November 2015

Independent Environmental Audit Bloomfield Colliery

Trevor Brown & Associates
APPLIED ENVIRONMENTAL MANAGEMENT CONSULTANTS

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Independent Environmental Audit
Bloomfield Colliery
November 2015

trevor brown & associates
applied environmental management consultants

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by

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13 December 2015

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Executive Summary

The Independent Environmental Audit of the Bloomfield Project was conducted in November 2015 in accordance with the requirements of Project Approval 07_087 Schedule 6 condition 6.

The Bloomfield Colliery operations demonstrated a high level of compliance with the Project Approval, Environment Protection Licence and Consolidated Coal Lease conditions.

A summary of the audit findings and compliance status of the Bloomfield Colliery operations follows. Note the Administrative Non-Compliances are a result of Bloomfield not receiving notification of approval of management plans and monitoring programs from DP&E at the date of this audit (November 2015):

Environmental Management Strategy **Compliance Status Administrative Non-Compliance**

The Environmental Management Strategy provides a sound basis for the management of the environmental matters related to the Bloomfield Colliery development and operations.

Environmental Monitoring **Compliance Status Compliant**

The Bloomfield Colliery environmental monitoring programs include the monitoring components from the Integrated Environmental Monitoring Program with additional supplementary sampling and monitoring sites to assess the status of the environment related specifically to the Bloomfield mining activities.

The Bloomfield monitoring program results are presented in the Bloomfield Colliery AEMR's and are provided on the Bloomfield Colliery website.

Environmental Management Plans **Compliance Status Administrative Non-Compliance**

In general the management plans address the requirements of the Project Approval 07_0087 Schedule 5 condition 2 and are satisfactory for management of the operations of Bloomfield Colliery. Where components of Project Approval 07_0087 Schedule 5 condition 2 are not included in the plans, an Administrative Non-Compliance is recorded in the audit report. It is recommended that inclusion of the missing component(s) be considered when revision of the Plan(s) occur.

Noise **Compliance Status Compliant**

Results of noise monitoring indicated compliance with the consent conditions at all monitoring locations and all noise surveys during the monitoring period except for some exceedances during the night-time period at location M and N in 2013 caused by the operation of the large dump trucks on the waste emplacement areas. Corrective actions was implemented with the truck not used on the high emplacement areas at night to reduce noise levels.

Blast and Vibration **Compliance Status Administrative Non-Compliance**

The Blast Monitoring Program and Explosives Management Plan for the site detail best practice and specific requirements of blasting and protocols to be followed by the blasting supervisor using a Pre-Blast Protocol and Evaluation of Blasting Protocol for the recording and reporting on each blast. Blast monitoring conducted between January 2013 and October 2015 indicated that the blast and vibration results are at or below modelling predictions in the Environmental Assessment (November 2008) and are compliant with the criteria in Project Approval Schedule 3 conditions 5 to 14, Statement of Commitment 12.1 to 12.5, EPL condition L4 and CCL condition 10, at the four blast monitors located at residences located around the Bloomfield Colliery mining operations.

Air Quality **Compliance Status Administrative Non-Compliance**

The Air Quality Monitoring Program provides adequate data to assess dust impact from the Bloomfield mining operations. The dust monitoring program has indicated that the dust deposition rate at areas surrounding the mining operations is consistent with the modelled levels predicted in the Environmental Assessment (2008) and the HVAS results have for 2012-2015 have demonstrated compliance with the PM_{10} and TSP criteria.

Water Management **Compliance Status** **Administrative Non-Compliance**

Site Water Balance **Compliance Status** **Compliant**

The site water balance model results prepared for the Environmental Assessment (2008) and the Water Management Plan indicated that the Bloomfield Colliery Completion of Mining and Rehabilitation project will be capable of meeting all water needs for dust suppression from the groundwater inflows and surface runoff into the mine pits and provide a net surplus of water that will contribute to the water available from Lake Kennerson for supply to the Bloomfield CHPP. The annual water balance between 2012 and 2015 confirm that Bloomfield Colliery has adequate water to meet the demands of the project.

Erosion and Sediment Control **Compliance Status** **Compliant**

Erosion and sediment control on the Bloomfield Colliery site was observed to be protecting the natural waterways from impact of surface runoff from the disturbed areas of the mine site. The requirements of *Managing Urban Stormwater: Soils and Construction, Volume2E Mines and Quarries* for the preparation of an Erosion and Sediment Control Plan are addressed in the Bloomfield documents Water Management Plan, Erosion and Sediment Control Plan and Mining Operations Plan.

Surface Water Monitoring **Compliance Status** **Compliant**

The Bloomfield surface water quality monitoring is conducted in accordance with the Integrated Environmental Monitoring Program and the Bloomfield Water Management Plan - Surface Water Monitoring Program. The Bloomfield Surface Water Monitoring Program also has additional monitoring locations that supplement the Integrated Environmental Monitoring Program, providing adequate data for the assessment of any potential impacts from the Bloomfield mining activities on the natural waterways. Bloomfield surface water quality monitoring has demonstrated that surface water quality results in waterways potentially affected by the Bloomfield mining operations have been generally consistent with the EPL criteria for pH, EC, Total Suspended Solids and Filterable iron during 2012 and October 2015, except for one EC of 6010 µS/cm reported for the discharge on 17 November 2012 that exceeded the EPL criteria of 6000 µS/cm.

Groundwater **Compliance Status** **Compliant**

The Bloomfield Colliery Groundwater Management Plan and monitoring program are adequate for the ongoing assessment of the Bloomfield Colliery mining activities on the local groundwater regime. Groundwater monitoring during the 2012 to October 2015 period did not demonstrate any trends in groundwater depth or water quality. The groundwater assessment conclusions in the *Environmental Assessment - Completion of Mining and Rehabilitation,* November 2008 predicted the groundwater would demonstrate consistent quality with no real trends in exhibited in the individual groundwater bores over time as a result of the mining operations.

Surface and Groundwater Response **Compliance Status** **Compliant**

The Surface and Groundwater Response Plan provides a sound outline for action in the event of exceedance of the trigger values adopted for the Bloomfield water quality parameters. Monitoring of surface water and groundwater quality in accordance with the Integrated Water Monitoring Program and Bloomfield Surface Water Monitoring Program did not exhibit results in exceedance of the trigger values during the 2012 to October 2015 period, therefore the Surface and Groundwater Response Plan was not required to be initiated in accordance with the Surface and Groundwater Response Plan protocol.

