to be greater than the air quality criteria in Schedule 3.	Compliant	Viewed a copy of LCO letter 'Information regarding the effects of mine dust' dated 23/04/15 (LCO website). The 'Mine Dust and You' factsheet was attached to the letter and distributed to neighbouring landholders in April 2014. DP&E approved the brochure and notification for distribution via letter to LCO dated 20/01/14.
INDEPENDENT REVIEW				
	4.0	If a landowner of privately-owned land considers the development to be exceeding the impact assessment criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.	Not triggered	BD (pers comm) verified no requests for independent review had been received during the audit period.
		If the Secretary is satisfied that an independent review is warranted, the Applicant shall within 2 months of the Secretary decision:		
		(a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Secretary, to:		

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> consult with the landowner to determine his/her concerns; 		
		<ul style="list-style-type: none"> conduct monitoring on the land, to determine whether the development is complying with the relevant impact assessment criteria in Schedule 3; and 		
		<ul style="list-style-type: none"> if the development is not complying with these criteria then: <ul style="list-style-type: none"> determine if more than one mine is responsible for the exceedances; and if so the relevant share of each mine regarding the impact of the land; identify measures that could be implemented to ensure compliance with the relevant criteria; 		
		(b) give the Secretary and landowner a copy of the independent review.		
	5.0	If the independent review determines that the development is complying with the relevant impact assessment criteria in Schedule 3, then the Applicant may discontinue the independent review with the approval of the Secretary.	Not triggered	BD (pers comm) verified no requests for independent review during the audit period.
	6.0	If the independent review determines that the development is not complying with the relevant impact assessment criteria in Schedule 3, and that the development is primarily responsible for this noncompliance, then the Applicant shall:	Not triggered	BD (pers comm) verified no requests for independent review during the audit period.
		(a) take all reasonable and feasible measures, in consultation with the landowner and appointed independent expert to ensure that the development complies with the relevant criteria; or		
		(b) secure a written agreement with the landowner to allow exceedances of the criteria in Schedule 3,		
		to the satisfaction of the Secretary.		
		If the additional monitoring referred to above subsequently determines that the development is complying with the relevant criteria in Schedule 3, then the Applicant may discontinue the independent review with the approval of the Secretary.		
		If measures referred to in (a) do not achieve compliance with the criteria in Schedule 3, and the Applicant cannot secure a written agreement with the landowner to allow these exceedances within 3 months, then upon receiving a written request from the landowner, then the Applicant or landowner may refer the matter to the Secretary for resolution. If the matter cannot be resolved within 21 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process (see Appendix 4).		
SCHEDULE 5				
ENVIRONMENTAL MANAGEMENT, AUDITING & REPORTING				
ENVIRONMENTAL	1.0	The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This	Compliant	LCO operate under an Environmental Management Strategy (EMS) developed consistent with ISO:14001

Section	Sub-section	Requirement	Status	Comments
MANAGEMENT STRATEGY		strategy must:		requirements. Viewed approval letter from DP&E dated 14/12/15. In the approval letter, DP&E note that the EMS will apply from 8/01/16.
		(a) provide the strategic context for environmental management of the development;		Section 3 of the approved EMS
		(b) identify the statutory requirements that apply to the development;		Section 4.12 of the approved EMS
		(c) describe in general how the environmental performance of the development would be monitored and managed;		Section 6 of the approved EMS
		(d) describe the procedures that would be implemented to: <ul style="list-style-type: none"> • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance; • manage cumulative impacts; and • respond to emergencies; 		Sections 5.5 – 5.12, 6.5 of the approved EMS
		(e) describe the role, responsibility, authority, and accountability of all the key personnel involved in environmental management of the development; and		Section 5.1 of the approved EMS
		(f) include: <ul style="list-style-type: none"> • copies of various strategies, plans and programs that are required under the conditions of this consent once they have been approved; and • a clear plan depicting all the monitoring to be carried out in relation to the development. 		Appendices A – H of the approved EMS includes hyperlinks to associated management documents on the LCO website. BD (pers comm) confirmed that these links would be updated to reference new or modified plans, as required.
	2.0	DELETED		
ANNUAL REVIEW				
	3.0	Each year, the Applicant shall prepare an Annual Review to the satisfaction of the Secretary. This review must:	Compliant	HB reviewed the AEMRs (Annual Review) relevant to the audit period to verify that the documents included the data required under this condition: <ul style="list-style-type: none"> • 2012 AEMR: compliant; • 2013 AEMR: compliant; • 2014 AEMR: compliant; and • 2015: Annual Review being prepared at the time of audit. Viewed letters sent to LCO during 2015 from DP&E, DRE and OEH in response to the 2014 AEMR and site reviews.

Section	Sub-section	Requirement	Status	Comments
				The AEMR was found to be prepared generally in accordance with the requirements of the development consent and mining authority conditions.
		(a) identify the standards and performance measures that apply to the development;	Compliant	
		(b) describe the works carried out in the last 12 months;	Compliant	
		(c) describe the works that will be carried out in the next 12 months;	Compliant	
		(d) include a comprehensive review of monitoring results and complaints received during the past year, and compare the results against: <ul style="list-style-type: none"> • limits/criteria in this consent, statutory requirements and performance measures/criteria; • monitoring results from previous years; and 	Compliant	
		(e) predictions in the latest EA;	Compliant	
		(f) identify any trends in the monitoring over the life of the development;	Compliant	
		(g) identify and discuss any non-compliance during the previous year and describe what actions were (or are being) taken to ensure compliance;	Compliant	
		(h) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	Compliant	
		(i) describe what measures will be implemented over the next year to improve the environmental performance of the development.	Compliant	
INDEPENDENT ENVIRONMENTAL AUDIT				
	4.0	Within a year of the approval of modification application DA 305-11-01 MOD 5, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:	Compliant	This audit.
		(a) be conducted by a suitably qualified, experienced, and independent team of experts whose appointment has been endorsed by the Secretary;		Audit team approved by DP&E in letter dated 10/11/15.
		(b) include consultation with relevant agencies;		This audit.
		(c) assess the environmental performance of the development, and its effects on the surrounding environment;		This audit.
		(d) assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;		This audit.
		(e) review the adequacy of any strategy/plan/program required under this consent; and, if necessary,		This audit.
		(f) recommend measures or actions to improve the environmental performance of the development, and/or any strategy/plan/program required under this consent.		This audit.
		<i>Note: This audit team must be led by a suitably qualified auditor and include experts in the field of mine rehabilitation and mine closure.</i>		Audit team approved by DP&E in letter dated 10/11/15, including rehabilitation and mine closure expert.

Section	Sub-section	Requirement	Status	Comments
	5.0	5. Within 6 weeks of completing this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary with a response to any recommendations contained in the audit report.	Compliant	Viewed letter dated 28/09/12 from LCO to DP&I submitting a copy of the 2012 Independent Audit Report. The letter includes proposed responses and timeframes for LCO to address the recommendations made in the 2012 Independent Audit Report.
	6.0	Within 3 months of submitting the audit report to the Secretary, the Applicant shall review and if necessary revise the strategies/plans/programs required under this approval, to the satisfaction of the Secretary.	Compliant	The LCO EMS, EMP, AQMP, Land Management Plan and NMP were updated and approved by DP&I (now DP&E) following the submission of the 2012 Independent Environmental Audit (in response to recommendations made).
COMMUNITY CONSULTATIVE COMMITTEE				
	7.0	The Applicant shall maintain a Community Consultative Committee for the development to the satisfaction of the Secretary. The CCC must be operated in accordance with the <i>Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments</i> (Department of Planning, 2007, or its latest version). <i>Notes:</i> <ul style="list-style-type: none"> The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent. <i>In accordance with the Guideline, the Committee should comprise an independent chair and appropriate representation from the Applicant, Councils and the community.</i>	Compliant	Reviewed LCO website and Annual Reviews and verified: <ul style="list-style-type: none"> Two CCC meetings in 2012 (Section 4.2 of AEMR); Two CCC meetings in 2013 (Section 4.2 of AEMR); and Two CCC meetings in 2014 (Section 4.2 of AEMR). Two CCC meetings in 2015 (LCO website). <p>HB confirmed that minutes of CCC meetings during the audit period were available on LCO website.</p> <p>Viewed letter from LCO dated 24/1/3 notifying DP&E of new CCC member (R. Clydesdale) and email from LB to DP&E updating the DP&E of CCC members and chair.</p>
		•		
	8.0	DELETED	N/A	Condition deleted.
ACCESS TO INFORMATION				
	9.0	By the end of February 2015, and for the remainder of the life of the development, the Applicant shall:	Compliant	Viewed spreadsheet provided by LB confirming when documentation was uploaded to the LCO website. All historic documents and contemporary versions of the plans were available on the LCO website by March 2015.
		(a) make the following information publicly available on its website: <ul style="list-style-type: none"> a copy of all current statutory approvals for the development; a copy of the current environmental management strategy and associated plans and programs; a summary of monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent; a complaints register, which is to be updated in a monthly basis; a copy of the CCC minutes; a copy of any Annual Reviews (over the last 5 years); 	Compliant	HB reviewed LCO website in January 2016. At the time of review, the website included the latest plans and required documentation, records.

Section	Sub-section	Requirement	Status	Comments
		<ul style="list-style-type: none"> a copy of any Independent Environmental Audit, and the Applicant's response to the recommendations in any audit; any other matter required by the Secretary; and 		
		(b) keep this information up to date		
		to the satisfaction of the Secretary.		
REVISION OF STRATEGIES, PLANS AND PROGRAMS				
	10.0	Within 3 months of:	Compliant	HB reviewed revisions of management plans, strategies and programs during the audit period and confirmed internal reviews were completed by LCO as required, including amendments in response to MOD 5.
		(a) the submission of an Annual Review under condition 3 above;		
		(b) the submission of an incident report under condition 11 below;		
		(c) the submission of an audit under condition 4 above; or		
		(d) any modification to the conditions of this consent,		
		The Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 2 months of the review the revised document must be submitted to the Secretary for approval, unless the conditions in Schedule 3 provide for an alternative timing and/or the Secretary agrees otherwise.	Compliant	BD noted that the WMP was revised in response to a review of monitoring results that indicated groundwater triggers should be revised. Notifications of the proposed changes to groundwater triggers were provided to DP&E and DPI-Water via emails from BD in October 2015 and November 2015, with the revised WMP provided to DP&E and DPI-Water on 18/12/15.
		<i>Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.</i>		
INCIDENT REPORTING				
	11.0	The Applicant shall notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Compliant	Incidents reported publically in 2012 (Section 3.3 of the AEMR): <ul style="list-style-type: none"> Issue with required HRSTS data not being logged correctly due to equipment failure (PIN); Disturbance of known Aboriginal site during clearing (no material harm, artefact not damaged); Discharge from Workshop sediment dam to Bowmans Creek (March 2012 so response only). 12 internal incidents recorded in 2012 (8 hydrocarbons, 3 dust, 1 waste).

Section	Sub-section	Requirement	Status	Comments
				<p>Incidents reported publically in 2013 (Section 3.3 of the AEMR):</p> <ul style="list-style-type: none"> • Exceedance of blast over pressure criteria at CoP Hotel (134.1 dB result); • Blast fume crossing over site boundary. <p>19 internal incidents recorded in 2013 (13 hydrocarbons, 2 blast, four water, one rehab, one safety).</p> <p>Incidents reported publically in 2014 (Section 3.3 of the AEMR):</p> <ul style="list-style-type: none"> • Exceedance of blast over pressure criteria at COPI (results of 136 dB and 134.9 dB). DP&E issued a PIN for the 11/04/14 event, no action of 28/04/14 event; No internal incidents recorded in 2014. <p>Incidents reported publically in 2015 (LCO incidents register):</p> <ul style="list-style-type: none"> • Damage to weather station mast due to storms. The monitoring station was down from 18/03/15 to 25/03/15 while replacement mast was delivered and installed; • Damage to Ausgrid powerline insulator due to flyrock from blasting; • Two formal notifications from DP&E officers on excessive dust being generated on site (5/08/15 and 6/08/15). • Category 2 water incident at the CHPP on 24/08/15.
REGULAR REPORTING				
	12.0	The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent, and to the satisfaction of the Secretary.	Compliant	<p>Reviewed website and incidents records. Monthly reporting up to date at the time of audit.</p> <p>BD (pers comm) confirmed that DP&E were satisfied with LCO arrangements for the reporting of environmental performance.</p>

Table B
Other Licences & Approvals

Instrument	Status	Comments
EPL 2094	Not Compliant	<p>Reviewed EPL 2094 conditions against relevant monitoring data and reporting requirements. Non-compliances were identified against the following conditions:</p> <p>L1, 1.1 Pollution of Waters. Discharge from breached windrow to Bayswater Creek on 24/08/15. Incident reported to EPA on 25/08/15, with a detailed report provided by LCO on 31/08.15 following receipt of downstream water quality test results. LCO re-instated windrow and redesigned erosion and sediment control arrangements of the ROM light vehicle access road; reviewed PIRMP document.</p> <p>L2, 2.1 Concentration Limits. Exceedance of e. coli criteria at Monitoring Point 5 (Dam 13) from July 2012 – April 2013 (location now superseded). Results reviewed and found not to be indicative of performance issues at the sewage treatment plant (STP). LCO applied to the EPA for a variation to the approved monitoring location on 24/06/13.</p> <p>M2, M2.1, 2.3 Requirement to monitor concentration of pollutants discharged. PM₁₀ data not measured at Monitoring Point 1 on 30/09/13. The HVAS unit was inspected and re-calibrated, with no further faults occurring.</p> <p>M4, M4.1 Weather Monitoring. LCO meteorological monitoring site did not record required data over the period 18/03/15 – 25/03/15. Monitoring site mast damaged during period of high winds; outage occurred over the period while sourcing and installing new mast. LCO accessed continuous meteorological data from neighbouring Glencore operations during the outage.</p> <p>M9, M9.1 Other monitoring and recording conditions. Monitoring Point 2 not communicating required data to the “Service provider” as required on 16 – 17/07/12. Incident reported to EPA by LCO on 21/08/12 and in EPL 2094 Annual Return for 2012/13. Faulty communications equipment was repaired, re-instated and calibrated. Bi-monthly communications check incorporated into NSW Office of Water maintenance program.</p> <p>E2, E2.1-E2.2 Hunter River Salinity Trading Scheme. Letter from EPA dated 23/08/12 noting non-compliant transfer of 20 credits between Xstrata Mangoola and LCO. The trade occurred for blocks 2011-334 and 2011-335 after the River Register for block 2011-334 had been published and discharge occurred outside of relevant period under the River Register. EPA requested LCO show cause for the discharge and LCO responded via letter dated 30/11/12.</p>
ML 1597	Not Compliant	<p>Reviewed conditions of ML 1597 as executed 5/11/07 against the activities and reporting completed during the audit period. A non-compliance was identified under:</p>

Instrument	Status	Comments
		Condition 19 Transmission lines, communication lines and pipelines. Minor flyrock damage to Ausgrid powerline insulator on 28 September 2015. LCO replaced damaged insulator.
Onsite Sewerage Management System (SC ref: DA 20/2008 & ST 18/2008)	Not Compliant	Reviewed approval conditions dated 29/05/08 against relevant activities and reporting completed during the audit period. Condition 3: Viewed results of three-monthly monitoring completed 9/09/15 by LCO contractor. Monitoring results reported to SC on 9/11/15, outside of 7 days of monitoring as required under Condition. Condition 6: Viewed examples of effluent monitoring results. Monitoring results for free residual chlorine fell outside of the standard range included in the approval.
MSC Approval to Operate an On-site Sewage Management System (MSC ref: WTA 2/2006)	Compliant	Reviewed approval conditions dated 25/06/14 against relevant activities, fees payed and reporting completed during the audit period. STP operated in accordance with MSC conditions of approval.
LCO AHIP (AHIP No: C0000623)	Administrative Non -compliance	Reviewed AHIP conditions dated 3/12/14 against relevant activities and reporting completed during the audit period. Condition 18 (Notification of commencement and completion of actions). LCO did not comply with the requirement to notify OEHL by written notice at least seven days prior to commencement of an action under the AHIP (salvage works undertaken in 2015). OEHL responded by email confirming that there were no issues with the action proceeding as proposed by LCO. Condition 20 (Copy of this AHIP and notices to be provided to Registered Aboriginal Parties). The AHIP conditions were provided to RAPs on 24/2/15 during a meeting on site (outside of the 14 day notification period). Viewed email from LCO dated 24/02.15 notifying OEHL of the issue and reply from OEHL dated 3/06/15 confirming that the department was satisfied.
20BL172588 Middle Liddell Bore	Administrative Non-compliance	Reviewed bore licence conditions against relevant activities and reporting completed during the audit period. LCO provided bore report and required sampling to NOW (now DPI-Water) in March 2013, following completion of the bore in January 2013. Water extraction, use and monitoring data required under the licence conditions are described in the LCO AEMRs for the audit period, with the documents provided to NOW for their records. Annual extraction volumes during the audit period are within licence limits. Condition 12 Five yearly independent audit of groundwater conditions and monitoring data to be commissioned. LCO did not commission an expert independent review within the timeframe required under the condition.

Instrument	Status	Comments
20BL172293 M49	Compliant	Reviewed bore licence conditions against relevant activities and reporting completed during the audit period. Water extraction, use and monitoring data required under the licence conditions are described in the LCO AEMRs for the audit period, with the documents provided to NOW for their records. Annual extraction volumes during the audit period are within licence limits.

Table C
LCO Management Plans

Section	Commitment(s)	Status	Comments
Environmental Management Strategy			
Section 2.1 Strategy and planning	Annual HSEC Planning at LCO is undertaken generally in accordance with CAA HSEC STD 0002 2.0 Strategy and Planning. Following the annual management review HSEC strategies, plans, process, objectives and targets are to be updated as part of the annual planning process. Actions and minutes from the meeting are recorded in LCO's compliance management database CMO and progress is reviewed at the next meeting.	Compliant	Viewed 2014/15 HSEC planning documents and Environment & Community meeting minutes and actions.
Section 2.1 Strategy and planning	A more detailed review of each operation's objectives and targets and compliance status is undertaken on a weekly basis at HSEC meetings. LCO also undertake a review of actions at weekly HSEC meetings to track progress and to address issues arising in between quarterly meetings.	Compliant	Viewed examples of actions tracked to completion via CMO provided by BD. Upcoming actions are also maintained and flagged in CMO. BD (pers comm) confirmed that HSEC actions are reviewed and documented at the weekly LCO Manager's Meeting (as per LCO SD PRO 0018 Communication and Engagement Procedure), with all departments involved in a quarterly meeting.
Section 2.2 Project Management	All projects are managed to consider HSEC requirements generally in accordance CAA HSEC PCL 0005 Statutory Approval Management, in conjunction with LCO SD PRO 0060 Life Cycle Management – Projects & Operations. Environmental impacts of projects are assessed during the planning phases to consider environmental criteria, legislative requirements and stakeholder views.	Compliant	Environmental aspects and impacts for major projects / developments during the audit period are included in EIS / EA phase. BD (pers comm) verified that the Change Management process is used for planning of other activities. HB viewed LCO SD PRO 008 (2014) Change Management that outlines the requirements for Change Management process on site. Examples of completed Change Management were also reviewed, including that completed for the modifications to the Workshop Fill Point dated 13/03/15 (from Xstrasafe system,

Section	Commitment(s)	Status	Comments
			now superseded by CMO). Change Management on site is now documented in CMO.
Section 2.3 Risk Management	Aspects and impacts at LCO are considered for operational activities, legislative requirements and internal and external stakeholder views. Key aspects and impacts are identified during the annual review of the Liddell Coal Operations Environment and Community Broad Brush Risk Assessment (E&C BBRA) and the Life of Mine (LOM) Risk Assessment and Site Wide Broad Brush Risk Assessment (Site Wide BBRA). The E&C BBRA is undertaken in accordance with CAA HSEC PRO 0009 Annual Environment and Community Risk Assessment	Compliant	Aspects and impacts are documented as part of the audit period AEMRs, as required. The requirement for LCO to complete the internal E&C BBRA has not been triggered as CAA HSEC PRO 0009 requires completion end of Q1 2016 (BD, pers comm).
Section 2.5 Exploration and Drilling	To assist with planning for these drilling programs, LCO Environment and Community personnel undertake inspections prior to, during and post drilling, to ensure works are undertaken in a safe manner and adequate controls are in place to minimise impacts on the environment and the community. Drilling inspections are held by the person responsible for undertaking the drilling program and returned to the Environment and Community Department upon completion of the program (including rehabilitation of drill sites).	Not Triggered	No exploration programs undertaken since approval of the EMS.
Section 3.3 Energy and Carbon	LCO manages energy consumption and greenhouse gas emissions in accordance with CAA HSEC PCL 0001 11.13 Carbon Management. This framework outlines the energy and greenhouse gas management and reporting requirements of GCAA and accordingly LCOs requirements.	Compliant	Viewed LCO GCP database.
Section 3.6 Internal Stakeholder Communication	Internal stakeholders include employees, contractors and visitors of LCO. Internal stakeholder communication is undertaken in accordance with CAA HSEC PCL 0031 Internal Communications.	Compliant	Reviewed examples of internal stakeholder communications during the audit period.
Section 3.7 External Stakeholder Communication	External stakeholder communication is undertaken in accordance with CAA HSEC STD 0010 Community and Stakeholder Engagement and CAA HSEC PCL 0016 Stakeholder Engagement. These documents are used as a basis for developing the Stakeholder Engagement Strategy.	Compliant	Reviewed examples of external stakeholder communications during the audit period. Community and regulatory stakeholders and engagement strategies for each are well understood by LCO personnel.

Section	Commitment(s)	Status	Comments
Section 3.9 Complaint Management	Community Complaints at LCO are managed in accordance with CAA HSEC PCL 0019 and LCO SD PRO 0017 Community Complaint & Enquiry Management Procedure. LCO implements a complaints hotline (1800 037 317) for handling the conflict resolution process.	Compliant	LCO maintains and publishes details of the complaints hotline and complaints register, as required.
Section 3.11 Training	LCO has developed a site specific training and competency management plan that outlines the process for determining training needs and the delivery of training across the operation as follows LCO SD PLN 0001 Training and Competency Management. Training specific to environmental management is delivered to all LCO personnel and contractors in the site familiarisation induction.	Compliant	HB interviewed LCO E&C and Training personnel and viewed examples of training documents and records from the audit period. Environmental training is provided to all personnel and contractors, with a Training Needs Analysis register in place to track staff competencies.
Section 3.12 Emergency Response and Preparedness	All personnel receive emergency preparedness and response training during their site familiarisation induction. LCO maintains a dedicated emergency response team who undergo regular training and operational drills.	Compliant	Viewed copies of emergency preparedness and response training provided to all staff and procedures: <ul style="list-style-type: none"> LCO SD TRN 0019; and LCO SD TRN 0028.
Section 4.1 Environmental Monitoring	Monitoring results are stored on the LCO Environmental Monitoring Database (EMD) in accordance with CAA HSEC PRO 0007 Environmental Data Collection and Reporting.	Compliant	Reviewed the EMD, which is updated and maintained by the LCO E&C Department. The EMD includes historical monitoring records.
Section 4.1 Environmental Monitoring	Environmental performance at LCO is evaluated through a variety of review mechanisms. A summary of these mechanisms are provided below in Table 6.	Compliant	Viewed examples of review mechanisms completed throughout the audit period. The mechanisms required by Table 6 of the EMS were completed by LCO, as required.
Section 4.2 Audits	Auditing at LCO is undertaken in accordance with the CAA HSEC STD 0013 Assurance and CAA HSEC POL 0006 GCAA HSEC Assurance Policy.	Compliant	Viewed examples of auditing completed during the audit period.
Section 4.3 Monthly Inspections	Monthly environmental inspections are undertaken by the E&C Department.	Compliant	Viewed examples of inspection records for inspections completed by the E&C Department.
Section 4.4 Incidents and	The E&C Department reports incidents in CMO and determines the appropriate corrective or preventative action using the Incident Cause Analysis Method (ICAM) where required.	Compliant	Viewed incident reports and relevant corrective actions logged in CMO.