Landscape Management **Compliance Status** **Administrative Non-Compliance**

The Landscape Management Plan (dated 15 June 2010) was prepared for Bloomfield Colliery to satisfy Project Approval 08_0087 Schedule 3 condition 26 by John Hindmarsh and Keren Halliday (experts approved by the Director-General on 16 December 2009), and submitted to DoP on 2 March 2010. A revised Plan was submitted to DoP on 15 June 2011 incorporating the Project Area approved under MOD 1, for approval. A further revision of the Land Disturbance Management Plan dated 10 October 2012 was submitted to DP&I including management of Aboriginal Heritage and

Permit to Disturb. No response to the Landscape Management Plan had been received from DP&I at the date of this audit (November 2015). The Landscape Management Plan establishes a framework for all rehabilitation and mine closure related issues and included an outline of the Rehabilitation Management Plan, Final Void Management Plan and Mine Closure Plan.

Rehabilitation **Compliance Status** **Administrative Non-Compliance**

The Rehabilitation Management Plan was prepared to satisfy Project Approval 08_0087 Schedule 3 condition 27 and submitted to DoP within 6 months of the Project Approval. A revised Rehabilitation Management Plan including the Project Area as approved by the Section 75W Modification (dated 16 May 2011), was prepared and submitted to the DOP on 15 June 2011 and re-submitted on 13 March 2012. No response from DP&I re the Rehabilitation Management Plan had been received by Bloomfield at the date of this audit (November 2015). The Bloomfield Colliery Rehabilitation Management Plan and Mining Operations Plan 2011-2016 provide a satisfactory strategy and rehabilitation plans for the rehabilitation of the disturbed areas of the Bloomfield CCL to meet the final land use for the Bloomfield Colliery disturbed and surrounding areas. The rehabilitation of the Bloomfield site is progressing generally in accordance with the Rehabilitation Management Plan (dated 15 June 2011) and the Mining Operations Plan (2011-2016), with the finished areas exhibiting established grass and vegetative cover, and successful erosion control and drainage lines established for control of surface runoff to Lake Kennerson or Lake Foster.

Biodiversity Offset **Compliance Status** **Administrative Non-Compliance**

The Biodiversity Offset Management Plan is generally consistent with the OEH *"Principles for the use of biodiversity offsets in NSW"* dated 17 June 2011. The Biodiversity Offset Management Plan was submitted to the DP&I on 5 February 2013. No response had been received from DP&E at the date of this audit (November 2015). The provision of a Conservation Bond is not due until 6 months after approval of the Biodiversity Offset Management Plan by DP&E. The Conservation Funding requirement (Project Approval 07_0087 Schedule 3 condition 30) has been met and the Certificate of Title for Lot 2371 DP1170348, LGA Cessnock, Parish of Ellalong, County of Northumberland, for the offset area registered on 5 January 2012 to Four Mile Pty Ltd.

Aboriginal Heritage Management **Compliance Status** **Compliant**

The Aboriginal Cultural Heritage Management Plan prepared by South east Archaeology Ltd for Bloomfield Colliery was reviewed and endorsed by the Mindaribba Local Aboriginal Land Council (LALC) and submitted to and endorsed by DECCW, and approved by the Director-General of DoP on 27 May 2010. No incidents relating to Aboriginal heritage occurred during the 2012 and 2015 period, and the requirements of the Aboriginal Cultural Heritage Management Plan will continue to be implemented including management of identified sites/areas.

Energy Saving **Compliance Status** **Administrative Non-Compliance**

Bloomfield has implemented the energy efficiency opportunities program demonstrating some significant energy savings in their annual Energy Efficiency Opportunities Report to the Australian Government Department of Resources, Energy and Tourism.

Community Complaints **Compliance Status** **Compliant Ongoing**

Community complaints are recorded in the Bloomfield Complaints Register in accordance with the Environmental Management Strategy page 10, with the location of the com plaint and action taken by Bloomfield in response to each complaint recorded. The total number of community complaints continue to remain low over the 2013 to 2015 period.

1. Introduction

1.1 Background

The Project Approval granted for the Bloomfield Colliery dated 3 September 2009, requires an Independent Environmental Audit to be conducted in accordance with the Project Approval 07_0087 Schedule 5 condition 6:

> *"Every 3 years, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:*
>
> *a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;*
> *b) include consultation with the relevant agencies;*
> *c) assess the environmental performance of the project and assess whether it is complying with the requirements in relevant project approvals and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);*
> *d) review the adequacy of strategies, plans or programs required under these approvals; and*
> *e) recommend appropriate measures or actions to improve the environmental performance of the mine complex, and/or any assessment, plan or program required under these approvals.*
>
> *Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Director-General."*

The Independent Environmental Audit required under Project Approval 07_0087 Schedule 5 condition 6, was conducted in November 2015 for Bloomfield Colliery by Trevor Brown & Associates endorsed by the Director-General / Secretary of Department of Planning and Environment on 10 September 2015.

1.2 Scope of Work

The Independent Environmental Audit was conducted generally in accordance with the Australian/New Zealand Standards ISO 19011:2002 – Guidelines for Quality and/or Environmental Systems Auditing.

The scope of work of the independent environmental audit of the Bloomfield Colliery operations included:

- review of compliance with Project Approval 07_087 conditions and other approvals for the project;
- conduct of a site inspection and review of documentation and monitoring data for the project, relevant to the audit;
- discussion of the Project Approval and other approval conditions and operation of the project with Bloomfield Colliery staff;
- assessment of environmental performance of the Bloomfield Colliery operations with the requirements in this Project Approval, Environment Protection Licence and Consolidated Coal Lease conditions;
- review the adequacy of strategies, plans or programs prepared under the Project Approval; and
- preparation of the Independent Environmental Audit Report providing assessment of compliance against each approval condition and provision of comments, recommendations or actions where considered appropriate to improve the environmental performance of the development, and/or the environmental management and monitoring systems.