Section	Commitment(s)	Status	Comments
Corrective Actions			
Section 4.5 Environmental Reporting	The LCO Environment and Community Manager facilitates the environmental reporting requirements outlined in Table 8 below.	Compliant	Viewed examples of environmental reports completed and submitted throughout the audit period. The reports required by Table 8 of the EMS were completed by LCO, as required.
Section 4.6 EMS Review and Continuous Improvement	The review and revision of the EMS is to be undertaken by the Environment and Community department at LCO in accordance with LCO SD PRO 0019 - Review of Environmental Management System.	Not Triggered	Review not triggered since the approval of the EMS.
Biodiversity Management Plan			
Fencing, Signage and Access Control			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Complete inspection of all fencing of BMP Area to map locations, condition and identify need for new fencing or redundant fencing.	Compliant	BD (pers comm) verified the fencing inspection and mapping for the BMP Area was completed in 2015. Viewed email dated 22/12/15 outlining works required.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Fencing of relevant parts of BMP area.	Compliant	Ongoing; fencing of the BMP to be undertaken over the next three years. BD (pers comm) confirmed the SAL is the first area to be fenced; HB confirmed this was under construction at the time of audit.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Any new fencing does not have barbed wire on upper strands and as little barbed wire generally as possible. The bottom strand will be plain wire and elevated to allow faunal passage (while maintaining cattle exclusion).	Compliant	HB viewed a section of SAL fencing in the field, which meets the required specification.

Section	Commitment(s)	Status	Comments
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Removal of redundant fences.	Not Triggered	Ongoing
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Minimum twice yearly inspections of fences to identify condition.	Not Triggered	Ongoing
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Information signage for the spotted-tailed quoll.	Not Triggered	Not commenced. BD (pers comm) confirmed the signage would be implemented for Bowmans Creek Riparian corridor access tracks (fencing underway at the time of audit).
Access Track Maintenance			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	New access tracks (only constructed where necessary) are subject to due diligence assessments.	Not Triggered	No new access tracks constructed post-approval of the BMP.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Minimum twice a year BMP Area inspections to identify track conditions.	Compliant	Viewed a copy of inspection forms completed during the audit period (current version dated 1/12/15). Inspections are documented as required.

Section	Commitment(s)	Status	Comments
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Rehabilitation of unnecessary access tracks.	Not Triggered	No tracks required rehabilitation during the audit period.
Topsoil Management			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Areas containing weeds that may pose a threat to rehabilitation are sprayed prior to topsoil stripping.	Compliant	Viewed LCO Land Clearing and Topsoil Stripping Procedure. Procedure documents weed management requirements prior to topsoil stripping.
Erosion, Sedimentation and Salinity			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Implement erosion and sediment controls during land clearing.	Compliant	Viewed LCO Erosion and Sediment Control procedure. Pre-clearance inspections are completed by Environment & Community personnel, with required controls documented as part of the Ground Disturbance Permit (GDP) approval process (documented under CAA-HSEC-PER-0004).
Creek and Drainage Line Protection			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Fencing/protection of LCO controlled side of riparian corridor (as part of Offset Management Plan).	Compliant	Fencing of the Bowmans Creek Riparian corridor underway at the time of audit.
Pathogen Management			

Section	Commitment(s)	Status	Comments
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	If reasonable potential for pathogens is identified in the BMP Area, appropriate pathogen monitoring and management protocols are developed and implemented.	Not triggered	Pathogen potential not identified in the LCO BMP Area.
Seed Collection			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Where suitable remnant vegetation is available, implementation of seed collection and handling program for use in revegetation/rehabilitation works.	Not triggered	BD (pers comm) confirmed that on site seed collection has not been undertaken post-approval of the BMP.
Vegetation Clearing			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Detailed pre-clearing procedure is to be implemented when clearing areas of woody native vegetation (including shrub, groundcover and isolated trees in grasslands).	Compliant	Pre-clearance inspections are completed by Environment & Community personnel, with required controls documented as part of the GDP approval process (documented under CAA-HSEC-PER-0004).
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Detailed tree felling process is to be implemented when clearing areas of woody native vegetation (including shrub, groundcover and isolated trees in grasslands).	Compliant	Viewed LCO Land Clearing and Topsoil Stripping Procedure. Procedure documents tree felling process.
Translocation Works			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and	Translocation of tiger orchids or other threatened flora species (if encountered during pre-clearing process) to biodiversity offset areas.	Not triggered	No threatened flora species required translocation during the audit period.

Section	Commitment(s)	Status	Comments
Completion Criteria			
Remnant Vegetation and Habitat Management			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Remnant vegetation is to be protected from accidental impact.	Compliant	Remnant vegetation is protected by the GDP review and approval process and by fencing off of conservation / remnant vegetation areas outside of the disturbance boundary.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Remnant vegetation is protected from disturbance.	Compliant	Remnant vegetation is protected by the GDP review and approval process and by fencing off of conservation / remnant vegetation areas outside of the disturbance boundary.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Annual inspections undertaken by suitably qualified personnel to assess the extent of natural regeneration occurring.	Compliant	BD (pers comm) confirmed that the required annual inspection was completed in November 2015, as required. The inspection report was due to be finalised in February 2016.
Rehabilitation Works			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Criteria for these works are included within the Mining Operations Plan (SLR 2015). This includes detailed criteria for rehabilitation success (survival, succession, vegetation structure and health).	Compliant	See comments on the LCO 2015 – 22 MOP.
Weed Control			

Section	Commitment(s)	Status	Comments
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Complete weed inspections of BMP area every two months to document diversity and abundance of noxious weed records. This will then inform ongoing control actions (as needed), including timing, frequency, target species and methods to be used.	Compliant	Viewed completed copies of inspection forms. BD (pers comm) confirmed Environment & Community personnel undertaken monthly inspection of the BMP area.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Weed inspections of remnant and rehabilitation areas	Compliant	Viewed completed copies of inspection forms. BD (pers comm) confirmed Environment & Community personnel undertaken monthly inspection of the BMP area.
Feral Animal Control			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Complete feral animal inspections of BMP area every two months to document sighting and abundance records. This will then inform ongoing control actions (as needed), including timing, frequency, target species and methods to be used.	Compliant	Viewed completed copies of inspection forms, which include notes of any feral animal sightings.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Develop and implement an effective annual pest animal action plan.	Compliant	BD (pers comm) confirmed that an annual action plan had been drafted at the time of audit. The action plan was due to be implemented in March 2016.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Particular action is paid to managing foxes, feral cats and feral dogs in order to protect the spotted-tailed quoll population in this area.	Compliant	Fox, feral cat and dog management actions will be included in the annual action plan to be implemented in March 2016.

Section	Commitment(s)	Status	Comments
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Develop a vertebrate pest control register to document when and where each control method is implemented.	Compliant	A pest register will be developed from the annual management actions completed for pest control on site to be implemented in March 2016.
Blue-billed Duck Management			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Complete habitat enhancement, maintenance and monitoring works (as required) for the blue-billed duck	Compliant	Viewed plantings and habitat features put in place for the Blue-billed duck on site dams during field inspections.
Habitat Enhancement			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Salvage of habitat features (particularly for the spotted-tailed quoll) such as hollow-bearing trees, logs, stumps, large rocks and boulders.	Compliant	Habitat features put in placed on rehabilitation viewed during field inspections, including logs, hollows and rocks.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Nest boxes are providing habitat value for native fauna.	Compliant	BD (pers comm) confirmed that LCO were looking to implement nest boxes within the Bowmans Creek Riparian corridor.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Salvaged–reinstated hollows	Compliant	Habitat features put in placed on rehabilitation viewed during field inspections, including logs, hollows and rocks.

Section	Commitment(s)	Status	Comments
Criteria			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Timing of nest box installation	Compliant	BD (pers comm) confirmed that LCO were looking to implement nest boxes within the Bowmans Creek Riparian corridor.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Salvaging, stockpiling and deployment of habitat features	Compliant	Habitat features put in placed on rehabilitation viewed during field inspections, including logs, hollows and rocks.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Foraging specific plant resources	Compliant	BD (pers comm) confirmed that the Broom bitter pea and Sickle wattle were included in the current woodland rehabilitation seed mix, based on likelihood of good survival outcomes.
Grazing Management			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Stock rotation	Compliant	Viewed results from cattle grazing on pasture rehabilitation areas during the field inspection undertaken for the audit. BD (pers comm) noted that Glencore cattle trial was ongoing at the time of audit.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion	Shade trees and shelter belts (in areas suitable for future grazing) are planted with suitable endemic species compatible with adjoining vegetation communities.	Compliant	Implementation of suitable tree plantings was ongoing at the time of audit.

Section	Commitment(s)	Status	Comments
Criteria			
Bushfire Management			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	The current Bushfire Management Plan will be updated according to the approved modification. Bushfire Management Plan will be implemented.	Compliant	BD (pers comm) confirmed that the LCO Bushfire Management Plan will be updated in 2016 to reflect DA 305-11-01 (MOD 5).
Ecological Monitoring			
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Undertake floristic, fauna, LFA, waterbird, nest box, stygofauna and instream/riparian monitoring program throughout LCO	Compliant	BD (pers comm) confirmed that the required annual inspection was completed in November 2015, as required. The inspection report was due to be finalised in February 2016.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Undertake annual inspections of LCO rehabilitation areas	Compliant	Annual inspections had been undertaken as required, with results reported in the AEMRs / Annual Review.
Section 6 – Table 6.1 Years 1 to 3 Performance Indicators and Completion Criteria	Native fauna presence in rehabilitation/regeneration areas	Compliant	BD (pers comm) confirmed that the required annual inspection was completed in November 2015, as required. The inspection report was due to be finalised in February 2016.
Section 6 – Table 6.1 Years 1 to 3 Performance	Collate data on actions implemented and results of inspections and monitoring into the AEMR.	Compliant	BD (pers comm) confirmed that the 2015 Annual Review would report on biodiversity management and rehabilitation actions

Section	Commitment(s)	Status	Comments
Indicators and Completion Criteria			undertaken. The document was being drafted at the time of audit.
Air Quality MMP			
Section 2.3 Air Quality Criteria	As specified in Condition 16 of Schedule 3 (Appendix A) of the development consent, LCO is required to ensure that dust emissions generated by the development do not exceed the impact assessment criteria listed in Table 1 and Table 2 at any residence on privately owned land.	Compliant	Reviewed air quality monitoring data for the audit period and confirmed compliant.
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> Meeting ambient TSP, PM10 and dust deposition criteria (Section 2.3) at compliance monitoring stations (Section 2.11.2). 	Compliant	Reviewed air quality monitoring data for the audit period and confirmed compliant.
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> Achieve a 100% data completeness for compliance monitoring stations. 	Compliant	LCO continues to record data capture rates for air quality compliance monitoring sites.
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> On-going implementation of a Dust Management TARP, informed by real-time air quality and meteorological monitoring. 	Compliant	Reviewed the performance of the Dust Management TARP since it was rolled out in 2013. HB viewed: <ul style="list-style-type: none"> LCO SD PRO 0069 Dust Management TARP. Responses are triggered from the real-time air quality monitoring network (PM₁₀), in response to adverse meteorological conditions, or in response to visual inspections by Mining and E&C personnel; Examples of daily Jacobs AQCS Forecaster - Liddell emailed to E&C, Maintenance, Production and Tech. Services personnel. LB (pers comm) confirmed risks were discussed at daily production meetings; Examples of daily production meeting presentations, including predictions of weather conditions and dust risk;

Section	Commitment(s)	Status	Comments
			<ul style="list-style-type: none"> • Examples of Statutory Shift Reports completed by Mining Supervisors, which include section to comment on air quality management actions and responses to dust alerts; • Records of internal LCO reviews of dust alarms. LB (pers comm) verified that reviews were undertaken on a quarterly basis and considered Dust TARP response actions and impacts on LCO operational efficiencies; • Cameras located at strategic locations in the pit. These can be used as a remote tool to review operations for dust sources, etc.
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> • Achieve 95% data availability for real-time monitors. 	Compliant	LCO continues to record data capture rates for air quality real-time monitoring sites. Real-time results are available via a web-based portal.
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> • Achieve an average haul road dust control efficiency of >80 %. The method for measuring haul road dust control efficiency is specified in the EPL PRP Monitoring Plan 2013. 	Compliant	LB (pers comm) confirmed that LCO maintained required watering of haul roads. This is verified by quarterly monitoring of haul road emissions (currently completed by AECOM).
Section 2.7 Objective and Targets	In implementing the AQMMP, LCO continues to work towards the following specific targets: <ul style="list-style-type: none"> • Reduce the overall site disturbance footprint through progressive rehabilitation, with a particular focus on reducing the overall area of site disturbance in the short to medium term. 	Compliant	HB reviewed rehabilitation performance and confirmed progressive rehabilitation is being undertaken to minimise exposed areas.
Section 2.11.1 Overview of monitoring	Three types of air quality monitoring are undertaken at LCO, namely: <ul style="list-style-type: none"> • Compliance Monitoring: Air Quality and Meteorological Monitoring undertaken at privately owned residence or LCO occupied residence, in accordance with development consent conditions (Appendix A) and EPL requirements. To demonstrate compliance, monitoring undertaken at these locations must satisfy legislative requirements as specified in Section 2.3 of this AQMMP. 	Compliant	Compliance air quality monitoring during the audit period was undertaken as required.

Section	Commitment(s)	Status	Comments
	<p>Section 2.11.2 - The compliance air quality monitoring network at LCO consists of TSP and PM10 monitors and dust deposition gauges situated at privately owned residences and occupied residences that are owned by LCO (also referred to as "mine owned residences").</p>		
<p>Section 2.11.1 Overview of monitoring</p>	<ul style="list-style-type: none"> Management Monitoring: This primarily refers to real-time Air Quality and Meteorological Monitoring for reactive dust management. This monitoring is used to inform operational dust management at LCO, as provided for in the LCO SD PRO 0069 - Liddell Dust Management TARP. Management monitoring also includes historical dust deposition and HVAS monitoring sites that are no longer representative of private residences but are maintained to inform operational dust management. This monitoring is not intended for use in assessing compliance with ambient air quality criteria to meet regulatory requirements. <p>Section 2.11.14 - LCO continues to maintain a network of historical dust deposition gauges and HVAS that are no longer representative of private residences or on mine owned properties that are currently not tenanted. The data collected is utilised to maintain the historical record over the long term and provide background local dust levels. The locations of historical air quality monitoring stations are shown in Figure 12 and details of the stations provided in Table 7.</p> <p>Table 6 outlines the Parameters measured by real time monitoring station informing the Dust management TARP</p>	<p>Compliant</p>	<p>Real-time air quality 'management' monitoring during the audit period was undertaken as required and is used as a tool to feed into the Dust TARP.</p>
<p>Section 2.11.1 Overview of monitoring</p>	<ul style="list-style-type: none"> Supplementary Boundary Monitoring: This refers to supplementary relocatable boundary monitors, as required by condition 19, schedule 3. The supplementary real-time boundary monitoring serves two purposes: 1) to determine LCO's contribution to local dust concentrations and 2) to supplement the reactive dust management system. <p>Section 2.11.15 Supplementary relocatable boundary Monitoring -</p> <p>In accordance with condition 19, schedule 3, LCO will operate relocatable boundary monitors with the following purpose:</p> <ul style="list-style-type: none"> To determine LCO's contribution to local dust levels, based on their upwind and downwind positioning relative to the location of LCO mining activity. To supplement the reactive operational dust management at LCO, as provided for in the LCO SD PRO 0069 - Liddell Dust Management TARP. <p>The relocatable boundary monitoring would utilise a technology suitable for running on solar/battery power, such as an E-Sampler or BAM, and would be trailer mounted to allow easy</p>	<p>Compliant</p>	<p>Supplementary boundary monitoring is undertaken at three representative locations. LB confirmed that the EBAM units were installed at these locations on 10/11/15 by Novecom and provided copies of the commissioning reports.</p>

Section	Commitment(s)	Status	Comments
	<p>relocation.</p> <p>Following a period of instrument conditioning and acclimatisation, data will be considered suitable for commencement of LCO contribution analysis.</p> <p>The relocatable boundary monitors role in reactive dust management will be finalised following an additional period of data collection and analysis, described further in Section 2.11.18. Pending any unforeseen delays in procurement of the monitoring equipment, LCO expect to commission and operate the boundary monitoring during October 2015.</p>		
<p>Section 2.11.3 Monitoring Methods</p>	<p>Monitoring for compliance purpose is undertaken in accordance with relevant Australian Standards, legislation and the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007) . Relevant methods implemented are as follows:</p> <ul style="list-style-type: none"> • Dust deposition gauges are sampled monthly for insoluble solids in accordance with AS 3580.10.1 (2003) Methods for sampling and analysis of ambient air – determination of particulate matter – deposited matter – gravimetric methods; as per AM-19 (DEC, 2007). • High Volume Air Samplers (HVAS) measure and analyse TSP in accordance with the guidelines specified in AS3580.9.3 (R2014) Methods for the Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – Total Suspended Particulate Matter (TSP) – High Volume Air Sampler Gravimetric Method”; as per AM-15 (DEC, 2007). • High Volume Air Samplers (HVAS) measure and analyse PM10 in accordance with the guidelines specified in AS3580.9.6 (R2014) “Methods for sampling and analysis of ambient air. Determination of Suspended Particulates – PM10 High Volume Air Sampler with size selective inlet – Gravimetric method; as per EPA AM-18. • Siting and operation of air monitoring equipment reflects the guidance in AS3580.1.1:2007 Guide to siting air monitoring equipment; as per AM-1 (DEC, 2007); and AS3580.14.1:2011 Methods for sampling and analysis of ambient air. • Meteorological monitoring in undertaken in accordance with AS3580.14.1- 2011 Methods for sampling and analysis of ambient air Part 14: Meteorological monitoring for ambient air quality monitoring applications. <p>Air quality and meteorological monitoring, including monitoring site selection, station commissioning and maintenance, transfer of filters and samples to and from the field, and instrument calibration is undertaken in accordance with appropriate monitoring standards as listed above. All preparatory laboratory work (e.g. filter preparation) and post-monitoring laboratory analysis is conducted by a NATA certified laboratory.</p>	<p>Compliant</p>	<p>Viewed monthly monitoring reports and calibration certificates during the audit period.</p>

Section	Commitment(s)	Status	Comments
	The locations of compliance air quality monitoring stations are shown in Figure 10 and details of the stations provided in Table 5. The location of the LCO Meteorological Monitoring Station is given in Figure 11.		
Section 2.11.6 Meteorological monitoring	Continuous meteorological monitoring is undertaken at the LCO Meteorological Station. Meteorological parameters recorded are as follows: wind speed, wind direction, air temperature, relative humidity, rainfall, barometric pressure, solar radiation and Sigma Theta (measure of wind direction variations).	Compliant	LCO Meteorological Station records required information
Section 2.11.9 Maintaining of monitoring records	All monitoring records required to be kept by LCO will be: <ul style="list-style-type: none"> • in a legible form, or in a form that can readily be reduced to a legible form; • kept at least for four years; and • produced in a legible form to any authorised officer of OEH who asks to see them. The following records will also be kept in respect of air quality monitoring undertaken: <ul style="list-style-type: none"> • the dates on which the monitoring was undertaken; • the times at which the monitoring was undertaken; • the point at which the monitoring was undertaken; and • the name of the person who undertook the monitoring. 	Compliant	Reviewed air quality monitoring records held by LCO and confirmed required data is available.
Section 2.11.17 LCO's Contribution Analysis	LCO's contribution to ambient PM ₁₀ concentrations would be determined as follow: <ul style="list-style-type: none"> • The upwind and downwind monitoring locations are reviewed on a quarterly / monthly basis, taking into consideration the location of planned LCO mining operations. 	Compliant	LCO PM ₁₀ data is reviewed as required, with information on upwind and downwind contributions provided to DP&E on regional dust events, or on request. LB (pers comm) confirmed that Novecom are able to provide advice on LCO-specific contributions towards ambient PM ₁₀ concentrations recorded at surrounding monitoring sites via daily monitoring reports.
Section 2.12.1 Complaint Management	Community Complaints at LCO are managed in accordance with CAA HSEC PCL Community Complaint Management and LCO SD PRO 0017 - Complaints Management. LCO implements a complaints hotline (1800 037 317) for handling the conflict resolution process.	Compliant	Complaints received during the audit period were documented as required, with the complaints hotline available.

Section	Commitment(s)	Status	Comments
	<p>The conflict resolution process includes:</p> <ul style="list-style-type: none"> • Acknowledging all complaints, responding to the complainant within 24 hours, where practicable; • Registering all complaints in CMO; • Investigating complaints impartially giving proper consideration to the facts and the circumstances prevailing at the time; • Implementing corrective actions if required; • Reporting to relevant stakeholders of investigation outcomes and corrective actions taken. <p>Complaint handling requirements, in terms of development consent conditions are provided in Appendix A.</p> <p>Section 2.12.2 Air Quality Specific Complaint Management</p> <p>In accordance with Schedule 4, condition 4 of the development consent conditions (Appendix A), if a landowner considers the development to be exceeding the air quality criteria (Section 2.3), except where predicted in the Environmental Assessment (SLR,2013) then he/she may request an independent review of the impacts of LCO on his/her land. Should this occur, LCO will undertake the process in accordance with Schedule 4, Conditions 4 to 8 of the development consent conditions (Appendix A).</p>		
<p>Section 2.12.3 External communication, reporting and notification</p>	<p>A summary of air quality related external communication, reporting and notification is provided in Table 8.</p>	<p>Compliant</p>	<p>Reviewed audit period reporting. External reporting and communications required by Table 8 of the AQMMP were completed as required.</p>
<p>Section 3.3 GHG Management Controls</p>	<p>LCO will implement all reasonable and feasible management controls to mitigate Scope 1 and 2 GHG emissions associated with the site. GHG emissions can be managed through project design, procurement processes and project operation. The management controls implemented at the LCO will be initiated at both corporate and site levels. The following sections 3.3.1 - 3.3.8 will include a combination of corporate and site based GHG management controls</p>	<p>Compliant</p>	<p>Review the AQMMP and confirmed that reasonable and feasible greenhouse gas controls were implemented as required.</p> <p>An Energy Savings Action Plan was in place at LCO during the audit period until it was superseded under the commitments of DA 305-11-01 (MOD5).</p>

Section	Commitment(s)	Status	Comments
Section 3.4 GHG Monitoring	<p>LCO will monitor GHG emission, energy use and energy production by the direct measurement of energy use and modelling emissions based on measured activity data. The GHG monitoring program will require the collation of activity data such as energy use, coal production and waste disposal.</p> <p>Section 3.4.3 Monitoring Records - To comply with the legislation, all sites are required to retain records of energy consumption, energy production, emissions data and estimations for a minimum of seven years from the end of the reporting period in which the activities took place.</p> <p>LCO has developed procedures for the collection and retention of data to ensure the site complies with the legislative requirements of the appropriate legislation.</p>	Compliant	<p>Viewed efficiency and idle reports prepared for mobile equipment prepared at the end of each shift as required by LCO MIN PRO 0061.</p> <p>LB provided examples of GCAA (Glencore corporate) reporting, which includes data that is incorporated in regulatory required greenhouse gas reporting.</p>
Section 3.5 GHG Reporting and review	<p>LCO will report GHG emissions and energy use both internally and externally. Internal reporting systems allow divisional groups to evaluate the performance of energy efficiency programs and comply with corporate greenhouse reporting requirements (NGERS is reported at a corporate level). Internal reporting also allows Glencore Plc to evaluate SD programs and report SD performance externally in programs such as the Global Reporting Index (GRI).</p> <p>Glencore Plc maintains a global internal reporting system called Glencore Corporate Practice (GCP). This is a web based system for collecting data and reporting sustainable development performance. As a subsidiary of Glencore Plc, GCAA must update GCP at prescribed intervals. LCO will report GHG activity data internally via GCP according to the schedule outlined in Table 11 GCP Reporting Intervals.</p>	Compliant	<p>LB provided examples of GCAA (Glencore corporate) reporting, which includes data that is incorporated in regulatory required greenhouse gas reporting.</p>
Section 4.2 Awareness and Training	<p>LCO provides training commensurate with the roles and responsibilities of personnel outlined above.</p> <p>Training implemented at LCO with respect to air quality management includes the following:</p> <ul style="list-style-type: none"> • Site Familiarisation Inductions provided to all new employees and contractors; • General Environmental Awareness provided to all existing employees and permanent contractors; and • Issue specific training sessions provided to employees and contractors as required. <p>Other methods used to communicate the responsibilities of LCO employees and contractors relating to air quality management include:</p> <ul style="list-style-type: none"> • Communication sessions; • Tool-Box Talks; 	Compliant	<p>HB interviewed LCO E&C and Training personnel and viewed examples of training documents and records from the audit period. Environmental training is provided to all personnel and contractors, with a Training Needs Analysis register in place to track staff competencies.</p>

Section	Commitment(s)	Status	Comments
	<ul style="list-style-type: none"> Electronic site notice boards; and Site newsletters. 		
Section 5 Auditing and Review Provisions	The AQMMP and related procedures and systems will be reviewed at least every three years or earlier as required following changes to the sites internal or external context.	Not Triggered	Review of the approved AQMMP not required during the audit period.
Water Management Plan			
Section 2.4	Licensed Discharge Points - A maximum discharge of 100 ML per day is stipulated for LDP 6 in EPL 2094 which is the Hunter River Salinity Trading Scheme (HRSTS) monitoring point.	Compliant	Maximum discharge criteria met during the audit period.
Section 5.2	Due to the progression of mining at LCO, LDP6 will cease to act as the HRSTS release point in 2015. LCO will apply for an EPL variation for the LDP to be relocated to just south of the CHPP area with discharges directed to Bayswater Creek.	Compliant	Viewed letter dated 8/09/15 approving variation to the HRSTS LDP. BD (pers comm) noted that site would be moved to the new location in 2016.
Section 5.1	Water management system - The Reservoir North Dam will replace the Raw Water Transfer Void (RWTV) as the central water storage at LCO during Q1 2015. The RWTV will be progressively decommissioned as the main water storage during 2015 as this lies within the planned future extent of the South Pit.	Compliant	Viewed during field inspection at 95% of capacity (approximately 1.9 GL).
Section 7.5	Site Water Balance Model - Initial model calibration of the site water balance will occur by the end of 2015, with validation to occur by mid-2016, and every three years thereafter.	Administrative Non-Compliance	Not completed by the end of 2015. In progress at the time of audit. HB viewed PO approving Gilbert & Associated to complete the model calibration prior to end of 2015.
Section 7.6	Site Water Balance Model - The site water balance will be reviewed annually using the monitored volumes and data collected as part of the water monitoring program, and will be reported on as part of the LCO Annual Review in the AEMR.	Compliant	Water balance reported in audit period AEMRs. Current review of model is underway (see above).
Section 8.4	Erosion and Sediment Control - All erosion and sediment control (ESC) activities are to be undertaken in accordance with the following guidelines: <ul style="list-style-type: none"> Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volumes 2A - Installation of Services, 2C - Unsealed Roads, and 2E - Mines and Quarries 	Compliant	Reviewed performance of erosion and sediment control structures in the field. Viewed Ground Disturbance Permit (CAA-

Section	Commitment(s)	Status	Comments
	(DECC, 2008) (the Blue Book). <ul style="list-style-type: none"> Glencore's internal standard CAA HSEC PLC 0025 11.06 Erosion and Sediment Control (Glencore, 2015). 		HSEC-PER-0004) completed for the pre-strip area active at the time of audit. Erosion and sediment controls had been adequately described and implemented.
Section 8.8.1	Erosion and Sediment Control - ESC structures and measures will be inspected regularly and monitored monthly as part of the sites environmental inspection program. Additional inspections will be carried out after high rainfall events to ensure the effectiveness of the controls	Compliant	Viewed ESC Inspection form completed 21/4/15 following significant period of rainfall. Inspections of all sediment control structures are completed at least monthly, and following rainfall events over 25 mm (as required by the LCO Erosion and Sediment Control Plan TARP).
Section 8.4	Ground Disturbance Permit and ESC plans - Prior to any disturbance activities being undertaken at LCO, a Ground Disturbance Permit (GDP) (CAA-HSEC-PER-0004) is required to be completed. As part of completing the GDP, an ESCP is required to be developed for the proposed works and the controls must be implemented prior to the main disturbance activity occurring.	Compliant	Viewed Ground Disturbance Permit (CAA-HSEC-PER-0004) completed for the pre-strip area active at the time of audit. Erosion and sediment controls had been adequately described under Part 3 and implemented.
Section 9.1.1.1	Surface Water Monitoring - Surface water quality is monitored as at three locations on Bayswater Creek (BWKU, BWKM and BWKD) and eight locations on Bowmans Creek (BCK1, BCK1A, BCK2, BCK2A, BCK3, BCK4, BCK5 and BCK6). All of these sites will be monitored monthly in accordance with condition 12(b)(i) of the EPBC Approval. In addition, HRSTS monitoring is currently conducted at LDP6 in accordance with EPL 2094.	Compliant	Reviewed audit period AEMRs and examples of monthly monitoring reports (regularly published on the LCO website), which include surface water data. HRSTS monitoring is also reported under EPL requirements.
Section 10.1	Surface Water Monitoring - Results from the water quality monitoring program will be compared against the trigger levels in Table 9-4. If exceedances are identified then the TARP outlined in Section 10 (Figure 10-1) will be implemented.	Compliant	Water monitoring data is included in the Glencore Environmental Monitoring Database (EMD), and the system sends an email to the E&C Department if trigger levels are exceeded. The surface water TARP trigger values have not been exceeded during the audit

Section	Commitment(s)	Status	Comments
			period. The groundwater TARP for EC trigger values was under revision at the time of audit.
Section 9.1.1.2	Surface Water Monitoring - Monitoring of channel stability and riparian vegetation health within Bowmans and Bayswater Creeks will be undertaken using the Riparian Channel and Environmental (RCE) inventory in accordance with the procedures outlined in the LCO Biodiversity Management Plan.	Compliant	BD (pers comm) confirmed RCE riparian zone monitoring was completed in November 2015 by Umwelt, with a report to be provided to LCO in Q1 2016.
Section 9.1.3.3	Surface Water Monitoring - The RCE scores obtained during each biennial monitoring event will be reviewed against the baseline condition of Bowmans and Bayswater Creeks, as documented in the EA for Mod 5 (SLR, 2013). A substantial decrease in the total score (by 10 points) will trigger further investigation.	Not Triggered	Not required during the audit period.
Section 9.1.1.3	Surface Water Monitoring - Two additional gauging stations will be installed along Bowmans Creek adjacent to LCO by Q3 in Year 2 (2016). The gauging location's previously instrumented by NSW Office of Water to the north (210113), adjacent (210042) and south (210121) of LCO will be investigated to assess whether they might be re-instated as active flow gauging stations.	Not Triggered	Not required during the audit period.
Section 9.1.1.4	Surface Water Monitoring - Treated effluent generated from the waste water treatment plant and aerated sewage treatment plant is tested every 4 weeks for E.coli.	Compliant	Viewed monitoring reports for treated effluent.
Section 9.2.2	Groundwater Monitoring - Groundwater monitoring is undertaken at least every two months for groundwater quality measurements, and at least every month for groundwater pressures / levels, in accordance with the requirements of EPBC 2013/6908 (Condition 12 (b) (ii)).	Compliant	Reviewed audit period AEMRs and examples of monthly monitoring reports (regularly published on the LCO website), which include groundwater data.
Section 9.2.4.3	Groundwater Monitoring - Groundwater quality is monitored as electrical conductivity and pH. Measurements on bores monitoring the Bowmans Creek Alluvium are recorded monthly and every six months groundwater samples are analysed for total dissolved solids (TDS), total suspended solids (TSS), heavy metals, cations and anions. Results are to be compared against the trigger levels in Tables 9-14 and 9-15.	Compliant	Reviewed audit period AEMRs and examples of monthly monitoring reports (regularly published on the LCO website), which include groundwater data. Groundwater trigger values for EC were under revision at the time of audit.
Section 9.2.2.2	Groundwater Monitoring - Pumping data from the open cut pits and extraction volumes recorded from the operational dewatering wells via flow meters will be compared to predicted inflow rates from the numerical groundwater model on an annual basis and assessed against current licensed	Compliant	Reviewed audit period AEMRs and examples of monthly monitoring reports (regularly published on the LCO website),

Section	Commitment(s)	Status	Comments
	approvals to extract from the hard rock aquifer.		which include groundwater data. 2016 Annual Review will be the first to include new Water Management Plan reporting requirements.
Section 9.2.2.4	Stygofauna monitoring is undertaken at LCO in accordance with the procedures outlined in the Biodiversity Management Plan.	Compliant	BD (pers comm) confirmed stygofauna monitoring was completed in November 2015 by Umwelt, with a report to be provided to LCO in Q1 2016. HB viewed schedule of works.
Section 9.2.4.2	Groundwater Monitoring - The results of monthly groundwater level monitoring will be compared against the trigger values of: 1. a 2 metre decrease in water level from the previous equivalent (seasonal) groundwater level measurement as recorded in the AEMR; or 2. a measurement below the monthly, two year observation data lower limit (10th percentile) trigger level, as indicated in Table 9-13.	Compliant	Reviewed audit period AEMRs and examples of monthly monitoring reports (regularly published on the LCO website), which include groundwater data. Groundwater trigger values for EC were under revision at the time of audit.
Section 9.2.4.2	Groundwater Monitoring - Where monitoring results triggers the 2 metre drawdown threshold, this will be reported to the Department of the Environment within 5 days and the DP&E within 7 days, and the TARP (Figure 10-2) instigated.	Not Triggered	Drawdown within threshold levels during the audit period.
Section 9.3	Groundwater Model - The validity of the numerical groundwater model will be assessed by a suitably qualified, experienced and independent reviewer to assess the efficacy of the existing model and compare its prediction results with the monitored data every three years.	Not Triggered	Not required during the audit period.
Section 11.1	Reporting - Within three months of each 12 month anniversary of the commencement of the action (activities approved by Mod 5 and within the referral areas as shown on Figure 6-1) LCO will publish a report on the website addressing compliance with this management plan, in accordance with Condition 19 of EPBC 2013/6908. This report will also be provided to the DoE.	Not Triggered	Not required during the audit period.
Section 11.1	Reporting - All monitoring records are kept by LCO within the Glencore Environmental Monitoring Database. Typically these results are presented in the monthly EPL compliance report and reported annually in the AEMR. Both reports are available on the LCO external website.	Compliant	Viewed EMD and the LCO website, which include the required documents.

Section	Commitment(s)	Status	Comments
Section 11.1	Reporting - Each discharge event is recorded. An annual report of activity under the HRSTS is forwarded to the EPA.	Compliant	Reviewed audit period Annual Returns of EPL 2094.
Section 11.1	Reporting - This management plan will be published on the LCO website within one month of being approved, and will remain on the website for the lifetime of the approval.	Compliant	Reports available on the LCO website at the time of audit.
Section 13	Cumulative Impacts - LCO, in conjunction with neighbouring Glencore operations, will develop a Cumulative Water Management Protocol to document a procedure to minimise cumulative impacts with respect to water resources.	Compliant	BD (pers comm) confirmed that a Water Management System for the Greater Ravensworth Area was being prepared at the time of audit.
Section 14	Review -This document shall be reviewed in accordance with condition 10 Schedule 5 of DA 305-11-01, and if necessary revised, within three months of the following: <ul style="list-style-type: none"> The submission of an Annual Review; The submission of an incident report under the Surface and Groundwater Response Plan (refer to Section 10) The submission of an independent environmental audit; and Following any modification to the LCO approvals. 	Compliant	The Water Management Plan was being revised at the time of audit.
Section 15	Auditing - An Independent Environmental Audit will be undertaken every three years (or as otherwise required by the DP&E or DoE) by an audit team whose appointment has been endorsed by the Director-General of the DP&E.	Compliant	This audit.
COPI Blast Management Strategy			
Section 4.2 Consultation	Report to CCC on blast monitoring outcomes, stabilisation works at each meeting for the duration of close range blasting (outside 350m, or vibration levels below 10mm/s)	Compliant	Viewed presentation given to CCC representatives in the meeting from November 2015. Presentation included an update on blasting impact management for the Chain of Ponds Inn (COPI).
Section 5.0 Implementation	Implement staged increase in vibration/airblast and mitigation measures as required by blast management strategy.	Compliant	BD (pers comm) confirmed the vibration / airblast criteria for the COPI had progressed to the first trigger level of 10-20 mm/s (vibration) and up to 146 dBL (overpressure).

Section	Commitment(s)	Status	Comments
Section 5.2 Structural Improvements	<p>The works described below will be carried out before blasting is predicted to reach these PPV levels at the Inn of 10-20mm/s:</p> <ul style="list-style-type: none"> Ensure the front verandah is supported or repaired as detailed by the ERM scope of works. Any support will be done with scaffold falsework, all attachments to be with straps or ties, not fasteners; Suitably secure loose brickwork in the chimney of building C. Chimney will also be supported with external counter-weighted scaffold tower with cantilevered support for the chimney, and internal falsework will be installed beneath the base of the chimney. Alternatively, if proposed conservation repairs are completed, reassess the need for support and at what PPV level. 	Compliant	<p>BD (pers comm) confirmed that the required verandah and chimney works were completed by Coal & Allied as the landowner of the COPI, in consultation with LCO. Viewed email provided by BD, with meeting minutes documenting works completed.</p> <p>Viewed response email from Coal & Allied dated 14/08/15 on additional repair works completed prior to going to first trigger level. LCO commissioned Bill Jordan (Structural and Conservation Engineer), who confirmed via email on 23/07/15 he was satisfied that LCO could progress to level 1 triggers.</p> <p>BD (pers comm) stated that three blasts had been designed to the first trigger level to document response of the COPI to vibration in the range of 10-20 mm, however only one resulted in the trigger, at 10.8 mm/s.</p>
Section 5.2 Structural Improvements	<p>The works described below will be carried out before blasting is predicted to reach these PPV levels at the Inn of 20-30mm/s (or agreed revised level):</p> <ul style="list-style-type: none"> Support the chimneys on Building A. This may be possible using pre-tensioned ties rather than external scaffolding, after further investigation and detailed design. 	Not Triggered	Blasts in the 20-30mm/s range not undertaken during the audit period.
Section 5.2 Structural Improvements	<p>The works described below will be carried out before blasting is predicted to reach these PPV levels at the Inn of up to 50mm/s (or agreed revised level):</p> <ul style="list-style-type: none"> Support any vulnerable walls with propped or tied timbers. Further design of measures required will be subject to progressive monitoring results and subsequent design. 	Not Triggered	Blasts up to 50 mm/s range not undertaken during the audit period.
Section 6.1	Blasting protocol within 350m control zone:	Compliant	BD (pers comm) stated that three blasts

Section	Commitment(s)	Status	Comments												
	<p>The control of blasting within 350 metres of the Inn will involve the following steps for each blast.</p> <p>a) Initial blast design will be based on a Maximum Instantaneous Charge (M.I.C) determined from the use of site parameters that are constantly reviewed to incorporate recent site data.</p> <p>b) Unless subject to review by an appropriately qualified expert, all blasts fired within 350 metres of the Chain of Ponds Inn will have blasting specifications that have been proven by prior experience to result in vibration levels, frequencies and air blast levels that conform with applicable structural limits</p> <p>c) Blast execution, including vibration monitoring at the Inn.</p> <p>d) Ongoing revision of the predictive model based on vibration monitoring results from subsequent blasts. Results of the structural monitoring of the Chain of Ponds Inn will also be reviewed, and the blast design modified if structural response is different to that expected (refer Section 7.1 below).</p>		<p>had been designed to the first trigger level to document response of the COPI to vibration in the range of 10-20 mm, however only one resulted in the trigger, at 10.8 mm/s.</p> <p>HB reviewed blast designs and model outputs (Orica AVM) prepared for the three blasts within 350 m control zone. The required steps were completed and documented.</p>												
Section 6.2 meeting targets and blast design	<p>Implementation blast vibration trigger levels and airblast levels. Advancement to higher levels will follow review of blast impacts, monitoring data, assessment of structural response and lack of structural damage:</p> <p>Table 3 Ground Vibration and Projected Airblast Overpressure Equivalent</p> <table border="1"> <thead> <tr> <th>PPV Limit mm/s</th> <th>Equivalent Overpressure Limit dBL</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>140</td> </tr> <tr> <td>20</td> <td>146</td> </tr> <tr> <td>30</td> <td>149</td> </tr> <tr> <td>40</td> <td>150*</td> </tr> <tr> <td>50</td> <td>150*</td> </tr> </tbody> </table> <p>* Recommended interim limit</p>	PPV Limit mm/s	Equivalent Overpressure Limit dBL	10	140	20	146	30	149	40	150*	50	150*	Compliant	Blast trigger levels approved to level one in 2015 (10-20 mm/s (vibration) and up to 146 dBL (overpressure)).
PPV Limit mm/s	Equivalent Overpressure Limit dBL														
10	140														
20	146														
30	149														
40	150*														
50	150*														
Section 6.2.3 Advancing	Prior to advancing to the next vibration and airblast trigger level, LCO will advise the DPE of the proposed change and provide justification for advancement.	Compliant	Viewed notification email from BD to DP&E date 10/08/15 notifying the Department of												

Section	Commitment(s)	Status	Comments
Vibration and airblast limits			progression to the first trigger level. Future notifications will include a further justification and response from DP&E confirming that the notification had been received.
Section 6.2.4 Management of Flyrock	For all blasts within 300m of the Inn complex, the Terrock Flyrock model will be used to predict flyrock distances and set clearance zones.	Compliant	Viewed output from the Terrock Flyrock model run on 23/12/15 for a shot to be fired 6/01/16.
Section 6.2.4 Management of Flyrock	In the event that flyrock is observed or is found to have entered the Inn complex then this will be notified to DPE as an incident in accordance with Schedule 4 Condition 11 of DA305-11-01. The intent is to trigger an investigation and review of the blast models and loading practices to identify the root cause and action required to mitigate the reoccurrence of a flyrock incident.	Not Triggered	No flyrock incidents occurred during the audit period.
Section 7.1 Monitoring & assessment	A suitably qualified person/s will be engaged to monitor the Inn complex & advise of further stabilisation measures.	Compliant	Bill Jordan (Structural and Conservation Engineer) was engaged during the DA 305-11-01 (MOD 5) EA and continues to provide advice on the monitoring and maintenance of the COPI. Viewed the following advice from Bill Jordan to LCO during the audit period: <ul style="list-style-type: none"> Site Visit Report from Bill Jordan to BD on temporary stabilisation measures at the COPI, dated 19/06/15; and Email from Bill Jordan to BD dated 28/05/15 providing advice on repair works and ongoing monitoring requirements.
Section 7.1 Monitoring & assessment	Monitoring and evaluation of blast results and corresponding structural behaviour will involve the following: a) Ground vibration and air blast monitoring at the Chain of Ponds Inn, together with periodic frequency analyses to show that the blast design is keeping within the established parameters. Frequency analysis of blast monitoring results should be undertaken for each blast measuring	Compliant	Viewed examples of blast monitoring report dated 23/12/15, which includes required information and a visual inspection summary of the COPI from Bill Jordan.

Section	Commitment(s)	Status	Comments
	<p>over 10mm/s at the Inn when structural monitoring is undertaken on the Inn.</p> <p>b) Verification of the monitoring results at the Inn and comparison with the vibration predictive model; and</p> <p>c) Ongoing review of the model for subsequent blasts.</p> <p>The PPV vibration and air blast trigger levels discussed in Section 6.2 will require at least two blast events to be monitored, with the possible removal or addition of other trigger levels as knowledge of the buildings' behaviour changes at the increasing levels.</p>		In a follow-up report dated 4/01/16, Bill Jordan advised that larger blasts within the level 1 impact trigger range were required to verify the structural response to the COPI.
Section 7.1 Monitoring & assessment	A dilapidation survey is undertaken once the C&A Stage 1 Restoration works are complete and before progressing to the first trigger level to form an adequate baseline.	Compliant	Viewed EJE Heritage Dilapidation Report dated May 2015 completed after latest round of restoration works (new beams, propping, fireplace restoration, etc).
Section 7.1 Monitoring & assessment	Visual inspection of the Inn buildings after at least two blast events at each of the trigger levels (10-20mm/s, 20-30mm/s, or as varied), at a minimum of at least one visual inspection carried out on a quarterly basis throughout the year;	Compliant	Viewed Bill Jordan visual inspection report dated 23/12/15.
Section 7.1 Monitoring & assessment	A visual inspection methodology will be developed based on the results of the initial dilapidation survey, in consultation with Coal and Allied.	Compliant	<p>Viewed email from Bill Jordan dated 24/07/15 confirming points of structural weakness identified in his visual inspection. BD provided this information to Coal & Allied on 28/07/15.</p> <p>BD provided a further email update to Coal & Allied on 3/08/15, notifying them of dilapidation works and of LCO's intention to transition to level 1 trigger values.</p>
Section 7.1 Monitoring & assessment	Dilapidation survey after the first 40 mm/s vibration level event at the Inn;	Not Triggered	Blasts impacts of 40 mm/s not recorded during the audit period.
Section 7.2 Monitoring exceedance notification	In the event that the target vibration or airblast levels are exceeded for a particular blast then this will be notified to DPE as an incident in accordance with Schedule 4 Condition 11 of DA305-11-01. The intent is to trigger an investigation and review of the blast models and loading practices to identify the root cause and action required to mitigate the reoccurrence.	Not Triggered	Blasts impacts at the COPI were in compliance with impact criteria during the audit period.