1.3 Structure of the Report

The report has been prepared to provide comment on each condition of approval in a tabulated form, with additional discussion where required on specific matters. The tabulated comments are in the Attachments to this Independent Environmental Audit Report. The Independent Audit Report sections are:

Glossary
Executive Summary
Section 1 Introduction
Section 2 Bloomfield Colliery Development
Section 3 Approvals and Licences
Section 4 Review of Environmental Management
Section 5 Summary of Compliance and Recommendations
Section 6 Conclusions and Recommendations
Attachment A Project Approval 07-087 conditions Table
Attachment B Statement of Commitments Table
Attachment C Environment Protection Licence No.396 conditions Table
Attachment D Consolidated Coal Lease No. 761 conditions Table

1.4 Compliance Table

This audit assessed the activities for compliance with the intent of the Project Approval, Environment Protection Licence and Mining Lease conditions via site inspections, document review and verification of relevant documentation related to the conditions of approval. The compliance status is expressed in the Attachments to this report as:

Status	Description
Compliant	Where verifiable evidence has been collected to demonstrate that the intent of the elements of the requirements of the regulatory approval and appropriateness of implementation against the Project Approval Condition has occurred.
Compliant Ongoing	The intent and specific requirements of the condition have been met and the requirements are ongoing for the operation of project.
Administrative Non-compliance	A technical non-conformance with a condition of the consent that would not result in any risk or material harm to the environment (e.g. the submission of a report to government later than required under the approval conditions).
Non-Compliance – Low Risk	Non-compliance with the potential for moderate environmental consequences, but is unlikely to occur, or, potential for low environmental consequence but is likely to occur.
Non-Compliance – Moderate Risk	Non-compliance with the potential for serious environmental consequences but unlikely to occur, or, potential for moderate environmental consequence but likely to occur.
Non-Compliant – High Risk	Non-compliance with the potential for significant environmental consequences, regardless of the likelihood of occurrence.
Not active / Not triggered	A regulatory approval requirement / condition has an activation or timing that had not been triggered at the time of the audit, therefore a determination of compliance could not be made.
Noted	A statement or fact where no assessment of compliance is required.

Any Non-compliance (if identified) will be subject to a risk level assessment in accordance with the *Independent Audit Guideline* section 4.1 (DP&E October 2015) and risk rating is reported in section 5 Conclusions of this Independent Environmental Audit Report.

1.5 Limitations of the Audit

The auditor received complete cooperation from Bloomfield Colliery staff during the audit. Any documentation that could not be located during the site visit / inspection and document review was provided to the auditors subsequent to the site visit.

The findings of the audit are based upon visual observations on the site and transport routes (including the Bungonia Bypass), interviews with site personnel and interpretation of records provided by Bloomfield. Opinions presented herein apply to the site as observed at the time of the audit inspection and from information provided by Multiquip personnel. Any changes to this information of which the Trevor Brown & Associates is not aware and has not had the opportunity to evaluate, cannot therefore be considered in this report. The auditor has taken due care to consider all reasonably available information provided during the audit and has taken this information to represent a fair and reasonable characterisation of the environmental status of the site.

The adequacy of strategy/ plans / programs required under the consent were assessed by reference to the requirements of the conditions of approval, where documentation from the relevant agency(s) to Bloomfield Colliery had not been received confirming approval at the date of this audit (November 2015).

2. Bloomfield Colliery Development

The Bloomfield Colliery is operated by Bloomfield Collieries Pty Limited, part of The Bloomfield Group. The Bloomfield Colliery, located to the north of John Renshaw Drive, Buttai and east of Buchanan Road, Buchanan, is approximately 20 km north-west of Newcastle. Coal has been mined from the Bloomfield Colliery Project site by both underground and open cut for approximately 170 years.

The Bloomfield Colliery operations are located within Consolidated Coal Lease (CCL) No.761 granted on 20 November 1991 for an area of 1372ha. The Bloomfield Colliery mining operations currently consist of existing open cut pits (known as Creek Cut and S Cut).

The mining operations at Bloomfield Colliery were carried out pursuant to existing use rights prior to the introduction of Part 3A of the *Environmental Planning and Assessment Act 1979* and the State Environmental Planning Policy (Major Projects) 2005. These changes to the legislation required Bloomfield to obtain project approval under Part 3A to continue mining and to rehabilitate disturbed mined areas. Bloomfield Colliery was granted approval under Part 3A on 3 September 2009 for the staged completion of mining and progressive rehabilitation of the disturbed land over a 12 year period.

Within the Bloomfield CCL 761 boundary there is a Coal Handling and Preparation Plant (CHPP), and rail loading facility for processed coal for transport to the Port of Newcastle (approved under the Abel Underground Mine Project Approval 05_0136 granted in June 2007). Bloomfield Colliery currently operates the CHPP and rail loading facility, under agreements with Donaldson Coal Pty Ltd and the Abel Project Approval Statements of Commitment. The Abel Project Approval allows the continued use of the Bloomfield CHPP, rail loading facility, management of water and coarse reject and tailings from the CHPP for processing coal from the Donaldson Coal mines (Abel Underground Mine produces coal and was operational at the date of this audit, Tasman Mine was under care and maintenance, and mining was completed at the Donaldson Mine), and the Bloomfield Colliery open cut mine.

The Bloomfield open cut operation is a multi-seam, multi bench system, mining up to 13 seams or splits, utilising heavy earth moving equipment to deliver the ROM coal to the onsite coal handling and preparation plant (CHPP) on internal haul roads. Bloomfield Colliery produces approximately 0.8 to 1.3 million tonnes of Run-of-Mine (ROM) coal per annum (mtpa). The coal bearing seams mined in the Bloomfield open cut are in the Tomago Coal Measures, located below the Newcastle Coal Measures. The coal seams include the Rathluba, Big Ben, Donaldson, Elwells Creek, Whites Creek, followed by the uncorrelated A, B, and C seams and the Buttai seams.

The extraction coal from the open cuts is processed by Bloomfield in the CHPP and the product coal is placed on the stockpiles adjacent to the CHPP. (Bloomfield's CHPP provides for size reduction, washing and screening of ROM coal from the Bloomfield open cut and also coal from neighbouring mines, Donaldson Open Cut and Abel and Tasman Underground Mines).

The product coal is loaded into rail wagons at the Bloomfield rail loop and transported to the Port Waratah Coal Services (PWCS) terminal at the Port of Newcastle.

2.2 Relationship between Bloomfield Colliery and Abel Underground Coal Mine

The Abel Underground Mine, located immediately to the south-east of the Bloomfield Project Area required use of some Bloomfield infrastructure for the processing of extracted ROM coal and to enable this use, the Abel Project Approval included conditions on:

- continued operation of the Bloomfield CHPP and rail loading facility (owned by Bloomfield);
- continued management of water from the Donaldson Coal operations, associated with the Bloomfield CHPP; and
- continued coarse reject and tailings disposal on the Bloomfield Colliery site.