Section	Commitment(s)	Status	Comments
Section 7.3 Make good measures	<p>If any damage to the Chain of Ponds Inn determined to be as a result of LCO blasts is observed during monitoring, a specialist structural engineer and/or materials conservator will be engaged to assess the damage. Any damage will be repaired by approved specialists in the relevant heritage building trades within six months of the damage occurring; repairs will be undertaken in accordance with the policies of the approved Conservation Management Plan and in recognition of the overall aims of that Plan.</p> <p>If the damage is deemed to be of a structural nature (i.e. non-cosmetic) the following shall occur: blasting to cease at the current design vibration range; should structural analysis determine that it is safe to do so, blasting shall continue at the previously proven lower levels of vibration until repairs and further structural mitigations are put in place as required; As a minimum conduct visual inspections or further monitoring as recommended by the structural engineer after each blast to identify if further damage is occurring; and if investigations into the cause of the damage find that modifications to this Blast Management Strategy are required, these modifications will be made in consultation with Coal & Allied and the NSW Heritage Council, and will be resubmitted for approval by the Department of Planning and Environment.</p>	Not Triggered	No structural damage to the COPI occurred during the audit period.
Section 7.4 Reporting	An annual report on the condition of the Chain of Ponds Inn Complex prepared by a suitably qualified person will be provided to the NSW Heritage Council and Coal & Allied. The annual report will include result of each visual inspection.	Not Triggered	Annual reporting on the COPI was not required during the audit period (the first annual inspection report is due in 2016).
ACHMP			
Section 3.3.1	Avenues for ongoing consultation are to be maintained following the pre-construction management of Aboriginal heritage at LCO. This will be achieved through the reformation of an Aboriginal Stakeholder Reference Group (ASRG). One position should be offered to each of the existing 19 RAPs for all new ASRG activities. Any management of Aboriginal heritage not discussed in this ACHMP (i.e. possible future impacts to sites not currently planned) will require a new consultation process. This should be consistent with the framework of the existing management measures and consultation.	Compliant	Viewed example notification letter provided to LCO RAPs regarding the salvage program undertaken in 2015. 19 RAPs were consulted regarding the program of works proposed in the DA 305-11-01 (MOD 5) EA and described in the approved ACHMP. All RAPs were invited to an annual meeting held 11/12/15.
Section 4.2	It should be noted here that OzArk 2013a recommended worker induction and curtilage should be utilized to prevent inadvertent impacts to Brayshaw A, B, C and D. The remaining portions of these sites are not within the LCO Boundary and no longer require management under this ACHMP.	Compliant	Viewed example of Environmental Induction Package (2013) provided to all new LCO employees and contractors. The induction presentation includes content on Aboriginal heritage management and obligations,

Section	Commitment(s)	Status	Comments
			including for the Brayshaw sites located outside of the LCO DA Boundary. A new version of the environmental training was rolled out to all personnel in October 2015 (Environmental Awareness Training, LCO SD PRES 0003). LB (pers comm) also provided examples of training packages developed with the RAPs that are used to inform personnel working on specific jobs in proximity to heritage sites.
Section 4.2	Table 4-1 lists sites requiring management due to direct impacts and provides a description of each site and a brief justification for collection.	Compliant	Reviewed Archaeological Salvage Liddell Coal Operations Development Modification 5 (Ozark Environmental and Heritage Management, 2015). Report documents management of sites predicted to be directly impacted.
Section 4.2	Table 4-2 lists sites outside of the direct impact footprint and provides a brief description of each.	Compliant	Reviewed Archaeological Salvage Liddell Coal Operations Development Modification 5 (Ozark Environmental and Heritage Management, 2015). Report documents management of sites outside of impact footprint.
Section 4.3.2	Group 1 Management Avoidance of Group 1 sites is to be managed through the following: <ul style="list-style-type: none"> • A minimum 10m curtilage around sites and areas of archaeological sensitivity that are 10m or further from the impacts; • A maximum possible curtilage of sites that are within 10m of the impacts; -Where the fencing and signage for the SAL (LID-BC-SAL) encompasses multiple sites, no individual 	Compliant	Reviewed Archaeological Salvage Liddell Coal Operations Development Modification 5 (Ozark Environmental and Heritage Management, 2015). Report documents management of Group 1 sites. Viewed fencing being installed to prevent

Section	Commitment(s)	Status	Comments
	<p>fencing and signage is required for each constituent site (see Figure 4-3);</p> <ul style="list-style-type: none"> Fencing will need to be sturdy enough to keep out stock and should not contain any gaps. Workforce awareness through the fencing of the curtilages and inductions; and Access track through Foy Brook / HAZ-OS1 is to be closed for construction activities associated with the Project and general mine operational purposes. The track and other sections of the site may be accessed by vehicle where unavoidable maintenance of infrastructure (i.e. electricity transmission line, fences) within the site is required. In these instances, a Ground Disturbance Permit will be required to be submitted to the Environmental department of LCO. 		access to the SAL (under construction at the time of audit).
Section 4.3.2	<p>Group 1 Management</p> <p>The following recommendations are made to ensure that extant sites are properly managed during the operational phase of the Project:</p> <ul style="list-style-type: none"> Fencing and signage, where implemented in the pre-construction phase of management (Section 4.3) is to be maintained by LCO staff for the operation of the Project. Regular site inspections that assesses the ongoing condition of the sites. -Consultation with RAPs is required for the following considerations: <ul style="list-style-type: none"> The regularity of the inspections; The attendees; and Management of possible impacts identified in the inspection. It is recommended by OzArk that the inspections be conducted annually and by a small group of representatives of RAPs. Possible impacts to heritage will require reporting to AHIMS through an Aboriginal Site Impact Recording form. 	Compliant	<p>Viewed fencing being installed to prevent access to the SAL (under construction at the time of audit).</p> <p>RAPs involved in the 2015 salvage program signed off on methodology and works undertaken.</p>
Section 4.4.1	<p>Group 2: Salvage</p> <p>Test excavations carried out at LCO confirmed that this group of sites does not, overall, have associated deposit, hence surface artefact collection is appropriate as the primary management option for these sites.</p>	Compliant	Reviewed Archaeological Salvage Liddell Coal Operations Development Modification 5 (Ozark Environmental and Heritage Management, 2015).
Section 4.4.1	<p>Multiple sites have also been assigned a secondary management sub-group that defines options for subsequent salvage activity that will be a necessary component of any required AHIP applications.</p>	Not Triggered	Sites in the secondary management sub-group were not salvaged during the audit period.

Section	Commitment(s)	Status	Comments
Section 4.4.2	<p>Group 2 sites are to be managed through the following measures:</p> <ul style="list-style-type: none"> • An AHIP is required for all actions under this recommendation; • Collection of all visible surface artefacts; • Collected artefacts would be analysed on-site at LCO following collection; • Positions will be offered to all RAPs for at least a portion of the surface collection and analysis. The number of representatives from each group and on what days they attend is to be determined through consultation prior to the commencement of the salvage; • Artefacts would need to remain in the care of LCO until all activities associated with the project over the salvaged sites are complete and while a Care and Control agreement is finalised, at which time a location for the reburial of the artefact collection would be determined; A Care and Control agreement would then be submitted and a selection of the artefacts recovered would be placed in the custody of Wanaruah LALC and / or another party who are able to demonstrate that custody would be for educational use; • The Care and Control agreement is to be limited in such a way that requires the artefacts to be reburied as near and as soon as possible to their original location; and • A short addendum will be added to the assessment (OzArk 2013a) in order to incorporate the findings of the surface collection. 	Compliant	Artefacts collected by the RAPs during the 2015 salvage were catalogued and are stored on site under the care of the LCO E&C Department.
Section 4.5	<p>Group 3: Management of LID-BC-SAL</p> <p>The management of LID-BC-SAL diverges from that of the sites contained within it During the construction of the Project, Group 1 management measures apply to LID-BC-SAL (Section 4.3). LID-BC-SAL will be fenced in the pre-construction phase. Where LID-BC-SAL adjoins cattle grazed paddocks, permanent stock proof fencing will be installed to protect LID-BC-SAL during the construction phase and beyond. The suggested location of the fencing for LID-BC-SAL is provided in Figure 4-3, this is a minimum fenced area requirement and a broader area may be fenced for exclusion as considered practical.</p>	Compliant	Viewed fencing being installed to prevent access to the SAL (under construction at the time of audit).
Section 4.6.2	<p>Group 4 Management</p> <p>These sites will not be impacted by the Project and as such no further salvage activity is required for these sites required (Figures 4-1 and 4-2). Works may proceed with no further management.</p> <p>The following recommendations are made to ensure that extant sites are properly managed</p>	Compliant	Group 4 sites were inspected by LB in December 2015, in consultation with the RAPs.

Section	Commitment(s)	Status	Comments
	<p>during the operational phase of the Project: Sites in this group will be fenced and signed. Where accessible by stock, appropriate fencing will be installed to exclude the stock. Fencing and signage will be inspected (see below). Regular site inspections that assesses the ongoing condition of the sites. Consultation with RAPs is required to discuss attendees of the inspection and how to manage any impacts that may arise to these sites.</p> <p>Inspections will be conducted annually and by a small group of representatives of RAPs. Possible impacts to heritage will require reporting to AHIMS through an Aboriginal Site Impact Recording form.</p>		
Section 4.7	<p>Group 5: Unassessed Areas</p> <p>A substantial portion of the Project Area has not undergone complete assessment and any possible future impacts to these areas will require further assessment. There has been some assessment in these areas, but these are fragmented and are often now dated. A large percentage of the unassessed area is the Bowmans Creek Alluvial Area identified by Umwelt (2008). Although this area was assigned greater archaeological sensitivity by Umwelt, any possible future impacts in this area will effectively require the same level of assessment as the remainder of the unassessed areas.</p>	Not Triggered	<p>LC (pers comm) confirmed no areas in the 'unassessed areas' were disturbed during the audit period.</p> <p>HB viewed a copy of the Glencore Ground Disturbance Permit Template (CAA-HSEC-PER-0004) used by LCO. Part 5 of any GDP is required to document Cultural Heritage approvals and controls required prior to disturbance.</p>
Section 4.8.1	<p>LCO are to maintain a register of all sites that are extant following the construction phase, including plans, coordinates, and descriptions of the sites;</p>	Compliant	<p>Viewed the sites register maintained by the E&C Department. Register includes GIS information confirming the status of known Aboriginal heritage sites following the 2015 salvage program.</p> <p>At the time of audit, an updated version of the ACHMP was with the RAPs for consultation / review. Table 4-1 of the revised ACHMP includes the new status of heritage sites.</p>
Section 4.8.1	<p>LCO are to have systems in place that alert the environmental manager to any possible impacts to sites arising from possible future works that are outside of the normal operation of the mine;</p>	Compliant	<p>HB viewed a copy of the Glencore Ground Disturbance Permit Template (CAA-HSEC-PER-0004) used by LCO. Part 5 of any</p>

Section	Commitment(s)	Status	Comments
			GDP is required to document Cultural Heritage approvals and controls required prior to disturbance.
Section 4.8.1	<p>Possible future impacts not identified in this ACHMP to any of the extant portions of sites will require further assessment. Such further assessment may include, but is not limited to:</p> <ul style="list-style-type: none"> • A re-evaluation of significance in light of possible changes in the conditions to the site and cumulative impact; • Possible site inspection(s) to establish current site condition if not already known; and Consultation with RAPs and a suitably qualified heritage professional to determine the level of assessment appropriate (i.e. desktop, field inspection, RAP involvement). 	Not Triggered	No requirement for further assessment of Aboriginal heritage following approval of the ACHMP in January 2015.
Section 4.8.1	LCO's ground disturbance permit is to include provisions for heritage checks.	Compliant	HB viewed a copy of the Glencore Ground Disturbance Permit Template (CAA-HSEC-PER-0004) used by LCO. Part 5 of any GDP is required to document Cultural Heritage approvals and controls required prior to disturbance.
Section 4.8.1	Erosion and sediment control is generally managed via the process documented in LCO SD PLN 0033 - Water Management Plan. Any general erosion control undertaken as part of a broader scheme of land management that is to take place within an Aboriginal site is to be assessed under the Due Diligence process (DECCW 2010c).	Not Triggered	<p>No erosion controls in the audit period undertaken in the vicinity of Aboriginal heritage sites managed under the ACHMP.</p> <p>The revised ACHMP will refer to the current LCO Water Management Plan.</p>
Section 4.8.1	<p>Should erosion processes affecting extant sites be identified as part of the annual site inspections or within an area of archaeological sensitivity, and this is determined to have affected the condition of a site since last recorded / inspected, then further erosion control should take place. Erosion control should not be implemented in this case if the impacts of the erosion control outweigh those of the erosion itself. Temporary, localised movement of individual artefacts is permissible on the condition that artefacts are returned to their original location immediately after the erosion control management action.</p> <p>All erosion control measures that take place within an Aboriginal site are to be documented through photography and the condition of the site is to be updated in the annual review.</p>	Not Triggered	LB (pers comm) confirmed erosion impacts to Aboriginal heritage sites were not identified during monthly E&C Department inspections or by the RAPs (December 2015).

Section	Commitment(s)	Status	Comments
Section 4.8.1	The principles set out in the NSW Rural Fire Service's 'The Conditions for Hazard Reduction and Aboriginal Heritage' should generally be followed when assessing appropriate measures to curtail bushfire hazard within an Aboriginal site (RFS 2006). The preferred method of clearing excessive fuels is manual clearance, with hand-held mechanical trimming allowed. Vegetation is not to be cut shorter than 100mm. No such restrictions apply to the portions of areas of archaeological sensitivity that do not contain Aboriginal sites.	Not Triggered	Bushfire management activities not undertaken during the audit period.
Section 4.8.1	Any stock within the DA is to be excluded from Aboriginal sites. This will require LCO to either construct fencing sturdy enough to keep the stock out or for the stock to be excluded from the paddocks that contain Aboriginal sites and LID-BC-SAL.	Not Triggered	No grazing of the SAL occurred during the audit period. Viewed fencing being installed to prevent access to the SAL (under construction at the time of audit).
Section 4.8.1	Any vegetation requiring removal within an Aboriginal site (i.e. weed control) is to be cut and/or poisoned, not uprooted. Vegetation removal for the purposes of salvage is discussed in Section 4.4.2.	Compliant	In accordance with the ACHMP and the salvage methodology developed by OzArk (2015) in consultation with the RAPs, all sites in the 2015 program were sprayed to reduce vegetation cover prior to the salvage work.
Section 4.8.2	LCO's current environmental awareness training program includes a heritage component. The existing induction is to be revised through consultation for this ACHMP and any recommendations considered for inclusion or exclusion as may be the case.	Compliant	Viewed example of Environmental Induction Package (2013) provided to all new LCO employees and contractors. The induction presentation includes content on Aboriginal heritage management and obligations, including for the Brayshaw sites located outside of the LCO DA Boundary. A new version of the environmental training was rolled out to all personnel in October 2015 (Environmental Awareness Training, LCO SD PRES 0003).
Section 4.8.2	An additional brief induction package should be prepared for the workforce undertaking the	Compliant	LB (pers comm) provided examples of

Section	Commitment(s)	Status	Comments
	construction for Development Modification 5. This induction should also be developed through consultation with the RAPs and include the following features: Accurate plans and coordinates identifying areas of exclusion for the construction phase of the Project; An overview of various Aboriginal site types including images; An Unanticipated Finds Protocol (Section 4.8.3); and An overview of relevant legislation including key features such as that it is an offence to knowingly disturb an Aboriginal site unless approval has been granted for that site.		training packages developed with the RAPs that are used to inform personnel working on specific jobs in proximity to heritage sites. Minutes from the AFGM dated 11/12/15 include discussions on RAP input to the LCO Aboriginal Cultural Heritage Induction Package.
Section 4.8.3	Should any unanticipated Aboriginal object or site be revealed during construction, then work in the area should cease and the vicinity of the find should be cordoned off until the object / site can be confirmed by an archaeologist. The supervisor of the workforce should be contacted, and he/she should in turn contact LCO's Environmental Manager.	Not Triggered	No unanticipated finds were identified during the audit period.
Section 4.8.3	Should suspected human remains be encountered, the following process should be adhered to: 1. Do not further disturb or move the remains; 2. Immediately cease work in the vicinity and cordon area off; 3. Notify the NSW Police; 4. Notify the EPA's Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location; and 5. Do not re-commence work in the area unless authorised in writing by EPA.	Not Triggered	No human remains were identified during the audit period.
Section 5.1	'Review' is considered here to apply to the period of time after this ACHMP has been approved by the DP&E and while its recommendations remain active. This ACHMP will undergo reviews by OzArk, LCO, and RAPs prior to application for approval, but the document requires review after it has been formalised and approved. This ACHMP will be subject to review every five years at a maximum.	Compliant	The ACHMP was under review at the time of audit, being with the RAPs for review and comment. The ACHMP will be revised to consider RAP input prior to being sent to regulatory agencies for review and/or approval.
Section 5.1.1	Any updates to cultural heritage management are recommended to be included in the AEMR so that relevant LCO staff and RAPs have access to current information. Such information could include, but is not limited to, the following: Updates of community consultation; Site inspection	Not triggered	No updated to cultural heritage management occurred during the audit period.

Section	Commitment(s)	Status	Comments
	reports (for extant sites); Salvage measures that have been executed; and Remaining management measures to be enacted.		
MOP (including Rehabilitation Management Plan)			
Reviewed in the Rehabilitation & Mine Closure Audit Report (see Appendix F)			
Noise Management Plan			
1	Attended noise monitoring will be undertaken once per calendar month at the representative locations nominated in Section 3.1 in accordance with the Environment Protection Authority (EPA) 'Industrial Noise Policy' (INP) guidelines and Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'.	Compliant	Viewed monthly attended noise monitoring reports for the audit period (Global Acoustics).
2	Attended noise monitoring results are compared with the noise criteria defined in the DA 305-11-01 to assess compliance.	Compliant	HB verified monitoring results are reported against relevant criteria of DA 305-11-01.
3	DP&I require monitoring to determine if any impacts are systemic/sustained. Accordingly, if a noise criterion exceedance is measured, then a second measurement is to be made within the next 75 minutes. If the second measurement also results in an exceedance, this location would be deemed noise affected for that night. This will trigger follow up monitoring that will be undertaken at that specific location (not all locations) on one night during the following one week. The regular monitoring frequency will be resumed if no further exceedances are measured. However, if a further exceedance is measured during the follow up period (one week), then a comprehensive survey will be undertaken, to the satisfaction of the DP&I, to determine if these impacts are regular (systemic/sustained).	Compliant	Second measurements and follow-up monitoring was undertaken in response to initial attended noise monitoring results in August and September 2014 and reported to the satisfaction of DP&E, as required under this commitment.
4	For each 15 minute monitoring period, the following information will be recorded: <ul style="list-style-type: none"> • operator's name; • monitoring location; • date and time that monitoring began at each location; • quantitative meteorological data such as temperature, wind speed, wind direction and humidity; • qualitative meteorological information such as cloud cover, fog, and rainfall; • instrument calibration details before and after the monitoring period; • the value or estimate of the LCO LAeq,15minute; 	Compliant	Viewed monthly attended noise monitoring reports for the audit period (Global Acoustics).

Section	Commitment(s)	Status	Comments
	<ul style="list-style-type: none"> • the highest mining LA1,1minute noise level (to allow comparison with the relevant sleep arousal criterion); • the overall LAeq,15minute and LCEq,15minute; • statistical noise level descriptors: LA90, LA50, LA10, LA1 and LAm_{ax}; • notes that identify the noise source that generated the highest LA1,1 minute (LAm_{ax}); • measurements in one-third octave bands from 25 Hz to 10 kHz inclusive (or a broader range of bands) to assess if the mining noise has characteristics that may require modifying factors to be applied; and • data suitable for assessing the relative contribution of mine-generated noise to the overall noise being measured by using a suitable low-pass filter. 		
5	<p>The unattended continuous noise monitors record the following information:</p> <ul style="list-style-type: none"> • the date and time; • the LAeq for each 15 minute interval; • the LA_{min}, LA90, LA10 and LA_{max} for each 15 minute interval; • the 15 minute one-third octave LAeq noise levels corresponding to the LAeq 15 minute interval; • between 10 second and one minute (depending on the settings) one-third octave noise levels over the entire monitoring period; • the LAeq, period (where period = day, evening and night) for each 24 hour interval; • the maximum LA1, 1 minute noise level recorded over a predefined 15 minute night time measurement period; • continuous weather data monitoring for wind direction, speed, temperature and rainfall as 15 minute averages; and • continuous audio file recording for subsequent playback. 	Compliant	<p>Viewed email from LB to Barry Jacobs seeking to confirm that the information required under this condition was being captured by the real-time noise monitors. Barry Jacobs confirmed that the required information was recorded in a reply email dated 22/09/15.</p> <p>Viewed web portal for noise data available to E&C Department staff and verified information available.</p>
6	Following an alert from unattended noise monitor - alarm response evidence required	Compliant	LB (pers comm) confirmed night-time noise alerts and trigger levels in place at LCO were consistent with those described in the NMP. Alerts are sent via email to mobile phones of: the two Mining Supervisor's on duty, Mining and Production Managers,

Section	Commitment(s)	Status	Comments
			E&C Department staff. Viewed examples of Noise Mitigation Recording Forms (LCO DS FRM 0066) completed by Mining Supervisors during the audit period. LB (pers comm) confirmed that these were required to be filled out for all noise alerts received. Any adverse noise conditions and responses are also documented in the Mining Supervisors statutory register completed for each shift.
7	The meteorological data recorded by the weather stations include: <ul style="list-style-type: none"> • wind speed, wind direction and sigma-theta; • temperature; • humidity; and • rainfall. 	Compliant	Site weather station records the required information.
8	If a non-compliance with any noise impact assessment criterion (refer to Section 2) is identified, an internal report detailing the circumstances of the non-compliance and resulting corrective actions, will be developed as per the LCO Hazard and Incident Management Procedure.	Compliant	Viewed internal records for the August and September 2014 attended monitoring exceedances.
9	All noise monitoring results will be made publicly available on the LCO website in accordance with Schedule 5, Condition 11 of the DA 305-11-01. LCO will update these results in accordance with current legislative requirements.	Compliant	Monitoring results for the audit period are publically available on the LCO website.
10	The Annual Environmental Management Report (AEMR) prepared each year for LCO will include all noise monitoring results for the corresponding year. The Annual Review will also include an assessment of the noise monitoring results against the noise impact assessment criteria, and any trends in monitored noise levels over the period.	Compliant	Audit period AEMRs include the required information.
11	In addition, any complaints relating to noise emissions from LCO, and the response actions taken, will be reported in the AEMR.	Compliant	Audit period AEMRs include the required information.
12	Reporting will also be conducted in accordance with the EPL 2094 compliance reporting to be submitted to EPA.	Compliant	Viewed EPL 2094 Annual Returns and correspondence between LCO and EPA

Section	Commitment(s)	Status	Comments
			during the audit period.
13	A summary of noise monitoring results will also be presented the LCO Community Consultative Committee (CCC) meetings which are held every six months.	Compliant	Viewed examples of LCO CCC meeting minutes during the audit period. Noise monitoring results are discussed at each meeting.
14	If an attended monitoring result exceeds the criterion but is not deemed to be a noise affected night due to mitigation actions, the exceedance is required to be reported to the DP&I the following day (or as soon as practical) verbally and/or via email, along with information on any actions taken to reduce the noise.	Compliant	Viewed reporting provided by LCO to DP&E in response to noise affected night in September 2014. Reporting describes the monitoring results and actions taken in response.
15	<p>If the attended monitoring program identifies that LCO is likely to be responsible for any exceedance of noise criterion that constitutes a noise affected night at any nearby privately owned residence or any privately owned land, LCO will:</p> <ul style="list-style-type: none"> Notify the Director General and the effected landowners and/or existing or future tenants in accordance with Schedule 4, Condition 2 of DA 305-11-01. This will entail verbal notification to the DP&I by the Environment and Community Superintendent or delegate the following day (or as soon as practical), and supply a written report of the exceedance within 7 days. Review mitigation measures which would prevent the exceedance from re-occurring; Report the exceedance to the LCO Community Consultative Committee (CCC) (Schedule 5 Condition 7) and in the AEMR (Schedule 5 Condition 3). 	Compliant	<p>Viewed notifications provided by LCO to DP&E and affected landowners / tenants in response to noise affected night in September 2014.</p> <p>The noise exceedance was reported to the LCO CCC and included in the monthly monitoring summary published on the LCO website.</p>
16	<p>The written notification to the DP&I (and any other government department/agency as required) will include the following details:</p> <ul style="list-style-type: none"> The date, time and nature of the exceedance/incident; Identify the likely cause of the exceedance/incident; Description of the response action that has been undertaken to date; and Description of the proposed measures to address the exceedance/incident. 	Compliant	Viewed reporting provided by LCO to DP&E in response to noise affected night in September 2014. Reporting includes the required information.
17	In accordance with Schedule 4, Condition 4 of DA 305-11-01, if a landowner considers the development to be exceeding any noise criterion, except where this is predicted in the 2006 Environmental Assessment (Umwelt, 2006) then he/she may request the Director General in writing for an independent review of the impacts of LCO on his/her land. Should this occur, LCO	Not Triggered	BD (pers comm) confirmed that no requests had been made during the audit period.

Section	Commitment(s)	Status	Comments
	will undertake the process provided in Schedule 4, Conditions 4 to 8 of DA 305 11-01.		
18	In accordance with EPL conditions and as per LCO document control procedures, monitoring records will be maintained on site for at least four years.	Compliant	Verified that LCO maintain required records.
19	The Noise Monitoring Program is to be reviewed in consultation with the Director-General of the Department of Planning at least every three years, as required by recommendations arising from the Independent Environment Audit, or after any significant changes to the operation. The review will reflect changes in environmental expectations, technology and operational procedures.	Not Triggered	Review of the approved NMP not required during the audit period.
Blast Management Plan			
N/A	The Blast Management Plan was under regulatory review at the time of period.	-	Compliance with the commitments made in the COPI Blast Management Strategy are assessed above.

APPENDIX F
LAMAC Rehabilitation and Mine Closure Audit

LIDDELL COAL OPERATIONS REHABILITATION & MINE CLOSURE AUDIT - FEBRUARY 2016. AUDIT REPORT



LAMAC Management Pty Ltd, March 2016.

DOCUMENT CONTROL HISTORY			
Version	Document Type	Checked	Date
1	First draft	LC	16/02/2016
1.2	Final Draft	DW (Hansen Bailey)	18/02/2016
1.3	Final	LCO	16/03/2016

Table of Contents

1	Introduction	4
1.1	Liddell Coal Operations.....	4
1.2	Audit Objectives	4
1.3	Audit Scope.....	6
2	Audit Methodology	6
2.1	Auditor Experience	6
2.2	Audit Criteria	8
2.3	Audit Activities	9
2.4	Audit Limitations.....	10
3	Audit Findings.....	11
3.1	General Observations	11
3.2	Key Findings	11
3.3	Compliance and Risk Assessment.....	14
3.4	Recommendations.....	14
	Appendix 1: Department of Planning and Environment Audit Methodology.....	16
	Appendix 2: Department of Industry, Division of Resources and Energy Audit Criteria	17
	Appendix 3: Department of Planning and Environment Auditor Approval	18
	Appendix 4: Compliance Assessment Checksheets	19
	Appendix 5: Plates	20

1 Introduction

LAMAC Management (LAMAC) was engaged by Hansen Bailey to undertake a rehabilitation and mine closure audit of Liddell Coal Operations (LCO), as part of a more broadly scoped Independent Environmental Audit (IEA).

LCO is approved to operate under Development Approval (DA) 305-11-01. The most recent DA modification (MOD 5) was approved by the Department of Planning and Environment (DP&E) on 1 December 2014. Schedule 5, Condition 4, of DA 305-11-01 requires LCO to arrange an IEA within one year of approval, and every three year subsequently. A note to that condition requires that the audit team include experts in the field of mine rehabilitation and mine closure. LAMAC was approved by DP&E to provide these expert roles, as part of the Hansen Bailey audit team.

1.1 Liddell Coal Operations

LCO is an open-cut mine located approximately 25 kilometres (km) north-west of Singleton, in the Upper Hunter Valley of New South Wales. LCO is operated and managed by Liddell Coal Operations Pty Limited, a wholly owned subsidiary of Glencore Coal Pty Limited (Glencore), on behalf of a joint venture between Glencore (67.5 percent (%)) and Mitsui Matsushima Australia (32.5%). The location of LCO is shown in Figure 1.

LCO has approval to produce up to 8 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal and operate until 2028. Mining occurs in two open cut pits, South Pit and Entrance Pit. These pits are advancing to the south east either side of the Main Northern Railway Line. Mining at LCO generally follows the methods outline below.

- Progressive removal of vegetation and soils ahead of mining.
- Drilling, blasting and removal of overburden using hydraulic excavators.
- Transport of overburden to in-pit emplacements using a rear dump trucks.
- Excavation and transport of raw coal to the LCO Coal Handling and Preparation Plant (CHPP).
- Processing of raw coal onsite at the CHPP.
- Loading and transporting of product coal to the Port of Newcastle by rail (LCO also has approval to truck up to 0.5 Mtpa of reclaimed tailings to local power stations).
- Co-emplacement of coarse rejects with overburden within in-pit emplacements.
- Emplacement of tailings at the existing tailings emplacement facilities (with approval to establish two additional tailings emplacement areas in the South Pit).
- Progressive rehabilitation of overburden emplacements that have reached the approved final dump height.

LCO also has approval to mine under the existing Mine Infrastructure Area.

1.2 Audit Objectives

The major objectives of this rehabilitation and closure audit are to:

- a) determine whether LCO are compliant with mine rehabilitation and closure requirements contained in DA 305-11-01 and associated management documents;
- b) assess overall mine rehabilitation and mine closure planning performance at LCO; and
- c) identify areas or issues of concern and, where appropriate, provide recommendations.

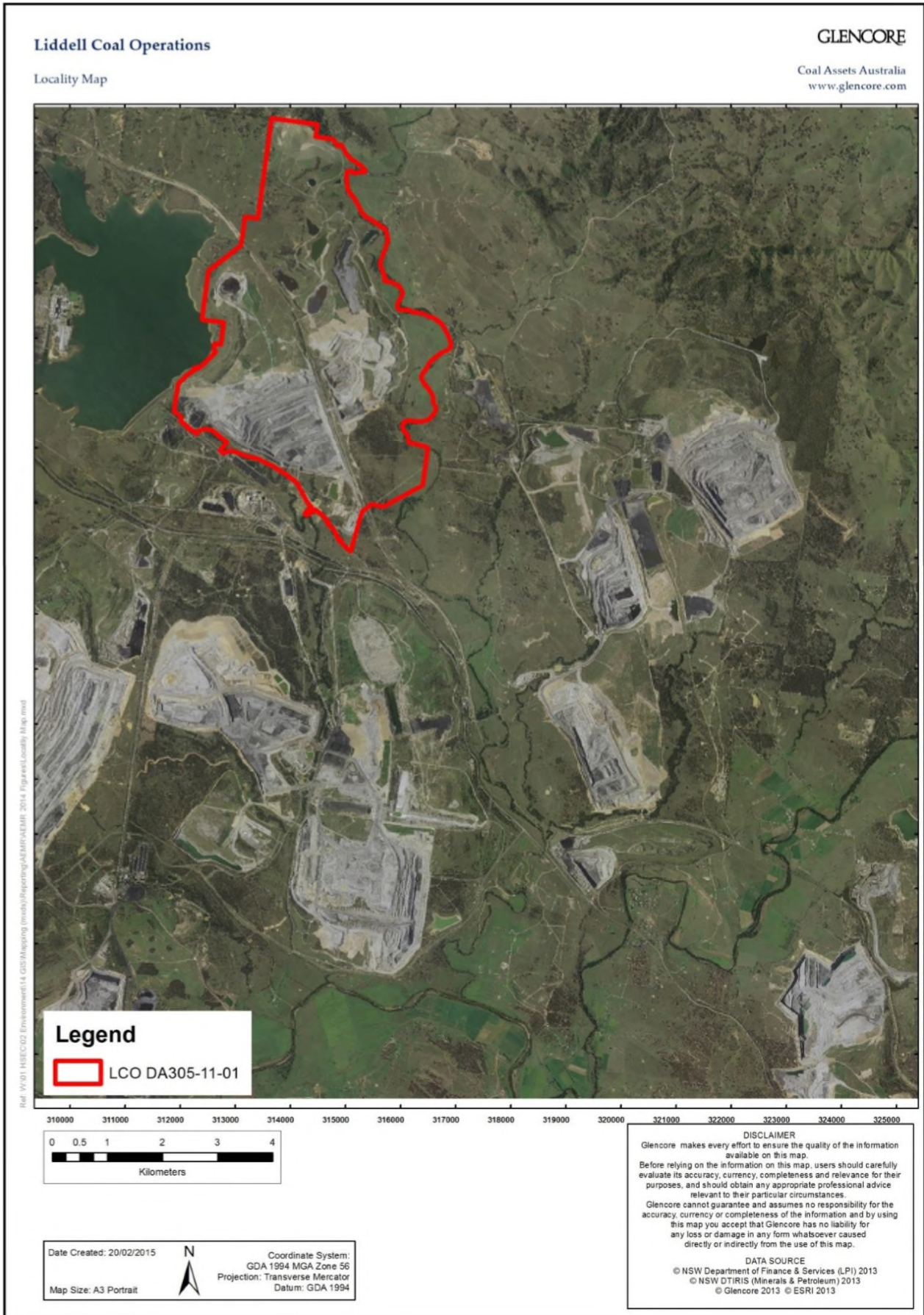


Figure 1: Location of Liddell Coal Operations

1.3 Audit Scope

The 2016 LCO rehabilitation and closure audit was scoped to address the audit content requirements of:

- DA 305-11-01 (as modified);
- *Independent Audit Guideline. Post-approval requirements for State significant developments (IAG)* (DP&E, October 2015);
- DP&E Audit Methodology (attached in Appendix 1); and
- Audit content request provided by NSW Department of Industry, Division of Resources and Energy (DRE) (attached as Appendix 2).

The audit assessed rehabilitation and closure related activities/ processes undertaken by, or on behalf of, LCO within the DA Boundary, including:

- Rehabilitation planning and reporting;
- Disturbance management and rehabilitation resource recovery;
- Growth media management;
- Vegetation establishment and development;
- Ecosystem development and habitat enhancement;
- Post-mining land use selection and development;
- Post-rehabilitation monitoring, care and maintenance; and
- Mine closure planning.

Other operations undertaken at LCO were only assessed as part of this audit where they may impact on the rehabilitation aspects listed above.

Rehabilitation activities completed since the previous rehabilitation audit in July 2012 were the primary focus of the audit; however, older rehabilitation was also inspected.

2 Audit Methodology

The audit was undertaken generally in accordance with the auditing standard *AS/NZS ISO 19011:2014 Guidelines for auditing management systems*, as part of a more broadly scoped IEA being undertaken concurrently by Hansen Baily under the requirements of DA 305-11-01. The site review component of the audit was undertaken on 3 February 2016.

The audit gathered sufficient evidence to address the audit criteria described in Section 2.2 and evaluate compliance against the IAG criteria described in Table 1. For each of the identified non-compliances and observations, the associated level of risk was determined according to the IAG criteria presented in Table 2.

2.1 Auditor Experience

Schedule 5, Condition 4 of DA 305-11-01 notes that:

“This audit team must be led by a suitably qualified auditor and include experts in the field of mine rehabilitation and mine closure.”

Lachlan Crawford from LAMAC Management was approved by DP&E to undertake the role of mine rehabilitation and mine closure planning expert, as part of the Hansen Bailey audit team for the 2016 LCO IEA. A copy of the DP&E auditor approval letter is included as Appendix 3.

Assessment	Criteria
Compliant	Where the auditor has collected sufficient verifiable evidence to demonstrate that the intent and all elements of the requirement of the regulatory approval have been complied with within the scope of the audit.
Not verified	Where the auditor has not been able to collect sufficient verifiable evidence to demonstrate that the intent and all elements of the requirement of the regulatory approval have been complied with within the scope of the audit. In the absence of sufficient verification the auditor may in some instances be able to verify by other means (visual inspection, personal communication, etc.) that a requirement has been met. In such a situation, the requirement should still be assessed as not verified. However, the auditor could note in the report that they have no reasons to believe that the operation is non-compliant with that requirement.
Non-compliant	Where the auditor has collected sufficient verifiable evidence to demonstrate that the intent of one or more specific elements of the regulatory approval have not been complied with within the scope of the audit.
Administrative non-compliance	A technical non-compliance with a regulatory approval that would not impact on performance and that 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).
Not triggered	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.
Observation	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. Further observations are considered to be indicators of potential non-compliances or areas where performance may be improved.
Note	A statement or fact, where no assessment of compliance is required.

Table 1: 2016 rehabilitation audit compliance assessment criteria (from IAG Section 4).

Risk level	Colour code	Description
High		Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium		Non-compliance with: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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)

Table 2: 2016 rehabilitation audit risk assessment criteria (from IAG Section 4).

2.2 Audit Criteria

Audit criteria was developed from specific requirements drawn from relevant regulatory and management documents, in accordance with Section 2.3 of the IAG. Audit criteria source documents are outlined below, with full detail on audit criteria included as Appendix 4.

DA 305-11-1, Schedule 3

Rehabilitation related DA conditions which contributed to audit criteria include (in summary):

- **Condition 25** - rehabilitation is to focus on specific threatened plant communities, species and habitat;
- **Condition 28** - Dam 3 is to be enhanced to increase habitat for water birds;
Condition 29 - A Biodiversity Management Plan for the site must describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site;
- **Condition 37** - The Applicant shall rehabilitate the site to the satisfaction of the DRE. The rehabilitation must comply with specific listed objectives and be consistent with the final landform plan.
- **Condition 38** - rehabilitation to be completed progressively, and all reasonable and feasible measures taken to minimise the total area exposed for dust generation, including interim rehabilitation.
- **Condition 39** - a Rehabilitation Management Plan for the development must be prepared to the satisfaction of DRE, meeting specific content criteria, including addressing mine closure, final landform, final voids and final land use.

Mining Lease ML 1597

ML 1597 has been issued to LCO by the DRE under the *Mining Act 1992*. ML 1597 is conditional, and those conditions relevant to mine rehabilitation and closure planning have been included in the audit criteria.

2012 IEA Rehabilitation Report (Global Soil Systems, July 2012)

The previous rehabilitation audit of LCO was completed in 2012. This audit observed a significant improvement in the standard of rehabilitation at LCO, but did note concerns and/or opportunities for improvement. These concerns and improvement opportunities have been incorporated into the audit criteria.

Liddell Coal Operations Mining Operations Plan 16 March 2015 – 16 March 2022 (Integrated with DA required Rehabilitation Management Plan)

Consistent with Schedule 3, Condition 39 of the LCO DA, the Rehabilitation Management Plan has been integrated with the 2015 LCO Mining Operations Plan (2015 MOP). Preparation of a MOP is, itself, a requirement of Condition 3 of the LCO mining lease, ML 1597. As the 2015 MOP details LCO rehabilitation planning for the period for the next five years, and conceptually outlines the mine closure process, the major commitments contained in the 2015 MOP have been included in the audit criteria.

Liddell Coal Operations, Proposed Modification to DA 305-11-01 Environmental Assessment (SLR, September 2013)

LCO MOD 5 EA (SLR, September 2013) Section 7.16 *Post-Mining Closure and Rehabilitation*, Appendix Q *Soil and Land Resource Assessment* (GSSE, 2013a) and Appendix S *Rehabilitation Strategy* (Umwelt, 2013b) contain information and commitments relevant to mine closure and rehabilitation planning. Commitments stated in these EA sections/ appendices that were not been included in subsequent regulatory or management documents (such as the 2015 MOP) have been included in the audit criteria.

DRE Audit Content Request

DRE provided a list of additional issues of concern they wished to see addressed as part of the LCO rehabilitation audit. These additional issues have been included in the audit criteria. A copy of the DRE request is included as Appendix 2.

2.3 Audit Activities

The rehabilitation audit consisted of the following activities:

- Review of relevant documents;
- Interview of LCO staff; and
- Inspection of relevant areas of LCO mine site.

2.3.1 Document Review

Relevant regulatory, management and approval documents were reviewed (partially or in full) in preparation for the audit to identify areas or issues of potential audit interest and to develop the audit criteria. Further documentation was provided by LCO on the day of the site inspection.

The list of documents reviewed during the rehabilitation audit includes:

- Development Approval 305-11-01
- Mining Lease 1597
- Liddell Coal Operations Modification to DA 305-11-01 Environmental Assessment. Volume 1, pages 1- 80 and 248 – 261 (SLR, September 2013).
- Rehabilitation Strategy (Umwelt, July 2013) (Appendix S to LCO MOD 5 EA)
- Soil and Land Resource Assessment (GSSE, April, 2013) (Appendix Q to LCO MOD 5 EA)
- Liddell Coal Operations Mining Operations Plan 16 March 2015 – 16 March 2022
- Liddell Coal Operations Rehabilitation Audit Report (Global Soil Systems, July 2012)
- Liddell Coal Operations 2012 Annual Environmental Management Report
- Liddell Coal Operations 2013 Annual Environmental Management Report
- Liddell Coal Operations 2014 Annual Environmental Management Report
- Email from DRE dated 22 January 2016, Subject: *FW: Liddell Regulatory Compliance audit*
- LCO Land Clearing and Topsoil Stripping Procedure (October 2012)
- Draft Conceptual Mine Closure Plan (SLR/LCO)
- Biodiversity Management Plan (Umwelt/LCO, DPE approved 27/7/2015)
- Offset Management Plan (Umwelt/LCO, DPE approved 20/1/2016)
- Weed Action Plan (Enright Land Management, August 2015, December 2014)
- Requirements of the *Independent Audit Guideline. Post-approval requirements for State significant developments* (DP&E, October 2015)
- DP&E Audit Methodology
- 2016 LCO Annual Rehabilitation and Land Management Plan
- Ground Disturbance Permit (example)
- Soil Distribution Plan (LCO, 2015)
- Eastern Creek Operations Compost Information Sheet August 2007 - Product: OGM
- Design Report for Premier Dump External Drainage (SLR, December 2013)
- Soil Characterisation Report (Environmental Analytical Laboratories)
- Rehabilitation Establishment and Methodology Form (for Native Woodland rehabilitation on Premier Dump)
- Liddell Grazing Trial, slides presented to Mining NSW Conference, 2015.

2.3.2 Interviews

The following LCO staff members were interviewed onsite on the 3 February 2016:

- Ben de Somer – Environment and Community Manager;
- Laura Barben - Environment and Community Officer;
- Jarith Young - Environment and Community Officer; and
- Cathal O’Leary – Project Manager, Mountain Block Remedial Strategy.

2.3.3 Site Rehabilitation Inspection

The following rehabilitation areas and features of LCO mine site were inspected between 10:30 am and 12:30pm on Wednesday 3 February 2016. Weather during the inspection was warm, sunny and dry.

- Dam 3 and adjacent Triangle Dams (Blue-billed duck habitat dams);
- Mountain Block Rehabilitation (from Hebden Road);
- Grazing trial area (Reservoir Block);
- Reservoir North water storage dam (and adjacent drop structure);
- RL192 Dump Overburden emplacement,
 - Established pasture rehabilitation,
 - Shaped and seeded topsoil stockpiles,
 - Rockpile habitat features;
- Entrance/ Premier Dump,
 - Reshaped and topsoiled slope being rehabilitated,
 - Recently rehabilitated slope,
 - Temporary topsoil stockpile;
- RL195 Dump,
 - Railway Block rehabilitation and adjacent reshaped overburden,
 - Recently slashed area,
 - 12 month old rehabilitation,
 - 18-24 month old woodland rehabilitation (on overburden),
 - Shaped and seeded topsoil stockpiles, and
 - Organic Growth Medium (OGM) stockpiles.

2.4 Audit Limitations

This report has been prepared by LAMAC for Hansen Bailey and LCO and may only be used and relied on by those organisations for the purposes presented in Section 1 of this report.

LAMAC otherwise disclaims responsibility to any other person arising in connection with this report.

The services undertaken by LAMAC in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report. The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. LAMAC has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by LAMAC described in the proposal. LAMAC disclaims liability arising from any of the assumptions being incorrect.

LAMAC has prepared this report on the basis of information provided by LCO and others who provided information to LAMAC (including Government authorities), which LAMAC has not independently verified or checked beyond the agreed scope of work. LAMAC does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

3 Audit Findings

3.1 General Observations

The overall standard of rehabilitation at LCO was observed to be generally very good, with the vast majority of regulatory requirements assessed as having been complied with. This is largely the result of well-resourced and robust rehabilitation planning procedures and systems. The 2012 rehabilitation audit noted significant improvements since 2009. The rehabilitation planning and execution processes that resulted in that improvement have been maintained or improved since 2012, resulting in the current rehabilitation quality.

Final landform establishment during the audit period was progressing generally in accordance with the design criteria for overburden emplacement presented in the 2015 MOP (see further comments in Section 3.2). Bulk reshaping of overburden is completed by LCO as a standard part of mining operations. This usually results in a better outcomes as landform reshaping considerations are integrated into wider mine planning and mine planners and supervisors share accountability for what is generally the most costly phase of mine rehabilitation. Contractors are then used for subsequent final trim and drainage construction.

Topsoil management across those areas of the site inspected was commendable, with several examples of industry leading practice observed. Only one area of obvious erosion was observed (Mountain Block – discussed in Section 3.2) and significant effort had been put into sediment control, as illustrated by the construction of the Premier Dump catch drain (see Plate 12).

Vegetation across most rehabilitated areas was looking very healthy during the audit site inspection. Rehabilitation sown on Premier Dump in late 2015 had established strongly, with a good cover crop evident (see Plate 1). Twelve to eighteen month old woodland rehabilitation established directly on overburden top-dressed with OGM was exhibiting a successful tree and shrub strike rate, as shown in Plate 2. Following a three month spell, trial grazed areas of Reservoir Block (see Section 3.2) had demonstrated good regeneration, with a more diverse suite of grass, legume and herb species observed during the inspection compared to nearby ungrazed pasture rehabilitation. This vegetation health was partially (but by not entirely) due to the warm, wet summer that had been experienced leading up to the audit.

Post-mine closure and final land use planning at LCO is governed by Glencore Mine Closure Protocol (Glencore, 2015) that require mine closure planning be integrated into the life of mine planning process. These standards guide the development of mine closure plans, ensuring economic, social, regulatory and environmental factors are considered. At the time of the audit, LCO has just revised the existing Conceptual Closure Plan to reflect changes made to the mine plan as part of the recent modification (DA 305-11-01 (MOD 5)).

The key audit findings include several positive observations, three non-compliance (including two administrative non-compliances) and seven observations.

3.2 Key Findings

The following observations represent industry leading rehabilitation practice.

1. Topsoil management, including the utilisation of topsoil alternatives, is managed very well at LCO. LCO has identified that natural topsoil resources alone will result in deficit of growth medium material over the remaining mine life. This has prompted LCO to develop a Soil Distribution Plan to ensure that growth media resources (soils, spoils, mulches and ameliorants) are deliberately allocated to best effect across the site. Good quality topsoil is being reserved for use on emplacement slopes, with OGM top-dressed overburden being utilised for relatively low risk areas such as level emplacement top surfaces. Treatment of individual topsoil stockpiles is also managed

well, with the resultant benefits of dust, erosion and weed suppression; improved drainage; increased aesthetic value from dump top undulations; and maintenance of topsoil biological and physical condition. Plate 3 shows the level of stockpile shaping and vegetative cover generally observed during the audit.