Approval of the above activities occurred under the Abel Underground Mine Project Approval (05_0136), granted to Donaldson Coal Pty Limited on 7 June 2007 (i.e. prior to Bloomfield Colliery obtaining Project Approval to continue mining and rehabilitate mined areas under Part 3A of the *Environmental Planning and Assessment Act 1979*). Also the Bloomfield Project CCL 761 area lies within the boundaries of the Abel Project Area approved under Project Approval 05_0136. (The Bloomfield open cut mining and rehabilitation activities within the Bloomfield Project Area are not part of the Abel Approval). Project Approval 07_087 granted for the Bloomfield Coal Project on the 3 September 2009 applies only to the Bloomfield Colliery open cut mining and rehabilitation activities within the Bloomfield Project Area.

Management relationships between Bloomfield Colliery and Donaldson Coal Pty Ltd (currently related to the Abel Underground Mine Project) involves a high degree of co-operation between the operating entities in terms of whom is responsible for the implementation and management of the various integrated components. Agreements have been established between Bloomfield Colliery and Donaldson Coal for the management of these integrated activities/components.

Figure 1: **Bloomfield Project Area (orange outline) within the approved Abel Project Area (purple outline).** (Figure 26 Bloomfield Colliery Environmental Assessment – *"Part 3A Environmental Assessment – Completion of Mining and Rehabilitation" dated November 2008*)

Key aspects of integration of the Bloomfield Colliery Project with the operations of adjacent Donaldson Coal mining projects include:

- Delivery of coal from the Bloomfield, Donaldson, Tasman and Abel operations to the Bloomfield CHPP (this may continue after completion of the current Bloomfield Project mining operations);
- An integrated water balance and water management system for the Bloomfield Colliery and Donaldson Coal mines and the Bloomfield CHPP;
- Provision for a final void used for management of rejects and tailings produced from the Bloomfield Colliery and Donaldson Coal processed at the Bloomfield CHPP;
- Integrated rehabilitation planning, considering the final land use proposed for the Bloomfield Colliery and Donaldson Coal sites; and
- Integrated environmental monitoring program for the Bloomfield Colliery and Donaldson Coal site operations.

A summary of planning approval responsibilities for integrated components related to Bloomfield are shown in Table 2.1.

Table 2.2: Summary of Responsibilities – Relationship Between the Bloomfield Project Approval and Abel Project Approval conditions

Project/Operational Aspect	Responsibility under Bloomfield Project Approval 07-087	Responsibility under Abel Project Approval 05_0136
Completion of mining at Bloomfield Colliery	**Bloomfield Project Approval Schedule 3, condition 5** "Mining operations may take place on the site until 31 December 2021.	No action or responsibility for the Abel Project
Bloomfield open cut coal delivery to the CHPP (ROM coal stockpile pad)	**Bloomfield Project Approval Statement of Commitment 1.2** Bloomfield will undertake mining within the Project Area, which includes the following items and their associated mining activities: ……. • Provision of the haul road(s) linking the current and proposed coal mining areas with the ROM coal stockpiles adjacent to the coal washery;……	No action or responsibility for the Abel Project
Operation of the CHPP	Bloomfield currently operates the CHPP and rail loading facility, under an Agreement with Donaldson Coal Pty Ltd for the Abel Project. The CHPP has been upgraded with new acoustic cladding on the major noise generating sections of the plant, reducing noise emissions to surrounding residents.	**Abel Project Approval Statement of Commitment 3.4** *"The operator of the Bloomfield CHPP shall:* *(b) investigate ways to reduce the noise generated by the Bloomfield CHPP, including maximum noise levels which may result in sleep disturbance;* *(c) implement all reasonable and feasible best practice noise mitigation measures on the site; and* *(d) report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the D-G."*
Rehabilitation of Bloomfield Project mining areas	**Bloomfield Project Approval Schedule 3 conditions 25 to 27** *"The Proponent shall progressively rehabilitate the site in a manner that is generally consistent with the final landform set out in the EA to the satisfaction of the DRE and the Director-General."* Bloomfield has rehabilitated areas of the site where mining is complete. Rehabilitation of reject emplacement areas will occur when placement of waste to the design levels are reached, with shaping to a stable, undulating,	No action or responsibility for rehabilitation of the Bloomfield Project mining areas (excluding the final void used for coarse reject and tailings from the CHPP after the completion of the Bloomfield Project mining), relate to the Abel Project responsibilities.

Project/Operational Aspect	Responsibility under Bloomfield Project Approval 07-087	Responsibility under Abel Project Approval 05_0136
	self-draining landform with mixed cover of pasture and native vegetation).	
Filling of Bloomfield final voids with CHPP reject material	**Bloomfield Project Approval Statement of Commitment 5.1** *"The final void will be retained for deposition of CHPP reject material in accordance with the Abel Project Approval."* The Bloomfield final void will be used as an active disposal site for reject material from the CHPP, as approved by the Abel Project, even after completion of open cut mining by Bloomfield Colliery mining project.	**Abel Project Approval Schedule 3 condition 34:** ***Disposal of Tailings/ Coarse Reject*** *"The Proponent shall ensure that the:* *(a) fine tailings generated by the project are disposed of within existing under -ground workings or open cut pits on the Bloomfield site; and* *(b) coarse rejects generated by the project are disposed of within existing open cut pits on the Bloomfield site,* *to the satisfaction of the D-G".*
Rehabilitation of final voids	**Bloomfield Project Approval Statement of Commitment 5.2** Rehabilitation of the final void forms part of the Abel Project Approval. However, rehabilitation of the tailings filled void at the completion of the Abel Project will remain the responsibility of Bloomfield as outlined in the Draft Bloomfield Closure and Rehabilitation Strategy (Abel 05_0136). The responsibility for the rehabilitation of the final voids is identified in the Abel Project Approval 05_0136, Abel Landscape Management Plan and Draft Bloomfield Closure and Rehabilitation Strategy (dated 4 October 2007).	**Abel Project Approval 05_0136 Schedule 3 condition 19:** The preparation and review of the *Draft Bloomfield Closure and Rehabilitation Strategy* (dated 4 October 2007), is closely associated with the Abel Project Landscape Management Plan (LMP) under the consent for the Abel Project 05_0136. The Bloomfield CHPP which operates under the Abel consent generally complies with the relevant management requirements in the Abel LMP, and the strategy document provides additional decommissioning detail specific to Bloomfield CHP operations.
Integrated Environmental Monitoring Plan	An Integrated Environmental Monitoring Program (IEMP) was developed and approved by DoP as part of the Abel Project Approval, has been implemented as part of the ongoing Bloomfield Project monitoring programs.	**Abel Project Approval Schedule 5 condition 2:** *"The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the D-G. This program must be submitted to the Director-General within 6 months of this approval, consolidate the various monitoring requirements in schedule 4 of this approval into a single document, and be integrated as far as is practicable with the monitoring programs of the adjoining Bloomfield, Donaldson and Tasman mines."* The Integrated Environmental Monitoring Program (IEMP) was developed and approved by DoP in 2007 as part of the Abel Project Approval.