2. Until recently, rehabilitation planning at LCO had been focused on re-establishing grazing pasture, and a degree of ambiguity in the planning of woodland corridors was noted in the 2012 audit. This has now largely been addressed, with LCO introducing several leading initiatives to facilitate the establishment of woodland corridors across the site. This is a significant issue for the wider Hunter Valley mining industry, as regulatory and community rehabilitation focus evolves from “safe, stable and non-polluting” to more comprehensive and specific biodiversity outcomes. Initiatives introduced at LCO include:
 - Clear delineation of woodland corridors in the revised final landform plan (Plan 4 of the 2015 MOP), providing increased habitat value and fauna movement connectivity across the LCO site to adjacent vegetation stands (remnant and rehabilitated);
 - A substantial biodiversity offset undertaking, including the establishment of the 200m wide Bowmans Creek riparian woodland revegetation corridor along the eastern site boundary;
 - The systematic and relatively large scale recovery and placement of habitat resources such as hollow bearing trees, logs and woody debris and large rocks on rehabilitation areas, augmented by the strategic installation of nest boxes;
 - Trials to assess the best methodology for establishing new woodland rehabilitation and converting existing pasture rehabilitation to woodland; and
 - The trial of rehabilitation seed mixes targeted at establishing specific vegetation communities such as *Grey Box – Ironbark woodland community* and *Ironbark - Spotted Gum - Grey Box forest community*.
3. Glencore has set up a rehabilitation grazing trial at LCO. Even with the inclusion of woodland corridors, approximately two-thirds of rehabilitation at LCO is designated as ‘*grassland suitable for grazing land uses*’. A local agronomist is advising on trial design and assisting with assessment of ongoing soil, vegetation and livestock condition. The grazing trial will assist to determine:
 - Whether sustainable grazing operations are a viable post mining land use;
 - What management inputs will be required to run a grazing operation on rehabilitation; and
 - How grazing can be used to assist with other management outcomes such as weed and fire risk reduction, and reducing exotic grass species dominance.
4. An *Annual Rehabilitation and Land Management Plan* is compiled as an internal Glencore management requirement. The consolidation of all rehabilitation and land management requirements, including documented key performance indicators, into a single document provides a level of focus and accountability across all relevant LCO levels and functions.

The key findings of concern identified during the audit are discussed below.

1. 45.5 ha of rehabilitation was completed in 2015, which did not meet the commitment of 61.9 ha, as presented in Table 19 of the 2015 MOP. The shortfall in rehabilitation was identified by LCO and reported to the DRE on 18 December 2015, before the end of the reporting year. The shortfall was caused by significant operational changes made during the reporting year, which resulted in substantially less completed overburden emplacement being available for rehabilitation than planned. LCO personnel confirmed that the proposed 2016 rehabilitation will make up the 2015 shortfall, as well as meeting the 2016 rehabilitation commitment from the 2015 MOP.
2. From a distance, the RL 195 emplacement appears to have a very level top profile. Whether this final landform integrates with surrounding natural landforms as required in DA 305-11-01 Schedule 3, Condition 37 (Table 8) is uncertain, but beyond the scope of this audit. The issue has been identified by LCO and measures have been implemented to enhance the natural appearance of

final landforms by integrating micro-relief (small emplacement top undulations), informal dump profiles, final height restrictions, and woodland vegetation corridors. These measures should better integrate final mine landforms with surrounding natural landforms.

3. Mountain Block continues to represent the greatest risk of instability, erosion and rehabilitation failure at LCO. This issue has been identified by LCO and implementation of a remedial strategy (included as Appendix F to the 2015 MOP) is well advanced. However, due to unforeseen complications, certain remedial activities have exceeded the proposed project schedule. Although LCO have allocated significant resources to developing a remedial pathway, Mountain Block still represents a significant risk of rehabilitation failure, as identified by DRE.
4. 2015 MOP Section 3.4.3 states that “LCO propose to re-spread 100 mm of topsoil on all rehabilitation areas.” However, areas of rehabilitation are established directly on OGM-top-dressed overburden. In the 2015 MOP Section 7.3.3, the commitment to 100mm of topsoil is qualified by the outcomes of the topsoil balance review and direct seeding trials. The use of OGM top-dressed overburden is of great benefit to LCO and the ambiguity in the 2015 MOP should be clarified.
5. 2015 MOP Section 7.3.4 states that “Generally; local native seed will be collected to maintain the genetic integrity of rehabilitation areas, where possible. When required, locally collected seed will be supplemented with seed purchased from external suppliers.” Discussions with LCO staff indicate that no local native seed collection program is in place at the time of audit due to limited seed source onsite. Rehabilitation seed is sourced from commercial suppliers, with 90% of seed being sourced from local provenance. The MOP needs to be clarified to remove commitment to collect local seed.
6. 2015 MOP Section 9.2 states that “Risks of failing to meet desired biodiversity outcomes in rehabilitation areas will be managed by assessing rehabilitation monitoring results to identify if key completion criteria are at risk of not being achieved”. In the 2014 AEMR, ecological monitoring results are discussed in relation to objectives and biodiversity performance targets, but not specifically against completion criteria in the 2015 MOP. Rehabilitation monitoring results are also discussed in terms of monitoring observations and in relation to rehabilitation objectives, but not specifically against rehabilitation completion criteria.
7. Small areas of bare patches along the ridges of contour banks in Railway Block rehabilitation were observed during the audit. LCO has identified the issue and has a program in place to monitor and, if required, remediate these areas.
8. A topsoil stockpile on the RL 192 dump had been borrowed from to establish a separate temporary stockpile for use in a current rehabilitation campaign and the disturbed face of the stockpile had not reinstated (shaped and seeded). Although discussions with LCO staff indicate that the disturbance is short term, and general stockpile management elsewhere was very good, the observation is based on the situation observed on the day of audit.
9. Although no significant infestations were observed, minor areas of weed presence were observed across site. This is a continuing issue for LCO and a Weed Action Plan is in place.
10. Much of the older pasture rehabilitation is dominated by Rhodes grass (*Chloris gayana*), as shown in Plate 4. Rhodes grass was used heavily in historic seed mixes for its rapid establishment and persistence. However, because of these aggressive qualities, it now represents a risk to the successful establishment of rehabilitation – especially woodland rehabilitation. LCO is aware of the issue and has trialled slashing and grazing as methods for Rhodes grass control.

3.3 Compliance and Risk Assessment

Table 3 indicates the compliance status and associated risk level for the ten key issues of concern discussed in Section 3.2. All other regulatory requirements and LCO management commitments were assessed as being complied with, not triggered or not verified at the time of audit.

No.	Reference	Issue	Compliance Assessment	Risk Level
1	DA 305-11-01, Schedule 3, Condition 37	Visual integration of RL 195 dump with surrounding natural landforms.	Observation	Low
2	2015 MOP Table 19	45 ha of rehabilitation completed in 2015, which did not meet 2015 MOP commitment of 61.9 ha.	Non-compliance	Low
3	2015 MOP Appendix F	Continued instability, erosion and rehabilitation failure in vicinity of Mountain Block.	Observation	Medium
4	2015 MOP Section 3.4.3	MOP commitment to place 100mm of topsoil on all rehabilitation areas, while OGM top-dressed overburden is used in some rehabilitation.	Administrative non-compliance	Admin NC
5	2015 MOP Section 7.3.4	Statement that local native seed will be collected. No local native seed collection program is in place.	Administrative non-compliance	Admin NC
6	2015 MOP Section 9.2	In the 2014 AEMR, ecological and rehabilitation monitoring results are not specifically discussed against rehabilitation completion criteria.	Observation	Low
7	Rehabilitation quality	Bare patches along contour banks in Railway Block rehabilitation.	Observation	Low
8	Rehabilitation quality	Topsoil stockpile on RL 192 dump had been borrowed from for use in rehabilitation and disturbed face had not reinstated (shaped and seeded).	Observation	Low
9	Rehabilitation quality	Minor areas of weed presence across site.	Observation	Low
10	Rehabilitation quality	Dominance of Rhodes grass across large areas of site rehabilitation.	Observation	Low

Table 3: Compliance and risk assessments for key audit findings

3.4 Recommendations

Most of the issues identified as key audit findings have also been identified by LCO and already have a control measure in place. The following recommendations may also be considered to address the key issues identified.

1. In future MOPs or MOP amendments, consider linking rehabilitation commitments with milestones other than calendar years, such as production or disturbance progress, to ensure rehabilitation commitments match operational progress. Rehabilitation commitments would then reflect fluctuations in operational tempo.

2. Engage a visual impacts consultant to conduct a predictive visual assessment of the proposed LCO final landform to determine the likely level of integration with surrounding natural landforms and, if required, provide recommendations for landform modifications that could be made to improve integration at this stage of mine life.
3. Given the age and advanced nature of the LCO final landforms, and the fact that both DRE and DP&E have approved the final landform plan to date, attempt to obtain greater clarification from regulators as to their actual expectations regarding landform integration.
4. Continue with investigations under the Mountain Block Remedial Strategy, as outlined in the 2015 MOP, Appendix F.
5. At the next opportunity, amend MOP Section 3.4.3 to ensure the commitment that “*LCO propose to re-spread 100 mm of topsoil on all rehabilitation areas*”, is subject to the LCO Soil Distribution Plan.
6. At next opportunity, amend MOP Section 7.3.4 to provide clarity regarding the source of seed used in LCO rehabilitation.
7. In future AEMR/ Annual Reviews, ecological monitoring results and rehabilitation monitoring results should be assessed in relation to MOP completion criteria. If required, monitoring results should trigger a management response as described in the MOP Trigger Action Response Plan (TARP). Ensure there is a clear decision making pathway between monitoring results, completion criteria, the TARP and resulting management measures.
8. The small areas of bare patches along the ridges of contour banks in Railway Block rehabilitation should be monitored, assessed against completion criteria, and the need for a remedial response determined according to the MOP TARP.
9. If it is proposed that the topsoil stockpile on RL 192 Dump will be left unmodified for the foreseeable future, LCO should reshape and seed the disturbed face.
10. Formally assess the immediate and long term success of grazing and slashing trials as a control measure for Rhodes grass dominated pasture, to determine the value of these activities as a long term controls (for biodiversity and woodland corridor areas).
11. Based on those areas with specific biodiversity objectives (such as proposed habitat features or woodland corridors) identified in the 2015 MOP, priorities for the slashing and/or grazing control of Rhodes grass should be documented, and a schedule determined to ensure sufficient time and resources are allocated to achieve the required outcomes.

Appendix 1: Department of Planning and Environment Audit Methodology

Audit methodology

The audit will need to address the following areas:

- Conditions of consent
 - All conditions of consent are to be audited
 - The condition numbers must be included in the report
 - Audit must be sequential (eg: all development consent requirements then EPL then Mining Lease)
- Management plans
 - The commitments in management plans have been implemented
- Requirements of other relevant environmental legislation (where specified by the consent)
 - Environmental Protection Licence conditions
 - Environmental aspects of the Mining Lease
- EA/EIS or SEE predictions and commitments
 - This will include but not be limited to items such as mining phase, dump height, landform, noise attenuation etc.
- Statement/s of commitments
 - The commitments made have been implemented/complied with.
- Monitoring results and trends
 - Including against regulatory limits and EA/EIS/SEE predictions
- Community complaints
 - Community complaints should be reviewed for any trends
 - Identifying the source of an established trend
 - Is additional monitoring required for identified trends?
- Regulatory action
 - Including any letters, penalty notices prosecutions etc
 - What was the outcome of that action?
 - What was committed to following the regulatory action? Was it completed?
 - Are recommendations required to prevent recurrence?
- Annual reviews
 - Annual reviews are to be reviewed to provide the auditor with information as a basis for recommendations regarding ongoing environmental improvement.
 - As far as possible the audit should verify the validity of the annual review
- Any other specific matters raised by relevant agencies or the Department
 - Ensure that all specific matters raised by relevant agencies or the Department are addressed
- Improvement opportunities
 - including opportunities to improve the environmental performance of the mine; and
 - opportunities to improve or update any strategy, plan or program required under the consent. This includes any suggestions to improve management plans.

Appendix 2: Department of Industry, Division of Resources and Energy Audit Criteria

Dorian Walsh

Subject: FW: Liddell Regulatory Compliance Audit

From: Kate Walsh [mailto:kate.walsh@industry.nsw.gov.au]

Sent: Friday, 22 January 2016 11:30 AM

To: Daniel Sullivan

Subject: RE: Liddell Regulatory Compliance Audit

Hi Daniel,

Thank you for your email below.

DRE suggests the audit address the following questions. Note further that this listing is not intended to be exhaustive and that the auditor should consider all matters he or she considers appropriate.

Audit Component - Desktop

Is there a current Mining Operations Plan (MOP) in place and has it been approved by DRE?

Has the MOP been prepared in consultation with the relevant agencies as outlined in the Project Approval?

Is the rehabilitation strategy as outlined in the MOP consistent with the Project Approval in terms of progressive rehabilitation schedule; and proposed final land use(s)?

Has the rehabilitation objectives and completion criteria as outlined in the MOP been developed in accordance with the proposed final land(s) as outlined in the Project Approval?

Has a rehabilitation monitoring program been developed and implemented to assess performance against the nominated objectives and completion criteria? – verified by reviewing monitoring reports and rehabilitation inspection records.

Has a rehabilitation care and maintenance program been developed and implemented based on the outcomes of monitoring program? – verified by reviewing Annual Rehabilitation Programs or similar documentation.

Audit Component - Site Inspection

Are mining operations being conducted in accordance with the approved MOP (production, mining sequence etc.), including within the designated MOP approval boundary? – to be verified by site plans and site inspection.

Is rehabilitation progress consistent with the approved MOP as verified by site plans and a site inspection? This should include an evaluation against rehabilitation targets and whether the final landform is being developed in accordance with conceptual final landform in Project Approval.

Based on a visual inspection, are there any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation?

In addition to the above, the audit should note observations where rehabilitation procedures, practices and outcomes represent best industry practice.

Regards,

Kate

Kate Walsh | Inspector Environment

NSW Department of Industry | Resources & Energy

516 High Street | Maitland NSW 2320

GPO Box 344 | Hunter Region Mail Centre NSW 2310

T: +61 (02) 4931 6739 | M: +61 (0) 427 039 514 | E: kate.walsh@industry.nsw.gov.au

W: www.resourcesandenergy.nsw.gov.au

Twitter: [@nswre](https://twitter.com/nswre) | Facebook: [nswre](https://www.facebook.com/nswre)

Appendix 3: Department of Planning and Environment Auditor Approval



Contact: Chris Knight
Phone: (02) 6575 3404
Fax: (02) 6575 3415
Email: christopher.knight@planning.nsw.gov.au

Ben de Somer
Environment and Community Manager
Liddell Coal Operations Pty Ltd
PO Box 7
SINGLETON NSW 2330

Our ref: DA 305-11-01

Attention: Ben de Somer

Dear Ben,

Liddell Coal IEA

I refer to your letter dated 5th November 2015 seeking approval of an audit team to undertake an independent environmental audit of Liddell Coal Operations required by the Liddell Colliery Development Approval, DA 305-11-01.

In accordance with Condition 4 of Schedule 5 of the consent, the Secretary has endorsed the following audit team from Hansen Bailey to conduct this audit:

Core Audit Team

- Daniel Sullivan– Lead Auditor
- Dorian Walsh– Auditor
- Lachlan Crawford– Rehabilitation and Closure specialist

Liddell will need to liaise with the relevant agencies including the Department prior to scoping of the audit, to ascertain any issues that the agencies wish the audit to address. Evidence of consultation is to be provided in the audit report.

The Department expects that the audit will be conducted in accordance with the attached audit methodology.

As per condition 5 the audit report together with responses to any recommendations contained in the audit report should be submitted to the Department by 31st **March 2016**.

Should you have any enquiries in relation to this matter, please contact Chris Knight on telephone 6575 3404.

Yours sincerely



Chris Knight
Senior Compliance Officer
As Nominee for the Secretary (Acting)

10/11/2015.

Attachment: Audit methodology

Appendix 4: Compliance Assessment Checksheets

Ref	Requirement	Compliance Assessment*	Comment
DA 305-11-01, Schedule 3			
Condition 25	<p>The Applicant shall ensure that the offset strategy and/or rehabilitation strategy is focused on the reestablishment of:</p> <p>(a) significant and/or threatened plant communities, including:</p> <ul style="list-style-type: none"> • Central Hunter Box – Ironbark Woodland EEC; • Narrow-Leaved Ironbark – Spotted Gum Woodland EEC; • Narrow-Leaved Ironbark – Bullock Open Forest EEC; <p>(b) significant and/or threatened plant species; and</p> <p>(c) habitat for significant and/or threatened animal species including the Spotted-tailed Quoll.</p>	C	<p>Rehabilitation objective is to establish at least 731 ha of Central Hunter Box – Ironbark Woodland EEC and self-sustaining habitat corridors for the Spotted-tailed Quoll (MOP Section 4.3). Corridors shown in MOP Plan 4. Existing woodland rehabilitation trial aims to establish two ecological communities - 8 ha seeded with a Central Ironbark, Spotted Gum, Grey Box Forest community seed mix (Area 1), and 8 ha seeded with a Central Hunter Grey Box, Ironbark Woodland community seed mix.</p>
Condition 28	<p>Prior to the construction of Dam 13B, the Applicant shall undertake habitat enhancement measures to Dam 3 to increase habitat for water birds to the satisfaction of DECC and the Director-General. The applicant shall in addition establish a dam in the Mountain Block area to provide habitat for waterbird species.</p>	C	<p>Dam 3 and adjacent Triangle Dams have been enhanced to increase habitat for water birds, including for the Blue Billed Duck (see Plate 5, Plate 6 and Plate 8).</p>
	<p>Where achievable, the habitat enhancement measures for each dam shall include:</p> <p>(a) A maximum water depth of 5 metres over at least half the surface area;</p>	C	<p>Dams were surveyed and constructed to ensure required water depth.</p>
	<p>(b) Gently sloping banks (apart from the dam wall) of less than 10 degrees;</p>	C	<p>Inspected. Adjacent banks slope less than 10 degrees. See Plate 5.</p>
	<p>(c) Areas of shallow back waters around the dams;</p>	C	<p>Inspected. Dams constructed in open gullies, with upstream extent of dams forming shallow back waters.</p>
	<p>(d) Appropriate levels of vegetation; and</p>	C	<p>Aquatic vegetation was initially established as planted seedlings in 2011 and is still developing. Open woodland community surround the dams and woodpiles placed as habitat features adjacent to dams.</p>

			Ecological Australia Pty Ltd completed the 2013/14 ecological monitoring and recommended supplementary planting around the blue billed duck dams. Vegetation has been established and will develop now cattle exclusion fencing has been constructed.				
	(d) Appropriate fencing and signposting.	C	Inspected. All dams fenced and sign-posted. See Plate 6.				
Condition 29	The Applicant shall prepare and implement a detailed Biodiversity Management Plan for the site to the satisfaction of the Secretary. This plan must: (b) describe how the implementation of the offset strategy would be integrated with the overall rehabilitation of the site	C	Biodiversity Management Plan approved by DP&E on 27/7/15. Section 4.11 <i>Rehabilitation Works</i> of the BMP describes features in post-mining landscape that will integrate offset strategy and site rehabilitation.				
Condition 37	The Applicant shall rehabilitate the site to the satisfaction of the DRE. The rehabilitation must comply with the objectives in Table 8, and be consistent with the final landform plan shown in Appendix 3.	C	Rehabilitation objectives and processes are presented in 2015 MOP, which was approved by DRE on 24/3/15. Proposed final landform and revegetation meets objectives as listed in Table 8 (see notes below).				
	<i>Table 8: Rehabilitation Objectives (from DA 305-11-01)</i>						
	<table border="1"> <thead> <tr> <th>Feature</th> <th>Objective</th> </tr> </thead> <tbody> <tr> <td>Mine site (as a whole)</td> <td>1 Safe, stable and non-polluting 2 Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms 3 Constructed landforms drain to the natural environment (excluding the final voids) 4 Minimise visual impact of final landforms as far as reasonable and feasible</td> </tr> </tbody> </table>	Feature	Objective	Mine site (as a whole)	1 Safe, stable and non-polluting 2 Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms 3 Constructed landforms drain to the natural environment (excluding the final voids) 4 Minimise visual impact of final landforms as far as reasonable and feasible	C	1 – Safe - final void high walls will be isolated from public access (MOP Table 14). Stable - final landforms will be reshaped to generally > 10 degrees, with drainage infrastructure and revegetated. Non-polluting – stability (as above) plus temporary Blue Book sediment controls and geochemical assessment determined low risk.
Feature	Objective						
Mine site (as a whole)	1 Safe, stable and non-polluting 2 Final landforms designed to incorporate micro-relief and integrate with surrounding natural landforms 3 Constructed landforms drain to the natural environment (excluding the final voids) 4 Minimise visual impact of final landforms as far as reasonable and feasible						
		Obs.	2 – Micro relief (by way of small dump top undulations), informal dump profiles, final height and woodland vegetation corridors continue to be incorporated into final reshaped				

	Final voids	5 Minimise to the greatest extent practicable: - the size and depth of final voids - the drainage catchment of final voids		overburden emplacements to integrate with surrounding natural landform. Final landform will integrate physically; however, RL 195 dump top still appears flat from distance (viewed from RL 192 dump). See Plate 14.
	Surface infrastructure	6 To be decommissioned and removed, unless DRE agrees otherwise		
	Revegetation	7 Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems that is comprised of at least: - 731 hectares of Central Hunter Box-Ironbark Woodland - 1,247 hectares of grassland suitable for grazing use 8 Establish areas of self-sustaining habitat for threatened flora and fauna species including corridor habitat for the Spotted-tailed Quoll	C	3 - Final landform drainage is designed to integrate with the surrounding catchments. MOP Plan 4 drainage shows final landform generally shedding water to adjacent drainage lines. However, clean water dams in the final landform (for native fauna and livestock watering) will capture some surface flow.
			Obs.	4 – See notes for objective 2.
	Community	9 Ensure public safety	C	5 - Two small approved final voids in SE corner of post-mining landform – South Pit and Entrance Pit (MOP Plan 4). South Pit void proposed for tailings storage. Final landform designed to limit the catchment reporting to the voids (MOP Sect 3.4.5).
	Final land use	10 Minimise the adverse socio-economic effects associated with mine closure	C	6 – Infrastructure still operational, but all built surface infrastructure will be decommissioned and removed from site (unless agreed otherwise with regulators and stakeholders) (MOP Table 11).
		11 Restore or maintain land capability generally as described in the EA and as shown conceptually in Appendix 3.	C	7 – Woodland corridors planned for post-mining landform to increase connectivity with adjacent rehabilitated mines and remnant vegetation, includes commitment to 731 ha of Central Hunter Box-Ironbark Woodland and 1,247 ha of grassland suitable for grazing use.

		C	8 - 200m wide habitat corridor proposed along Bowmans Creek to enhance habitat specifically for the Spotted-tailed Quoll, plus habitat features and vegetation species suited to the Quolls (MOP Table 11).
		C	9 – Fence and berm treatment proposed for final void highwall (MOP Table 11). Final landform revegetated and geotechnically stable (generally 10 degree slope or less).
		C	10 – Section 10 of the Conceptual Mine Closure Plan outlines proposed measures to mitigate socio-economic impacts of mine closure.
		C	11 – Land capability classes IV, V and VI (grazing capable) to be re-established on overburden emplacements, including 1,247 ha grasslands, as shown on MOP Plan 4.
Condition 38	The Applicant shall carry out rehabilitation progressively, that is, as soon as reasonably, practicable following disturbance.	C	Inspected in field and latest aerial photography. Rehabilitated (seeded) areas as close as practical to active emplacements. Shortfall in 2015 rehabilitation ha due to rehabilitation operations having caught up to dumping operations.
	All reasonable and feasible measures must be taken to minimise the total area exposed for dust generation at any time.	C	Ground Disturbance Permits (GDP) used to limit new disturbance, maximum area of final rehabilitation completed (as noted above), and commitment to temporary revegetation on unshaped long term overburden dumps and other disturbed areas. (MOP Section 3.3.1)
	Interim rehabilitation strategies shall be employed when areas prone to dust generation cannot yet be permanently rehabilitated.	C	As above, plus CHPP dump is an example of temporary revegetation for aesthetic, stability and dust control purposes.