Commercial agreements in place between Bloomfield and Donaldson Coal (representing Abel Project Approval requirements) allocate responsibilities for the actions required under the Bloomfield Project Approval and Abel Project Approval.

2.3 Bloomfield Colliery Status November 2015

The Bloomfield Colliery operations at the date of this audit (November 2015) were confined to the open cuts (S Cut and Creek Cut) generally in accordance with the mining methods described in the 2012-2016 Mining Operations Plan (MOP). Mining in S Cut continue towards the west and Creek Cut extraction continues towards the south and west.

The areas of CCL 761 where mining has been completed has been stabilised and rehabilitated over time and the resulting landscape and vegetative cover presents a visual amenity that is consistent with the surrounding land that has not been disturbed mining. Areas of the rehabilitated land are being used for cattle grazing and management to control of surface runoff to water storage dams used for agricultural use of the fenced areas.

Bloomfield Colliery November 2015

Bloomfield Tailings Dam

Established rehabilitaion

Bloomfield Coal Handing and Preparation Plant

Bloomfield Open Cut Pits

3. Consents, Approvals and Licenses

3.1 Development Consents and Project Approvals

The mining operations at Bloomfield Colliery were carried out pursuant to existing use rights prior to the introduction of Part 3A of the *Environmental Planning and Assessment Act 1979* and the State Environmental Planning Policy (Major Projects) 2005. These changes to the legislation required Bloomfield to obtain project approval under Part 3A to continue mining and to rehabilitate disturbed mined areas.

Bloomfield Colliery was granted Project Approval PA 07_0087 under Part 3A of the *Environmental Planning and Assessment Act 1979* on 3 September 2009 for the staged completion of mining and progressive rehabilitation of the mine over a 12 year period. Modification to Project Approval PA 07_0087 are presented in Table 3.1.

Table 3.1: Project Approval 07_0087 (3 September 2009) and Modifications

Date	Approval	Project Description
3 Sep 2009	Part 3A Project Approval	Completion of mining and progressive rehabilitation of the Bloomfield Colliery open cut mine over a 12 year period.
Notice of Modification		**Modification**
16 May 2011	MOD 1	Extension of the project approval area for out-of-pit overburden emplacement and rehabilitation, alternative haul road and power line relocation. Additional conditions attached to the MOD 1 approval were related to Biodiversity Offsets, Biodiversity Offset Management Plan, and Conservation Bond.
29 Mar 2012	MOD 2	An application to modify PA 07_0087 was submitted by Bloomfield in September 2010 to facilitate an amend the submission date of the Final Void Management Plan and Mine Closure Plan of Project Approval Schedule 3 Condition 26, to 30 June 2012. (The Modification was lodged after DRE requested that Bloomfield submit Final Void Management Plan and Mine Closure Plan after DRE's approval of the Mining Operations Plan (MOP) for the Bloomfield Colliery).
20 Feb 2013	MOD 3	An application to modify PA 07_0087 was submitted by Bloomfield on 17 December 2012 to allow a change to an area proposed for vegetation clearing. The current approval was to clear 1.3ha of vegetation to create a corridor for a power-line easement. Bloomfield used an existing contour drain for the power-line corridor and consequently the approved vegetation clearing was not required. Bloomfield requested a Modification for clearance of 1.6ha of vegetation adjacent to the 'Creek Cut' high-wall, for mining infrastructure purposes.

3.2 Environment Protection Licence

Environment Protection Licence (EPL) 396 for the Bloomfield Colliery was granted in July 2000 under the *Protection of the Environment Operations Act 1997*. Recent Notices of Variation to the EPL are outlined in Table 3.2.

Table 3.2: Notices of Variation to EPL 396

Date of Issue	Notice No.	Notice of Variation to EPL 396
02 Dec 2011	1501185	Condition 8 - Pollution Reduction Program, U1 Coal Mine Particulate Matter Control Best Practice inserted, to be addressed following a four step assessment process:

Date of Issue	Notice No.	Notice of Variation to EPL 396
		1. estimate baseline emissions and determine the four mining activities that currently generate the most particulate matter; 2. estimate the reduction in emissions that could be achieved by applying best practice measures; 3. assess the practicability of each of these measures; and 4. propose a timetable for the implementation of any practical measures.
18 Nov 2009	1104182	Fee based activity Coal Mining - amended to 0.5Mt - 2Mt produced Fee based activity Coal works – added for 2Mt - 5Mt loaded Condition L4.2 – word change only to condition. Condition L6 conditions deleted and renumbered as L7 Blasting limits Condition M2 sampling method changed to grab samples for Point 1 & Point 2.

Refer to Attachment C EPL 396 Table for compliance with the EPL conditions.

3.3 Mining Leases

Consolidated Coal Lease (CCL) No. 761 was granted to Bloomfield Collieries Pty Ltd on 20 November 1991 and renewed until 8 October 2029, in accordance with the provision of Section 114(1) of the *Mining Act 1992*, subject to the conditions attached to the Renewal document.

Conditions 2 to 8 and 12 to 16 are identified as conditions relating to environmental management for the purposes of Section 374(1) of the *Mining Act 1992*.

The area of CCL 761 is 1372ha (shown in Plan No.D6979 attached to the CCL).

Refer to Attachment D - CCL 761 Table for compliance with the CCL environmental conditions.

4. Review of Environmental Management

4.1 Environmental Management Strategy

[Project Approval 07_0087 Schedule 5 condition 1]

Environmental Management Strategy Compliance Status Compliant

The Environmental Management Strategy was prepared and submitted to the DoP on 24 February 2010, within 6 months of the date of the Project Approval. The EMS was revised on 9 June 2011 to incorporate the Project Area approved under the section 75W Modification (MOD 1), and resubmitted to DP&I.

The EMS provides the strategic framework for environmental management of the approved Bloomfield Colliery Completion of Mining and Rehabilitation Project. The Environmental Management Strategy:

- provides the strategic framework for environmental management of the project (Page 3);
- identifies the statutory approvals that apply to the project(Page 5 and Appendix C);
- describes the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project (Page 9);
- describes procedures to be implemented to keep the local community and relevant agencies informed about the operation and environmental performance of the project (Page 10); receive, handle, respond to, and record complaints (Page 10); resolve any disputes that may arise during the course of the project; respond to any non-compliance and response to emergencies (Page 11);
- includes reference to strategies, plans and programs required under the Project Approval conditions and monitoring to be implemented under conditions of approval (Pages 5 to 8).

The Environmental Management Strategy also generally conforms to the elements of ISO14001 (see Table 4.1).

Table 4.1 Environmental Management Strategy vs AS/NZS ISO14001 Elements

ISO 14001 Element	Construction Environmental Management Plan section
4.2 Environmental Policy	Bloomfield Colliery Environmental Policy EMS page 3 and Appendix A
4.3.1 Environmental Aspects	Page 4 - Project Description and Page 6 Approved Development
4.3.2 Legal and Other Requirements	Page 5 Statutory Obligations and Appendix C - Key Legislation
4.3.3 Objectives and Targets	Page 3 - Purpose and Objectives
4.3.4 Environmental Management Programs	Page 5 – Relationship with Other Plans
4.4.1 Structure and Responsibility	Page 9 - Roles and Responsibilities
4.4.2 Training Awareness and Competence	Statements of Commitment 19 Staff Training
4.4.3 Communication	Page 10 Public Awareness and Complaints
4.4.7 Emergency Preparedness and Response	Page 11 – Emergency Procedures and Incident Response
4.5.1 Monitoring and Measurement	Page 10 - Monitoring
4.5.2 Non-conformance, Corrective and Preventative Action	Page 11 – Corrective Action

4.1.2 Conclusion

Environmental Management Strategy Status: Compliant

The Environmental Management Strategy provides a sound basis for the management of the environmental matters related to the Bloomfield Colliery development and operations.

4.1.3 Environmental Management System

The Bloomfield Colliery also operates under the Bloomfield Group Environmental Management System (EMS) developed generally in accordance with ISO 14001 principles. The EMS was implemented prior to the Part 3A environmental assessment and Project Approval for the Bloomfield Colliery project.

The EMS includes the Bloomfield Group Environmental Policy and relevant environmental systems and procedures to guide the mining project operations until the completion of mining. Any additional requirements resulting from conditions of Project Approval or the Consolidated Coal Lease are incorporated into the existing EMS where required.

The Bloomfield Environmental Policy states:

"It is the policy of the Bloomfield Group and its subsidiary and associated companies to achieve a high standard of care for the natural environment in all of the associated with our coal mining and engineering operations.

We aim to conduct our operations in an ecologically sustainable manner through minimising our impact on the environment by:

- *Managing the effect of our activities with regard to air, ground and water pollution;*
- *Reducing noise associated with our activities to as low as reasonably practicable;*
- *Controlling the waste associated with our activities and the identification of recycling opportunities;*
- *Rehabilitating disturbed mining areas; and*
- *Managing our energy consumption.*
- *Identifying, monitoring and, providing adequate resources to manage risks arising from our operations in accordance with the structure of our Environmental*
- *Management System, which establishes the appropriate objectives and targets related to the environmental risks relevant to the scope of our operations;*
- *Reviewing our environmental management activities and seeking to continually improve our production processes, waste management and the use of resources;*
- *Conducting our operations in compliance with all relevant environmental legislation, regulations and licences;*
- *Consulting with managers and employees about our aim and about their individual*
- *responsibilities;*
  Informing our contractors, customers and suppliers of our aim and of their environmental responsibilities in relation to our business; and
- *Consulting with the community and relevant government bodies with regard to our environmental performance, obligations and issues, as appropriate to their interests."*

Existing systems and procedures that have been developed to manage the impacts and operation of activities on the Bloomfield Colliery site include:

- Mining Operations Plan;
- Maintenance Management System;
- Rehabilitation Management System;
- Environmental Water Management System;
- Draft Waste and Contamination Procedure;
- Draft Land Disturbance Management System;
- Aboriginal Heritage Management System;
- Mine Transport Management Plan;
- Explosives Management System;
- Bushfire Management Plan; and
- Fuel and Bulk Oil Delivery Procedures.

4.2 Environmental Management Plans

[Project Approval 07_0087 Schedule 5 condition 2]

Environmental Management Plans **Compliance Status** **Administrative Non-Compliance**

The management plans required to be developed for the Bloomfield Colliery development are:

Project Approval	Management Plan
Schedule 3, condition 19	Water Management Plan (WMP)
Schedule 3, condition 21	Erosion and Sediment Control Plan (ESCP)
Schedule 3, condition 26	Landscape Management Plan (LMP)
Schedule 3, condition 27	Rehabilitation Management Plan (RMP
Schedule 3, condition 28	Final Void Management Plan (FVMP)
Schedule 3, condition 29B	Biodiversity Offset Management Plan (BOMP)
Schedule 3, condition 31	Aboriginal Cultural Heritage Management Plan (ACHMP)

The Management Plans were prepared to satisfy the Project Approval conditions and submitted to the Director-General in accordance with the conditions for approval in 2012. Bloomfield are awaiting a response from DP&E re approval of the management plans.

4.2.1 Management Plan Components

The Bloomfield Colliery environmental management plans were prepared generally in accordance with Project Approval 07_0087 Schedule 5 condition 2 requirements. Where the requirements of Schedule 5 condition 2 have not been met the information is generally available in other Bloomfield documents. Table 4.2 provides a summary of the Project Approval 07_0087 Schedule 5 condition 2 components as addressed in the management plans.

Table 4.2.1: Summary of the Management Plan sections addressing Schedule 5 condition 2 components.