Condition 39	Rehabilitation Management Plan The Applicant shall prepare and implement a Rehabilitation Management Plan for the development to the satisfaction of DRE,	C	Rehabilitation Management Plan (RMP) prepared as combined document with 2015 MOP.
	This plan must:	C	Approved by DRE on 24/3/15.
	(a) be submitted to DRE for approval by the end of June 2015;	C	2015 MOP distributed to DP&E, NOW, OEH, SC and MSC. Copy of correspondence with DP&E, OEH, NOW contained in MOP Appendix D.
	(b) be prepared in consultation with the Department, NOW, OEH, MSC and SC;	C	2015 MOP prepared in accordance with DRE guideline <i>ESG3: Mining Operations Plan (MOP) Guidelines, September 2013 (DRE 2013)</i> .
	(c) be prepared in accordance with relevant DRE guidelines;	C	MOP Section 3.3.7 describes LCO management of biodiversity, and short, medium and long term measures to integrate management of offset areas with remnant vegetation and rehabilitation.
	(d) describe how the rehabilitation of the site would be integrated with the implementation of the biodiversity offset strategy;	C	MOP Section 6 presents detailed completion criteria, which will be used to evaluate progress and success of rehabilitation. These criteria are linked via the rehabilitation and ecological monitoring programs to the Trigger Action Response Plan (MOP Section 9.2) for identification of remedial action.
	(e) include a detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and triggering remedial action (if necessary);	C	Description of measures implemented to ensure compliance with the rehabilitation relevant conditions of this consent are presented primarily in MOP Section 5 <i>Rehabilitation Planning and Management</i> and Section 7 <i>Rehabilitation Implementation</i> . Mine closure planning is primarily described in the Conceptual Mine Closure Plan; however, closure planning is discussed to in MOP Sections 4.2 -4.3, and commitment to produce final Mine
(f) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform including final voids and final land use;	C		

			<p>Closure Plan five years before closure is included in Table 9 of the MOP.</p> <p>Final landform design and construction is described in MOP Sections 5 and 7, with discussion of rehabilitation objectives and methods for Primary Domains.</p> <p>Final Voids management is discussed primarily in MOP Section 3.4.5 <i>Final Void Water Balance</i>.</p> <p>Final land use planning is described in MOP Section 4 <i>Post Mining Land Use</i>.</p>
	(g) include interim rehabilitation where necessary to minimise the area exposed for dust generation;	C	Commitment to temporary revegetation on unshaped long term overburden dumps and other disturbed areas is discussed in MOP Section 3.3.1. CHPP dump is an example of temporary revegetation for aesthetic, stability and dust control purposes.
	(h) include a program to monitor and report on the effectiveness of the measures, and progress against the detailed performance and completion criteria; and	C	MOP Section 8.1 <i>Rehabilitation Monitoring Program</i> describes the program implemented to monitor and report on the effectiveness of the rehabilitation measures, and progress against completion criteria.
	(i) build to the maximum extent practicable on other management plans required under this consent.	C	MOP Section 3.3 <i>Environmental Issues Management</i> and Section 3.4 <i>Operational Issues Which Affect Rehabilitation</i> summarise the implementation of management plans required by this consent, and how they relate to rehabilitation planning.
SoC 34	Within five years of closure, LCO will prepare a detailed Mine Closure Plan, which will include confirmation of post-mining land uses and final rehabilitation success criteria.	Not Triggered	Conceptual Mine Closure Plan revised in late 2015/ early 2016, but final Mine Closure Plan not due until 2023.
2012 LCO Rehabilitation Audit (Global Soil Systems, July 2012)			
Rehabilitation Planning			

Section 4.3	Discussion with mine personnel indicated the intention to establish connecting bushland corridors. However, the current vegetation strategy did not clearly reflect this intention nor was there any plan in the Landscape Management Plan indicating how this was going to be achieved.	C	2015 MOP Plan 4 now shows the location of proposed woodland community corridors in the post-mining landscape.
	More prescriptive rehabilitation completion criteria needs to be developed, and integrated into the existing rehabilitation monitoring programs to provide a useful feedback mechanism.	C	The preliminary closure criteria audited in 2012 has been developed into detailed closure criteria as presented in MOP Section 6. The relationship between closure criteria, monitoring programs and Trigger Action Response Plan is discussed in MOP Section 8.1 <i>Rehabilitation Monitoring Program</i> and Section 9 <i>Intervention and Adaptive Management</i> .
Section 4.2	Arguably the greatest rehabilitation challenge facing the mine is the south facing Mountain Block slope. It is understood that a plan is currently being prepared to address slope failure in this area.	C	Mountain Block Remediation Strategy has been developed and included as MOP Appendix F.
	Capping and revegetation of the main tailings dam will also require a detailed strategy.	C	Table 13 commits to detailed tailings capping and rehabilitation designs for the Antiene, Reservoir, Durham and South Pit tailings emplacements prior to decommissioning. Antiene capping / rehabilitation plan has been developed.
Topsoil Management			
Section 4.1	Topsoil management could be improved by shaping topsoil dumps to gently rounded mounds and sowing a pasture cover crop on them immediately after placement.	C	Topsoil stockpiles on RL 192 emplacement inspected – emplacements were mounded and sown with grass species. See Plate 3.
	All topsoil dumps should be signposted.	C	Topsoil stockpiles on RL 192 emplacement inspected – stockpiles are sign posted. See Plate 7.
	The practice of mulching felled timber and mixing the mulch with topsoil is considered best practice and is strongly encouraged.	C	Discussions with LCO staff and 2014 AEMR Section 2.2 <i>Land Preparation</i> indicate that mulching of non-habitat vegetation and integration with topsoil is standard practice.

Section 4.3	A more systematic clarification of limiting soil characteristics such as pH, EC and ESP across Liddell would be beneficial.	C	Characterisation of soils and spoils is described in MOP Section 7.3.3 <i>Growth Media Development Phase</i> and Section 8.1.5 <i>Geochemical Monitoring. Analysis</i> includes pH, EC, nutrients; total organic matter, cation exchange capacity (CEC), ESP, total carbon and nitrogen. Laboratory analysis report (Australian Environmental Laboratories) and interpretation (Carbon-Based Environmental) were reviewed during audit.
	Sediment control measures around topsoil dumps (e.g. cut off drains up slope, sediment barriers down slope) were mentioned in several reports. However, there was little evidence of same for dumps inspected in this audit.	C	Temporary topsoil stockpile was inspected during audit (Premier Dump rehabilitation). Stockpile was located on level surface within bunded area. Primary method of erosion control across other inspected stockpiles was location of stockpiles in low risk areas, shaping and seeding with cover crop.
Habitat Enhancement/ Land use Development			
Section 4.1	The placement of large logs around the perimeter of water storages (both above and below water level) would greatly enhance the habitat value of the Blue-billed Duck and other dams.	C	Logs and wood debris have been placed in piles around Dam 3. See Plate 8.
	Felled timber, like topsoil, is considered a valuable resource at the mine and its use should be maximised.	C	Standard practice to identify, recover and translocate habitat features (such as logs and hollow bearing trees) to rehabilitation/ revegetation areas during clearing operations. Extensive stockpiling of habitat logs/ trees in preparation for Bowman Creek corridor.
	A large scale cattle grazing trial will commence in the Reservoir Block and adjacent areas before the end of 2012. This is a major and positive step for the mine and enhances the need to establish more specific soil, vegetation and grazing completion criteria in order to assess the efficacy of the trials.	C	Grazing trials has been established in Reservoir Block and is ongoing. Local agronomist advising on trial design and assisting with trial monitoring.
Section 4.3	It is recommended that the mine source more general (Hunter Valley) provenance seed and tube stock when required.	C	Section 7.3.3 states that local seed collection will be supplemented by purchased seed.

			Discussions with LCO staff indicate that 90% of purchased seed is of local provenance (Hunter Valley).
Rehabilitation Monitoring and Maintenance			
Section 4.1	As Rhodes grass is the most aggressive and competitive pasture species limiting tree establishment at Liddell Mine, it is recommended that slashing be initially focussed on proposed tree corridors in order to encourage more rapid tree growth where tube stock are intended to be planted.	C	Slashing of Rhodes grass dominated pasture has been trialled with favourable results. Recently, grazing of Rhodes dominated pasture has been observed to have similar benefits. Both grazing and slashing will be used, as appropriate, to address Rhodes dominance. Plate 9 shows an area of Rhodes grass pasture recently slashed, and Plate 10 shows an area of recent grazed.
	Small patches of weeds are still present on at various points on site and it is doubted that it is possible to remove all weeds. However, it would be beneficial to add two new weed species (<i>African olive</i> and <i>Acacia saligna</i>) to the spraying program.	C	Both weed species have been included for control in the Weed Action Plan (Enright, 2015), and active programs have been implemented to address both species.
Table 2	Other rehabilitation efforts suggested for Liddell include removal of existing rocks and erosion control in the reservoir block.	Not verified	No areas of excessive surface rock were observed during 2016 audit. Discussions with LCO staff indicate that erosion and surface rock observed in 2012 was specific to an area of Reservoir Block. The area was remediated, but has subsequently been submerged by a water storage.
Section 4.3	With regards to aerial fertiliser application - many of the sites appear to exhibit symptoms of nutrient deficiency and would benefit from more regular application of nutrients.	C	Repeat fertiliser application is included in the suite of post-rehabilitation maintenance activities, especially for grazing areas. Other than application of OGM, no fertiliser application occurred during 2013 or 2014 according to respective AEMR Table 40. Discussions with LCO staff indicate that a specific fertiliser application regime is being developed from the outcomes of the grazing

			trial and soil analysis being completed as part of rehabilitation monitoring.
Section 4.2	Weed control – Galenia, A. saligna, Castor oil, African olive, Pampas grass and others.	C	A well designed and resourced weed control program has been implemented to control weeds across the site. The 2015 Weed Action Plan was reviewed during the audit.
	Carefully consider content and consequences of introduced organics.	C	Risks associated with the use of Organic Growth Medium (OGM) in rehabilitation have been assessed and determined to be manageable, in consideration of benefits. The grade of OGM used at LCO meets physical and chemical specifications for use in mine rehabilitation under NSW EPA Waste Exemptions.
	Carefully consider option of not using contour banks.	C	Limited areas of rehabilitation have been trialled without construction of contour banks. However, discussions with LCO staff indicate that outer slopes of emplacements require constructed drainage control to safely drain water, and installation of contour banks and drains is standard practice.
ML 1597			
Condition 3	a) Mining operations must not be carried out otherwise than in accordance with a Mining Operations Plan (MOP) which has been approved by the Director-General of the Department of Primary Industries – Mineral Resources.	C	Within the scope of this rehabilitation audit, LCO mining operations were observed to consistent with the approved MOP.
	b) The MOP must:	C	Areas proposed for mining disturbance are shown in MOP Plans 3A to 3G.
	<ul style="list-style-type: none"> • identify areas that will be disturbed by mining operations; • detail the staging of specific mining operations; 	C	Each of the MOP Plans 3A to 3G represents a single year of mining operations advancement. This is further described in MOP Section 2.
	<ul style="list-style-type: none"> • identify how the mine will be managed to allow mine closure. 	C	Mine closure planning is primarily described in the Conceptual Mine Closure Plan; however,

			closure planning is discussed to in MOP Sections 4.2 - 4.3.
	<ul style="list-style-type: none"> identify how mining operations will be carried out on site in order to prevent and or minimise harm to the environment. 	C	Control measures implemented to prevent or minimise harm to the environment are described in MOP Section 3.
	<ul style="list-style-type: none"> reflect the conditions of approval under <ul style="list-style-type: none"> the <i>Environmental Planning and Assessment Act 1979</i> the <i>Protection of the Environment Operations Act 1997</i> and any other approvals relevant to the development including the conditions of this lease, and 	C	The MOP incorporates a site Rehabilitation Management Plan, as required by Schedule 3, Condition 39, of the LCO project approval (DA 305-11-01) under the <i>Environmental Planning and Assessment Act 1979</i> .
	<ul style="list-style-type: none"> have regard to any relevant guidelines adopted by the Director-General. 	C	The MOP was prepared in accordance with the DRE guideline <i>ESG3: Mining Operations Plan (MOP) Guidelines</i> , September 2013 (DRE 2013).
Condition 7	Disturbed land must be rehabilitated to a sustainable/agreed end land use to the satisfaction of the Director-General.	C	Rehabilitation objectives, methods, schedule and final land uses are described in the 2015 MOP, which was approved by DRE on 24/3/15.
LCO MOP 16 March 2015 – 16 March 2022			
<i>Soils and Land Preparation</i>			
Section 2.3.4	Prior to any site disturbance, a Ground Disturbance Permit is obtained from the LCO Environmental Superintendent (or delegate).	C	GDP identified as requirement of land clearance. Example of completed GDP reviewed during audit (GDP 2015-05-19-08-00).
	Suitable topsoil and subsoils will be stripped in accordance with the Land Clearing and Stripping Procedure.	C	Soil resources identified in Soil and Land Resource Assessment, Suitable stripping depths determined through inspection and implemented through conditioning of GDP.
	Soils will be stripped when in a moist condition (when possible) to minimise loss of soil structure.	Not verified	No topsoil stripping occurring during audit, but in moist soil condition is standard consideration for stripping operations.
	Soils will be loaded using excavators or loaders. Loading areas will be watered by water carts to minimise dust generation and, where possible, loading will not occur in windy conditions.	Not verified	No topsoil stripping occurring during audit, but use of watercarts is standard requirement. Discussions with LCO staff also indicate that scrapers are used to strip topsoil.

	Stockpiles will be established away from mining areas, traffic areas and watercourses.	C	Topsoil stockpiles inspected during audit (on RL 192 and RL 195 dumps) were located away from mining areas, traffic areas and watercourses.
	Stockpiles will be established on level or gently sloping land where possible to minimise erosion.	C	Topsoil stockpiles inspected during audit (on RL 192 and RL 195 dumps) were established on level or gently sloping land.
	Suitable erosion and sediment controls will be installed including clean water diversion upslope and sediment controls at the downslope toe of stockpiles.	C	Temporary topsoil stockpile was inspected during audit (Premier Dump rehabilitation). Stockpile was located on level surface within bunded area. Primary method of erosion control across other inspected stockpiles was location of stockpiles in low risk areas, shaping and seeding with cover crop.
	Stockpiles will be windrowed no more than 3 m high to maximise surface exposure and retain biological activity.	C	Topsoil stockpiles inspected during audit (on RL 192 and RL 195 dumps) were all less than 3m high.
	Stockpiles will be sprayed for weeds, as necessary.	Not verified	No weed spraying of stockpiles observed during audit but 2015 MOP and AEMR both identify as standard practice. No weed infestations observed on stockpiles during audit.
	Stockpiles retained longer than three months will be shaped, ripped and seeded with a suitable cover crop to minimise dust generation, suppress weed growth and preserve the soil seed bank.	C	Topsoil stockpiles inspected during audit (on RL 192 and RL 195 dumps) were seeded with cover crop.
	Stockpiles will be regularly inspected and maintained. Maintenance may include weed control, fertilising and reseeding, and repairing erosion and sediment controls.	C	Regular inspection of topsoil stockpiles as part of rehabilitation "walkover" monitoring and weed control plans
	Soil stockpiles will be demarcated with signage to minimise unauthorised use or disturbance.	C	Topsoil stockpiles inspected during audit (on RL 192 and RL 195 dumps) were signposted. See Plate 7.
Section 3.4.3	LCO will undertake a review of the material balance to verify volumes of available suitable topsoils, subsoils and capping materials for rehabilitation. Following completion of the soil balance LCO will review	C	Completed during preparation of internal Soil Distribution Plan (LCO, 2015).

	suitable soil substitutes such as recycled organics and mushroom composts.		
	Currently LCO propose to respread 100 mm of topsoil on all rehabilitation areas.	Admin NC	Where topsoil is used it is spread to 100mm, but areas of rehabilitation are established on overburden topdressed with OGM, as identified in the internal Soil Distribution Plan.
Section 7.3.3	Prior to revegetation activities, spoils and topsoils will be characterised to determine the type and application rate of any ameliorants required such as gypsum, fertiliser, biosolids and organic composts.	C	Characterisation program implemented (as described in MOP Section 7.3.3 Growth Media Development Phase and Section 8.1.5 Geochemical Monitoring). Laboratory analysis report (Australian Environmental Laboratories) and interpretation (Carbon-Based Environmental) were reviewed during audit.
	Spoil samples will be analysed for pH, electrical conductivity (EC) and exchangeable sodium percent (ESP).	C	Analysis includes pH, EC, nutrients; total organic matter, cation exchange capacity (CEC), ESP, total carbon and nitrogen. Laboratory analysis report (Australian Environmental Laboratories) and interpretation (Carbon-Based Environmental) were reviewed during audit.
	Following material characterisation, substrates will be treated by: Incorporating appropriate soil ameliorants at the recommended rate per hectare.	C	Soil ameliorant application reported in 2014 AEMR Section 5.4 <i>Rehabilitation Performance</i> . Typical application of 360 kg of Granulock fertiliser and 10t of gypsum per ha.
	Deep ripping shaped surfaces parallel with the contour prior (where direct tree seeding is planned) or shallow ripping/tilling across the contour (where grasslands are to be established) to provide for an adequate seed bed.	C	Shallow cross-tilling observed during audit at Premier Dump rehabilitation. Surface of OGM dressed overburden was observed to have been ripped. Discussions with LCO staff indicate ripping to approximately 400mm.
	Rock raking to remove large rocks in Grassland rehabilitation areas.	C	Rockpiles on rehabilitation areas resulting from rock raking observed during audit inspection. See Plate 11.
	Suitable erosion control measures (e.g. silt fences) will be installed to minimise soil loss prior to spreading soils.	C	Substantial catch drain constructed at base on Premier Dump as sediment control. See Plate 12.

	Topsoil and/or subsoil will generally be spread over the prepared substrate to a depth of 100 mm. The depth of topsoil will depend on the outcome of the topsoil balance review and outcomes of the direct seeding trials. Where appropriate, LCO will substitute topsoils and subsoils with alternatives such as OGM.	C	Topsoil cover at Premier Dump rehabilitation observed to be approximately 100mm. Other rehabilitation areas established on OGM dressed overburden, as identified in the internal Soil Distribution Plan.
	Following application of soils and required ameliorants, the rehabilitation area is re-ripped along the contour. This allows for the partial mixing of topsoil, ameliorants and overburden, and provides surface roughness to improve infiltration and seed/soil contact.	C	Shallow cross-tilling observed during audit at Premier Dump rehabilitation. See Plate 13.
	Neighbouring Mines		
Section 3.3.7	LCO will continue through the MOP term to liaise with Ravensworth Operations and Mount Owen Complex to optimise the compatibility of the proposed final landform, and maximise linkages between proposed habitat corridors.	C	Discussions with LCO staff indicate that communication with neighbouring operations occurred during development of joint biodiversity offset strategy.
	Rehabilitation Monitoring		
Section 8.1.1	LCO will continue annual rehabilitation monitoring to identify if key characteristics of rehabilitation areas are trending toward desired outcomes.	C	Annual rehabilitation monitoring reported on in Rehabilitation Summaries, included in Section 5.4 of 2014 AEMR.
Section 8.1.2	Annual ecological monitoring will be undertaken in accordance with the approved Biodiversity Management Plan and Environmental Monitoring Program.	C	Annual ecological monitoring (flora and fauna monitoring) survey was undertaken from 1st-5th December 2014 and reported in Section 3.10.1 of the 2014 AEMR.
Section 9.2	Risks of failing to meet desired biodiversity outcomes in rehabilitation areas will be managed by assessing rehabilitation monitoring results to identify if key completion criteria are at risk of not being achieved, and implementing appropriate corrective actions in accordance with a Rehabilitation Trigger Action Response Plan.	Obs.	In 2014 AEMR, ecological monitoring results are discussed in relation to objectives and biodiversity performance targets, but not specifically against completion criteria. Rehabilitation monitoring results are discussed in terms of monitoring observations and in relation to rehabilitation objectives, but not specifically against rehabilitation completion criteria.

	Weed Management		
Section 3.3.8	Regular site inspections to identify areas of weed infestation and weed species.	C	As detailed in the Weed Action Plan (Enright, 2015) and reported in AEMR.
	Development and implementation of an eradication plan applicable to the circumstances, which may include manual removal, spot spraying, boom spraying, aerial spraying or biological control.	C	As detailed in the Weed Action Plan.
	Liaising with neighbouring property owners to coordinate weed control in the surrounding area.	Not verified	Discussions with LCO indicate that main neighbouring property owners are Glencore mines, and communications regarding weed control does occur.
	Minimising vegetation disturbance by reducing the number of access tracks.	C	Track network observed during audit is not excessive and is appropriate to facilitate light vehicle movement around rehabilitated areas.
	Minimisation clearing associated with civil works.	C	Ground disturbance controlled through conditioning of approved GDPs.
	Progressive rehabilitation focussed on rapid establishment of groundcover at rehabilitation areas.	C	Seed mix in pasture rehabilitation includes rapid establishing annual cover crop species such as Japanese Millet or Oats.
	Conducting control activities in a manner appropriate for the weed type, location in the landscape. This includes using selective herbicides, herbicides safe for aquatic environments and various techniques from foliar spraying through to cut and paint control in sensitive areas.	C	Weed species appropriate treatment detailed in the Weed Action Plan.
	Habitat Augmentation		
Section 7.3.3	Prior to revegetation habitat features and nest are installed in Domain D – Woodland rehabilitation areas.	C	Habitat features (i.e. logs and rockpiles) have been installed in woodland rehabilitation areas across site, and are monitored as part of ecological monitoring.
	Where appropriate and practical, salvaged tree hollows and logs will be incorporated into the final landform to augment the habitat value of proposed habitat corridors or riparian habitat.	C	Placement of habitat logs/ trees observed in Reservoir Block adjacent to waterbird habitat dams and in preparation for Bowman Creek corridor.
	Large rocks will be placed into habitat piles where appropriate.	C	Observed on RL 192 Dump during audit. See Plate 11.

	In addition to installation of habitat features on rehabilitation areas nest boxes will be established adjacent to rehabilitation areas in nearby remnant vegetation to compensate for the loss of hollows in habitat trees.	C	Nest boxes have been installed in woodland rehabilitation areas adjacent to waterbird habitat dams and north east part of the site, and are monitored as part of ecological monitoring.
Ecosystem Establishment			
Section 7.3.4	Generally; local native seed will be collected to maintain the genetic integrity of rehabilitation areas, where possible. When required, locally collected seed will be supplemented with seed purchased from external suppliers.	Admin NC	No current local native seed collection program in place. Rehabilitation seed is sourced commercially and consists of 90% local provenance species.
	The seed mixes for Domain C – Grassland (Table 21) and Domain D – Woodland (Table 22). Seed mixes may be subject to variation due to seasonal seed availability.	C	Seed mixes reported in 2014 AEMR as used in rehabilitation are consistent with those presented in 2015 MOP Tables 21/22 (see below).
	The majority of revegetation will involve sowing of pasture species and direct seeding of native tree species. A range of other techniques may also be utilised where appropriate over isolated areas associated with steep slopes.	C	Completed rehabilitation areas, and rehabilitation in progress, observed during audit indicated that sowing and direct seeding were methods of vegetation establishment.