Project Approval 07_0087 Schedule 5 condition 2	Management Plans (section reference)	Summary Comments on Management Plan content
(a) detailed baseline data	WMP –Part D page 18 and Part D page 21 ESCP – Part C page 14 LMP – Not applicable RMP – Not applicable FVMP – Not applicable BOMP – Page4 and 5 ACHMP – Attachment 1 and 2	Baseline is provided in the Environmental Assessment and Modifications where applicable
(b) description of: (i) statutory requirements (including approvals, licence or lease conditions)	WMP –Part D page 17 ESCP – Part C page 14 LMP – Page 3 RMP – Page 6 FVMP – Page 7 BOMP – Page 3 ACHMP – Page 3	EMS Appendix C also provides a Summary of Key Legislation applicable to all management plans
(ii) limits or performance measures/criteria	WMP – Page 18 ESCP – Page 14 and 15 LMP / RMP – Page 10 FVMP – Page 8 BOMP – Page 7 ACHMP – Page 7	
(iii) specific performance indicators	WMP – Page 18 ESCP – Page 15	

Project Approval 07_0087 Schedule 5 condition 2	Management Plans (section reference)	Summary Comments on Management Plan content
	LMP/RMP – Page 10 FVMP – Page 8 BOMP- Page 7 ACHMP – Page and Attachment 1	
(c) measures to be implemented to comply with the statutory limits, or performance measures /criteria	WMP - Part D page 19 and Part E page 23 ESCP – Page 14 LMP / RMP – Appendix a page A4 FVMP – Page 11 BOMP – Page 8 ACHMP – Page 11	
(d) program to monitor and report (i) impacts and environmental performance; (ii) effectiveness of management measures	WMP – Part D page 19 and Part E page 23 ESCP – Page 15 LMP / RMP – Pages 10 to 13 FVMP – Page 11 BOMP – Page 8 ACHMP – Page 11 and 12	
(e) contingency plan	WMP – Part F page 24 to 26 ESCP – Page 15 ACHMP – Page 12	Contingency plans are not relevant to the LMP / RMP / FVMP.
(f) program to investigate and implement ways to improve environmental performance of the project over time	All management plans	Continual improvement and periodic review of management plans is addressed in EMS page 12
(g) protocol for managing and reporting any: (i) incidents; and	All management plans	Emergency procedures and incident response for all plans is addressed in EMS page 11
(ii) complaints;	All management plans	Compliant management for all plans is addressed in EMS page 10
(iii) non-compliances with statutory requirements;	All management plans	Incident management for all plans is addressed in EMS page 11
(iv) exceedances of the impact assessment criteria and/or performance criteria;	WMP – Part F –Surface and Groundwater Response Plan LMP / RMP – Pages 14 and 15 FVMP – page 9 BOMP – Page 8 ACHMP – Page 7 and Attachment 2	
(h) a protocol for periodic review of the plan	All management plans	Continual improvement and periodic review of management plans is addressed in EMS page 12

Recommendation:
Where detailed baseline data or procedure(s) are not included in the Management Plan Schedule 5 condition 2, reference to the Environmental Assessment or other available baseline information, should be considered for inclusion in any revision of the Plan(s), or a waiver obtained from the Secretary DP&E in accordance with Project Approval Schedule 5 condition 2.

4.2.2 Conclusion

In general the management plans address the requirements of the Project Approval 07_0087 Schedule 5 condition 2 and are satisfactory for management of the operations of Bloomfield Colliery. Where components of Project Approval 07_0087 Schedule 5 condition 2 are not included in the plans, an Administrative Non-Compliance is recorded in the audit report. It is recommended that inclusion of the missing component(s) be considered when revision of the Plan(s) occur.

4.3 Environmental Monitoring

[Project Approval 07_0087 Schedule 3]

4.3.1 Environmental Monitoring Programs

[Project Approval 07_0087 Schedule 3]

The monitoring programs developed for the Bloomfield Colliery development to satisfy Project Approval 07_0087 are:

Project Approval	Monitoring Program
Schedule 3, condition 4	Noise Monitoring Program
Schedule 3, condition 14	Blast Monitoring Program
Schedule 3, condition 16	Air Quality Monitoring Program
Schedule 3, condition 22	Surface Water Monitoring Program
Schedule 3, condition 23	Groundwater Monitoring Program

4.3.2 Integrated Environmental Monitoring Program

[Statement of Commitment 7.2]

An Integrated Environmental Monitoring Program (IEMP) developed and approved by DoP in 2007 has been implemented for the Bloomfield Colliery and Abel Underground Mine Projects. The monitoring programs that make up the approved IEMP were prepared in consultation with relevant government departments and agencies and Maitland and Cessnock Councils.

The IEMP was developed and submitted to the DoP on 7 December 2007 and approved by DoP as part of the Abel Project Approval Schedule 5 condition 2:

> **Abel Project Approval Schedule 5 condition 2**
> ***Environmental Monitoring Program***
> *The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program must be submitted to the Director-General within 6 months of this approval, consolidate the various monitoring requirements in schedule 4 of this approval into a single document, and be integrated as far as is practicable with the monitoring programs of the adjoining Bloomfield, Donaldson and Tasman mines.*

and the Bloomfield Statement of Commitment:

> ***Bloomfield Project Approval, Statement of Commitment 7.2 - Environmental Monitoring and Reporting***
> *"Bloomfield will implement and participate in the actions required for the Integrated Environmental Monitoring Program ('IEMP') that forms part of the Abel Project Approval and which includes elements of the Bloomfield Project."*

The monitoring programs for each of the environmental aspects included in the environmental management plans prepared for the for Bloomfield Colliery and Abel Underground Mine Projects have been collated into the Integrated Environmental Monitoring Program (IEMP) for the Abel, Donaldson, Tasman and Bloomfield operations.

The IEMP includes monitoring for:

- Noise
- Blasting
- Air Quality Monitoring
- Surface Water
- Groundwater
- Aboriginal and Cultural Heritage
- Flora and Fauna
- Meteorological Monitoring

4.3.3 Conclusion

Environmental Monitoring **Compliance Status** **Compliant**

The Bloomfield Colliery environmental monitoring programs include the monitoring components from the Integrated Environmental Monitoring Program with additional supplementary sampling and monitoring sites to assess the status of the environment related specifically to the Bloomfield mining activities.

The Bloomfield monitoring program results are presented in the Bloomfield Colliery AEMR's and are provided on the Bloomfield Colliery website.

4.4 Noise

[Project Approval Schedule 3 conditions 1 to 4]
[Statements of Commitment 11.1 to 11.4]

4.4.1 Noise Monitoring Program

A Noise Monitoring Program was prepared by SLR for Bloomfield on 16 September 2011 and addresses the requirements of Project Approval Schedule 3 condition 4, Statements of Commitment 11, and MOD 1. The Noise Monitoring Program was submitted to DoP on 4 November 2011. (The noise monitoring requirements for the Bloomfield Project within the Integrated Environmental Monitoring Program (December 2007) prepared for the Bloomfield, Donaldson, Abel and Tasman mines are included in the Bloomfield Noise Monitoring Program).