Table 21 Species and Sowing Rates for Grassland Rehabilitation

Species	Rate (kg/ha)	
	Spring / Summer	Autumn / Winter
Japanese Millet	15	0
Oats	0	25
Green Panic	3	2
Premier Digit Grass	5	3
Setaria	2	1
Kikuyu	5	3
Couch Grass	5	3
Tall Fescue	2	5
Cockfoot	0	2
Wimmera Ryegrass	2	6
Lucerne (Aurora)	6	8
White Clover (Haifa)	2	2
Medic (Seph)	0	5
Chicory	2	2
Plantain (Tonic)	1	3
Woolly Pod Vetch (Namoi)	0	5
TOTAL	50	75

Table 22 Recommended Species for Woodland Rehabilitation

Scientific Name	Common Name
Upper Storey	
<i>Angophora floribunda</i>	Rough-barked apple
<i>Eucalyptus crebra</i>	Narrow-leaved ironbark
<i>Eucalyptus moluccana</i>	Grey box
Mid Storey	
<i>Allocasuarina luehmannii</i>	Bulloak
<i>Brachychiton populneum</i>	Kurrajong
<i>Notelaea macrocarpa</i> var. <i>macrocarpa</i>	Velvet mock olive
Ground Cover	
<i>Aristida ramosa</i>	purple wiregrass
<i>Austrostipa scabra</i>	speargrass
<i>Cymbopogon refractus</i>	Barbed wire grass
<i>Brunoniella australis</i>	Blue trumpet
<i>Calocephalus citreus</i>	Lemond beauty-heads
<i>Einadia nutans</i> subsp. <i>Nutans</i>	Climbing saltbush
<i>Eremophila debilis</i>	Winter apple
<i>Lomandra multiflora</i> subsp. <i>Multiflora</i>	Many-flowered mat-rush

Rehabilitation Records			
Section 8.1.1	<p>LCO records the details of each rehabilitation campaign so that they are available for later interpretation to inform the continual improvement process and (where required) revise rehabilitation methodologies, including:</p> <ul style="list-style-type: none"> • Landform design verification; • Geotechnical assessment for highwall and lowwall stability and integrity; • Drainage design and ‘as constructed’ survey records to verify contour banks; • Substrate characterisation records including; • Soil chemistry analysis, visual assessment of physical characteristics (e.g. rockiness); • Site preparation records including; • Seeding campaign records including; and • Follow-up care and maintenance works (including watering and weed management). 	C	Required rehabilitation details are recorded on a Rehabilitation Establishment and Methodology Form. Completed example observed for “ <i>Native Woodland on Premier Dump</i> ”.
Compliance with Rehabilitation Objectives			
Table 11	<i>Domain 1 – Active Mining</i>		
	Open cut pit areas will be progressively backfilled and rehabilitated as soon as practical following the completion of mining.	C	As detailed in 2015 MOP and observed during audit.
	Active mining areas will generally be rehabilitated to a mixture of grassland and woodland final land-uses.	C	As detailed in 2015 MOP and observed during audit.
	<i>Domain 3 – Infrastructure</i>		
		Not triggered	All infrastructure still operational
<i>Domain 4 – Overburden Emplacement</i>			
	Overburden emplacement areas will be predominantly rehabilitated to grassland (Rural Land Capability Classes IV, V and VI), with woodland habitat corridors established on slopes;	C	As detailed in Rehabilitation Objectives for Primary Domain 4: Overburden Emplacements in MOP Table 11, and shown on MOP Plan 4. Observation of completed pasture rehabilitation with woodland corridors indicates rehabilitation

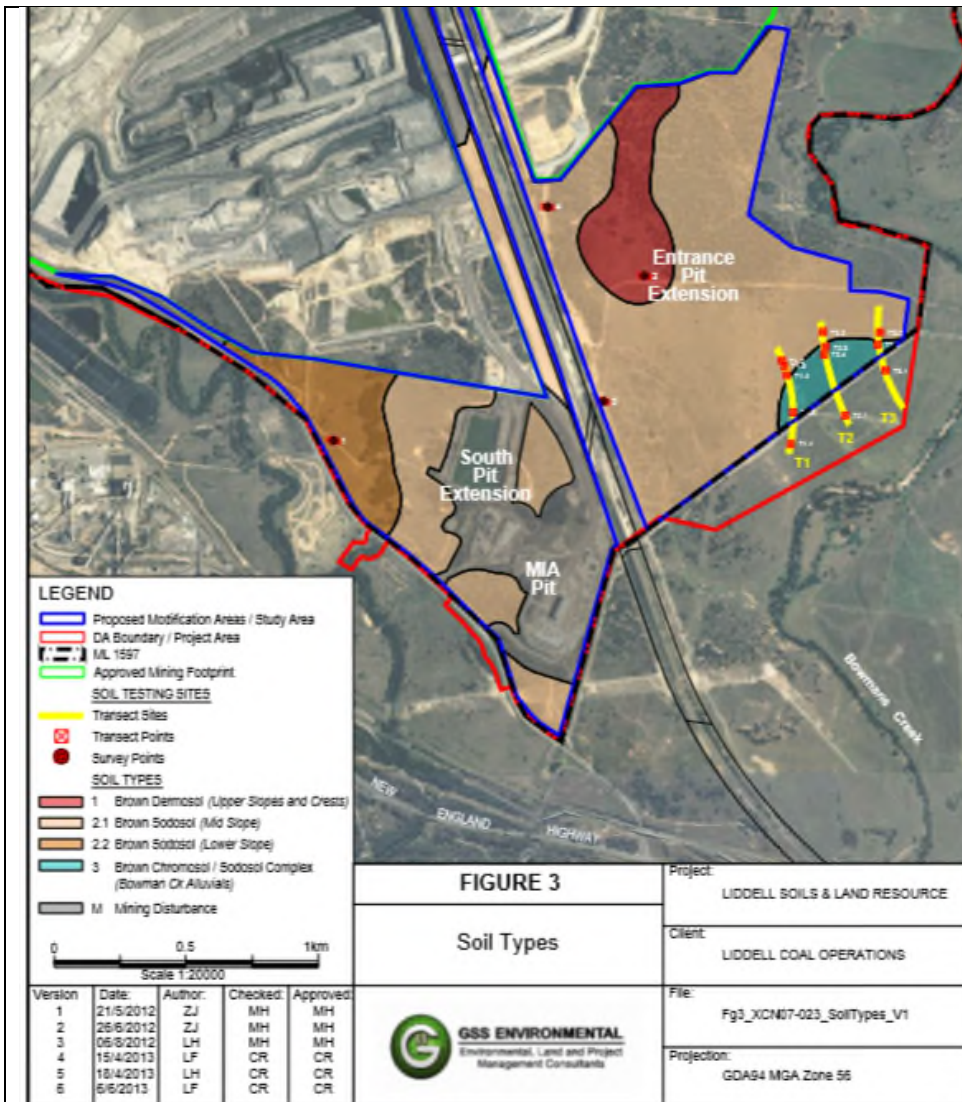
			of overburden emplacements are generally being completed according to 2015 MOP.
Overburden emplacement shaping will produce a generally free draining land form with slopes generally 10 degrees or less and not exceeding 18 degrees unless agreed by regulators;	C		Contours on 2105 MOP Plan 4, rehabilitation status reporting in 2014 AEMR Table 31, and audit inspection indicate that rehabilitated landform slopes are generally less than 10 degrees, with no evidence of final slopes exceeding 18 degrees observed.
<i>Domain 5 – Tailings Emplacement Area</i>			
All tailings pumping infrastructure will be decommissioned and removed prior to closure.	Not triggered		
Tailings emplacement areas will be capped and rehabilitated in accordance with an approved capping design and Section 101 approval.	Not triggered		Antiene tailings dam scheduled for commencement of capping works in 2016.
Rehabilitated tailings emplacements will be capped and shaped to produce free draining landforms.	C		As shown by drainage lines and contours in 2015 MOP Plan 4.
Tailings emplacements will be rehabilitated to meet all completion criteria for Domain C – Grassland.	C		As shown by Secondary Domain C: Grassland in 2015 MOP Plan 4.
<i>Domain A – Final Void</i>	Not triggered		No final voids at date of audit
<i>Domain B – Water Management</i>	Not triggered		Water management structures still operational at date of audit
<i>Domain C – Rehabilitation Area - Grassland</i>			
At least 1247 ha of grassland will be established that can be demonstrated to be capable of supporting sustainable grazing by: Having a pasture species mix representative of the district	C		Grassland species mix is representative of typical pasture species that would be found in local non-mining improved pasture.
Providing a mix of land capability suitable for agriculture (Rural Land Capability Class IV, V and VI)	C		Pasture areas are planned to be capability classes IV, V and VI as identified in Soil and Land Resource Assessment (GSSE, July 2013) and shown on 2015 MOP Plan 4.
Having a carrying capacity comparable to suitable analogue sites.	Not verified		Not yet determined. Will be evaluated by Glencore grazing trial (in progress at the time of audit) and ongoing grazing at LCO.

Requiring management inputs comparable to suitable analogue sites	Not verified	Not yet determined. Will be evaluated by Glencore grazing trial (in progress at the time of audit) and ongoing grazing at LCO.
Soils (or soil substitutes) will be reinstated on rehabilitation areas with characteristics that are appropriate for the final landuse.	Not verified	Initial soil analysis (GSSE, July 2013) indicates topsoil suitability for grazing in the short term (non-saline; acidic to slightly alkaline pH; non-sodic, but low CEC); however, long term grazing sustainability will be indicated by ongoing grazing and soil analysis.
Domain D – Rehabilitation Area - Woodland		
At least 731 ha of woodland will be established on areas disturbed by mining including the slopes of overburden emplacement areas;	C	As reported in 2015 MOP Table 11 and shown by Secondary Domain D: Woodland in 2015 MOP Plan 4.
Woodland rehabilitation corridors will connect with remnant vegetation and rehabilitation at adjacent operations including Ravensworth Operations and Mount Owen Complex, to enhance habitat connectivity;	C	2015 MOP Plan 4 shows woodland corridor connectivity with offset areas, adjacent remnant vegetation in the north and neighbouring mine site rehabilitation.
Soils (or soil substitutes) will be reinstated on rehabilitation areas with characteristics that are appropriate for the final landuse;	Not verified	Initial soil analysis (GSSE, July 2013) and early woodland vegetation trial results indicate topsoil suitability for native tree establishment; however, long term community sustainability will be indicated by floristic monitoring and soil analysis.
Woodland rehabilitation areas will provide habitat augmentation features (such as rock piles and felled logs and woody debris) for target native species including the Spotted Quoll.	C	Nest boxes, wood piles and rock piles have been strategically located as habitat features through woodland rehabilitation areas.
Vegetation compositions in woodland rehabilitation areas will be comparable with analogue vegetation communities, including areas representative of Central Hunter Box – Ironbark Woodland, specifically adjacent to rehabilitation areas at Ravensworth Operations and Mount Owen Complex.	C	The composition of woodland rehabilitation seed mixes have been developed to specifically target <i>Grey Box – Ironbark woodland community</i> and <i>Ironbark - Spotted Gum - Grey Box forest community</i> .
Woodland rehabilitation areas will be self-sustaining and require ongoing management inputs that are appropriate for the final land use.	Not verified	Woodland vegetation trial and ecological monitoring results indicate successful early

			native tree establishment; however, long term community sustainability will be indicated by ongoing floristic and ecological monitoring.
	Activities during MOP Term		
Table 19	Rehabilitation and Disturbance Rates – 61.9ha rehab proposed in 2015	NC	45.5 ha of rehabilitation completed in 2015, against MOP target of 61.9 ha. Shortfall caused by operational changes resulting in fewer ha of completed overburden emplacement available for rehabilitation. Shortfall reported to DRE before end of reporting year.
	<p>Drainage structures (contour banks, drains and rock drop structures) will be constructed in accordance with Blue Book requirements and the principles below:</p> <ul style="list-style-type: none"> • Diversion drains and banks will be constructed to convey a minimum 1 in 20 year Average Recurrence Interval (ARI) storm event, with side batters no steeper than 1V:2H; • Contour banks will be constructed with a maximum 1 – 2 % grade and (typical) maximum slope length of 70 – 100 m. Contour bank spacing will be appropriate for the slope gradient and constructed in accordance with the detailed design; • Rock lined drop structures will be constructed to convey a minimum 1 in 50 year ARI. Channel base width and batters will be constructed in accordance with design specifications appropriate for the design catchment and peak flows. 	C	Drainage structures are designed by external consultants, generally in accordance with Blue Book requirements, as observed in the <i>Design Report for Premier Dump External Drainage</i> (SLR, December 2013).
	Mountain Block Remediation Strategy		
Appendix F	The initial task will be the finalisation and implementation of the detailed geotechnical monitoring program. The following activity schedule is proposed:	Obs.	Discussions with LCO staff indicated that implementation of the remedial strategy was well advanced; however, certain activities have taken longer than was anticipated during project planning due to unforeseen complications, and have not met the scheduled target dates. See Plates 15 and 16.

	Activity	Target Date		
	Finalise scope of works for geotechnical investigation	Q4 2014		
	Develop tender and award contract for geotechnical investigation	Q1 2015		
	Undertake detailed design for Stage 1 remediation works	Q4 2014		
	Commence geotechnical investigation (pending quoted timeframes)	Q1 2015		
	Develop tender and award contracts for Stage 1 remediation works	Q1 2015		
	Commence Stage 1 remediation works	Q1 2015		
	Complete detailed geotechnical analysis of slope stability following monitoring period	Q1 2016 (indicative 12 month period)		
	Complete detailed design of Stage 2 works	Q1 2016		
	Develop tender and award contracts for Stage 2 remediation works	Q2 2016		
	Commence Stage 2 works	Q2 2016		
Section 3.4.5	Final Void Water Balance Prior to completion of mining LCO will develop a detailed final void design to construct the landform with final void catchments that are designed to produce the intended void water equilibrium level.		Not Triggered	To be included in Final Mine Closure Plan.
Rehabilitation Strategy (Umwelt, July 2012)				
Section 2.1	As part of the ongoing operations of LCO, the existing Conceptual Closure Plan will be revised as part of the implementation of the Project.		C	Conceptual Mine Closure Plan revised in late 2015/early 2016.
	The completion criteria will be finalised as part of the detailed mine closure planning process and presented in the Final Closure Plan for approval by the relevant government agencies.		Not Triggered	Final Mine Closure Plan not due until 2023.
Section 2.4	Habitat enhancement works will be undertaken for the spotted-tailed quoll along Bowmans Creek (being approximately 200 metres wide along the majority of its length), which is outside of the disturbance area from LCO's mining operations.		Not Triggered	Detailed planning for Bowmans Creek Riparian corridor planned for 2016, with works to commence soon after.
Soil and Land Resource Assessment (GSSE 2013)				

Section 5.1.2	Strip material to the depths stated in Tables 16 - 17, subject to further investigation as required.	C	Topsoil stripping depths are based on the recommended stripping depths in Tables 16 and 17 of the Soil and Land Resource Assessment (GSSE 2013), subject to “ground-truthing” inspections undertaken as part of GDP preparation ahead of ground disturbance.																												
Table 16 – Stripping Depth for Each Soil Type																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 10%;">Soil Type</th> <th rowspan="2" style="width: 20%;">ASC</th> <th colspan="3" style="width: 70%;">Recommended Soil Stripping Depth (m)</th> </tr> <tr> <th style="width: 20%;">Topsoil</th> <th style="width: 20%;">Subsoil</th> <th style="width: 20%;">Total</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Brown Dermosol <i>(Upper Slopes and Crests)</i></td> <td style="text-align: center;">0.40</td> <td style="text-align: center;">0.45</td> <td style="text-align: center;">0.80</td> </tr> <tr> <td style="text-align: center;">2.1</td> <td>Brown Sodosol <i>(Mid Slope)</i></td> <td style="text-align: center;">0.20</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">0.20</td> </tr> <tr> <td style="text-align: center;">2.2</td> <td>Brown Sodosol <i>(Lower Slope and Flats)</i></td> <td style="text-align: center;">0.35</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">0.35</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Brown Chromosol/Sodosol Complex <i>(Bowmans Ck Alluvials)</i> <small>Note * this soil is not proposed for disturbance</small></td> <td style="text-align: center;">0.80*</td> <td style="text-align: center;">0.30*</td> <td style="text-align: center;">1.10*</td> </tr> </tbody> </table>				Soil Type	ASC	Recommended Soil Stripping Depth (m)			Topsoil	Subsoil	Total	1	Brown Dermosol <i>(Upper Slopes and Crests)</i>	0.40	0.45	0.80	2.1	Brown Sodosol <i>(Mid Slope)</i>	0.20	Nil	0.20	2.2	Brown Sodosol <i>(Lower Slope and Flats)</i>	0.35	Nil	0.35	3	Brown Chromosol/Sodosol Complex <i>(Bowmans Ck Alluvials)</i> <small>Note * this soil is not proposed for disturbance</small>	0.80*	0.30*	1.10*
Soil Type	ASC	Recommended Soil Stripping Depth (m)																													
		Topsoil	Subsoil	Total																											
1	Brown Dermosol <i>(Upper Slopes and Crests)</i>	0.40	0.45	0.80																											
2.1	Brown Sodosol <i>(Mid Slope)</i>	0.20	Nil	0.20																											
2.2	Brown Sodosol <i>(Lower Slope and Flats)</i>	0.35	Nil	0.35																											
3	Brown Chromosol/Sodosol Complex <i>(Bowmans Ck Alluvials)</i> <small>Note * this soil is not proposed for disturbance</small>	0.80*	0.30*	1.10*																											



An inventory of available soil should be maintained to ensure adequate topsoil materials are available for planned rehabilitation activities

C

Discussions with LCO staff indicate that an inventory of available topsoil is maintained by

			the Technical Services department, with input from LCO environmental staff. A soil balance was conducted in 2015 during preparation of the internal Soil Distribution Plan.
2014 Annual Environmental Management Report (2015 AEMR in preparation at time of audit)			
Table 40	114 ha of grazing proposed for 2015	C	No grazing within trial area for last quarter of 2015, but discussions with LCO staff indicate that grazing will re-commence in near future.
	For completion in 2015 - continue site wide vertebrate pest management program	C	As reported in 2014 AEMR Section 5.6 <i>Rehabilitation Maintenance</i> and Table 40.
	For completion in 2015 - continued implementation of site weed management strategy with a focus on systematic weed management within, but not limited to rehabilitated areas	C	As reported in 2014 AEMR Section 5.6 <i>Rehabilitation Maintenance</i> and Table 40.
	For completion in 2015 - review and update final landform design and mine closure criteria for Life Of Mine	C	As drafted in Conceptual Mine Closure Plan.
DRE Audit Requirements (email of 22 January 2016)			
Audit Component - Desktop			
Is there a current Mining Operations Plan (MOP) in place and has it been approved by DRE?			Yes. LCO 2015 MOP 16/3/15 – 16/3/2022 approved by DRE on 24/3/15.
Has the MOP been prepared in consultation with the relevant agencies as outlined in the Project Approval?			Yes. 2015 MOP distributed to DP&E, NOW, OEH, SC and MSC. Copy of correspondence with DP&E, OEH, NOW contained in 2015 MOP Appendix D.
Is the rehabilitation strategy as outlined in the MOP consistent with the Project Approval in terms of project rehabilitation schedule; and proposed final land use(s)?			Yes. The rehabilitation strategy, schedule and final landuse outlined in the 2105 MOP (as described in Section 5 and shown on MOP Plans 3A – 3G and Plan 4) is consistent with the Rehabilitation Objectives in LCO Development Consent DA 305-11-01, Schedule 3, Condition 37, Table 8 and Appendix 3.

<p>Has the rehabilitation objectives and completion criteria as outlined in the MOP been developed in accordance with the proposed final land(s) as outlined in the Project Approval?</p>		<p>The Domain Rehabilitation Objectives (2015 MOP Table 11) and completion criteria (2015 MOP Section 6) have been developed in accordance with the proposed final landform and land uses outlined in LCO Development Consent DA 305-11-01, Schedule 3, Condition 37, Table 8 and Appendix 3.</p>
<p>Has a rehabilitation monitoring program been developed and implemented to assess performance against the nominated objectives and completion criteria? – verified by reviewing monitoring reports and rehabilitation inspection records.</p>		<p>Rehabilitation monitoring and ecological monitoring programs have been implemented to assess progress against objectives and completion criteria. 2015 was the first year of revised (more comprehensive) ecological monitoring as required under DA 305-11-01 (MOD 5) commitments and monitoring results were not available for review at the time of audit. However, previous years rehabilitation monitoring results for the audit period were reviewed, as were previous years flora and fauna monitoring results.</p>
<p>Has a rehabilitation care and maintenance program been developed and implemented based on the outcomes of monitoring program? – verified by reviewing Annual Rehabilitation Programs or similar documentation.</p>		<p>A rehabilitation care and maintenance program (as documented in the <i>Annual Rehabilitation and Land Management Plan</i>) has been implemented, consisting of (where required):</p> <ul style="list-style-type: none"> • weed control; • invertebrate pest control; • slashing and grazing; • soil treatment (amelioration); • supplementary revegetation; and • remedial earthworks. <p>Results from annual rehabilitation monitoring (and future ecological monitoring) are one of</p>

		the triggers for activities to be included in the program.
Audit Component - Site Inspection		
Are mining operations being conducted in accordance with the approved MOP (product ion, miningsequence etc.), including within the designated MOP approval boundary? – to be verified by site plans and site inspection.		Mining operations (except as they impact on rehabilitation and mine closure) were not the focus of this audit. However, as far as could be determined by review of the 2015 MOP, MOP Plan 3A, 2014 AEMR and aerial photography, mining operations are consistent with the MOP extraction and MOP disturbance boundaries.
Is rehabilitation progress consistent with the approved MOP as verified by site plans and a site inspection? This should include an evaluation against rehabilitation targets and whether the final landform developed in accordance with conceptual final landform in Project Approval.		As reported to DRE on 18/12/15, LCO rehabilitated 45.5 ha in 2015, compared to the 61.9 ha committed to in the 2015 MOP. This is discussed further in Section 3.2 of the main Rehabilitation Audit Report. The final landform in developing in accordance with the conceptual final landform included as Appendix 3 to DA 305-11-01 (MOD 5).
Based on a visual inspection, are there any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation?		Rehabilitation failure within Mountain Block is the main risk identified during the audit. Mountain Block rehabilitation is discussed further in Section 3 of the main Rehabilitation Audit Report.
In addition to the above, the audit should note observations where rehabilitation procedures, practices and outcomes represent best industry practice.		Several aspects of LCO rehabilitation represent industry leading practice. These are discussed further in Section 3.1 of the main Rehabilitation Audit Report.

* C: Compliant, NC: Non Compliance, Obs: Observation

Appendix 5: Plates



Plate 1: Premier Dump rehabilitation, showing good cover crop establishment (top of plate)



Plate 2: RL195 Dump woodland rehabilitation seedlings



Plate 3: Well managed topsoil stockpiles – mounded and seeded



Plate 4: Rhodes grass dominated pasture



Plate 5: Dam 3 banks less than 10 degrees



Plate 6: Habitat dam exclusion signage



Plate 7: Topsoil stockpile signage



Plate 8: Habitat features and exclusion fencing at Triangle dams



Plate 9: Slashed Rhodes grass dominated pasture



Plate 10: Grazed Rhodes grass dominated pasture



Plate 11: Rockpile habitat features



Plate 12: Premier Dump sediment catch drain



Plate 13: Cross tilled rehabilitation at Premier Dump



Plate 14: Level surface of RL 195 Dump



Plate 15: Mountain Block east face



Plate 16: Mountain Block west face

APPENDIX G
Plates from Site Inspection



Plate 1
LCO Workshop Bay



Plate 2
Maintenance Bay Hydrocarbon Management



Plate 3
Bulk Fuel Storage Tank Bunding



Plate 4
Bulk Fuel Storage Fill Point



Plate 5
Vehicle Wash Down Sumps



Plate 6
Workshop Hardstand



Plate 7
Mining Operations in South Pit



Plate 8
Liddell CHPP Stockpiles
(temporary rehabilitation slope in background)



Plate 9
Bioremediation Area



Plate 10
2011 Woodland Corridor Rehabilitation



Plate 11
Pasture Rehabilitation Area



Plate 12
Habitat Dam Fencing and Signage



Plate 13
Habitat Dam Plantings (Mountain Block in background)



Plate 14
Existing EPL Discharge Point



Plate 15
Plantings on Visual Bund (viewed from Old New England Highway)



Plate 16
Bowmans Creek SAL Fencing (underway at the time of audit)



Plate 17
Chain of Ponds Inn Heritage Site