The objectives of the Bloomfield Noise Monitoring Program are to:

- Demonstrate compliance with the project approval conditions;
- Identify potential noise sources and their relative contribution to noise impacts from the development;
- Outline the methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, monitoring locations, periods and times of measurements, the design of any noise modelling or other studies, including the means for determining the noise levels emitted by the development; and
- Integrate the Bloomfield NMP with monitoring programs for the Tasman, Donaldson and Abel mines.

4.4.2 Noise Monitoring

Noise monitoring is conducted quarterly in accordance with the Noise Monitoring Program and consists of operator attended noise monitoring and use of continuous unattended noise loggers, with noise measurement procedures employed in the noise monitoring program guided by the requirements of AS 1055:1997 *"Acoustics _ Description and Measurement of Environmental Noise"* and the NSW Industrial Noise Policy.

The Noise Monitoring Program includes:

Operator attended noise measurements - conducted quarterly at the each nominated location identified from modelling conducted for the Environmental Assessment (2008) of predicted noise levels from the Bloomfield Colliery operations to quantify and characterise the maximum (LA_{max}), the energy equivalent (LA_{eq}), average maximum (LA_{10}) and background (LA_{90}) noise levels from ambient noise sources and Bloomfield mining operations over a 15 minute measurement period.

Table 4.2.2: Noise Monitoring Locations (identified from modelling conducted for the Environmental Assessment)

Noise Monitoring Location ID	Noise Monitoring Location Description
F	Lot 684 Black Hill Road, Black Hill
G	156 Buchanan Road, Buchanan
L	Kilshanny Avenue, Kilshanny
M	John Renshaw Drive, Buttai
N	669 John Renshaw Drive Buttai

Unattended continuous noise monitoring - conducted at Locations F, G, L, M and N, for a minimum period of seven (7) days each 3 months, to quantify overall ambient noise amenity levels resulting from mining and other noise sources in the vicinity of the mine.

Noise monitoring as part of the noise management strategy **-** noise surveillance measurements are conducted of acoustically significant plant and equipment, to ensure that they operate within specified compliance levels (e.g. Drilling Noise Assessment, SLR 13 April 2011).

Cumulative noise - noise monitoring requirements for the Bloomfield Colliery Mine Project within the Integrated Environmental Monitoring Program (December 2007) prepared for the Bloomfield, Donaldson, Abel and Tasman mines are included in the Bloomfield Noise Monitoring Program to determine compliance with the cumulative noise criteria as required under the Bloomfield Project Approval Schedule 3 Condition 2.

4.4.3 Noise Monitoring Reports

4.4.3.1 Attended Monitoring

A protocol to determine compliance with the noise criteria from the attended monitoring results, as required under Project Approval Schedule 3 condition 4(c), is included in the Noise Monitoring Program section 7.1.1.

The Quarterly Noise Monitoring Reports section 4.3 (SLR) describe the acoustic environment at each monitored receiver and generally comment that road traffic noise and insects dominate the noise environment. Noise monitoring results have confirmed increased LA_{eq} levels during day, evening and night as a result of these dominant sources. Night time traffic on John Renshaw Drive is characterised by intermittent flow with regular breaks in traffic noise. Bloomfield Colliery operations have been described generally as inaudible during the operator attended noise measurements at the nominated noise monitoring locations between 2013 and 2015.

The SLR Quarterly Noise Monitoring Reports provide tabulated results for each of the five monitoring locations (F, G, L, M and N) with the following information provided:

- Monitoring location, date and time of monitoring;
- Wind velocity (m/s) and temperature (ºC) at the measurement location Summary of all attended and unattended noise monitoring results;
- Predicted noise levels at each assessment location from the compliance noise model (if necessary);
- Measured/ calculated and/or operator estimated Bloomfield Mine LAeq(15minute) contributed noise levels for each monitoring location;
- Measured/ calculated and/or operator estimated Bloomfield mine LA1(1minute) contributed noise levels for each monitoring location;

- Mine contributions from Bloomfield Colliery operations are listed in the tables when a noise contribution from the mine could be quantified.
- Statement of compliance/ non-compliance; and
- Details of any complaints received by Bloomfield Colliery related to noise.

4.4.3.2 Unattended Monitoring

The Noise Monitoring Program section 4.3 addresses the unattended monitoring requirement as:

> *"….. to supplement the operator attended measurements, unattended continuous noise monitoring shall be conducted at Locations F, G, L, M and N, for a minimum period of seven (7) days per quarter, to quantify overall ambient noise amenity levels resulting from mining and other environmental noise sources. Data from unattended continuous noise logging will allow trends to be identified in ambient noise levels surrounding the mine and the assessment of cumulative noise impacts from all mining related noise sources in the area.*
> *The monitoring locations chosen should be representative of noise emissions from Bloomfield mining operations and coal processing in order to determine compliance with the approval conditions and/ or allow the contributed noise level to be calculated at the nominated assessment locations."*

At least three of the unattended noise monitoring locations (F, M and N) consistently return traffic noise levels well in excess of the Bloomfield Colliery operations noise emission assessment levels, so the ambient noise levels recorded do not necessarily reflect the contributed level of noise emissions from mining operations.

4.4.4 Noise Monitoring Results

The Bloomfield operations were noted to be generally inaudible at all monitoring locations during the attended monitoring campaigns between 2013 and 2015. Attended noise monitoring results have generally indicated compliance with the Project Approval conditions at all monitoring locations during the 2013 to 2015 monitoring period.

Table 4.4.4: Noise Monitoring Summary 2013 to 2015

Noise Monitoring Reports	Conclusion of Noise Monitoring Surveys
September 2015	Results of noise monitoring have indicated compliance with the consent conditions at all monitoring locations during the September 2015 quarter.
June 2015	Results of noise monitoring have indicated compliance with the consent conditions at all monitoring locations during the June 2015 quarter.
March 2015	Exceedance during the night-time period was measured at locations M and N during the March 2015 quarter. The exceedances were caused by the operation of the large dump trucks. Corrective actions were implemented to modify dump truck use at certain times to reduce noise levels to below the consent conditions.
2014	All noise monitoring indicated that compliance with consent criteria was met at all locations during day, evening and the night-time periods during 2014.
2013	One exceedance of the consent criteria at Location M occurred in June 2013. In accordance with Schedule 4 Condition 1 of the project approval Bloomfield notified the DP&I and the affected landowner.
2012	The monitoring indicated that compliance with consent criteria was met at all locations during day, evening and the night-time periods during 2012.

4.4.5 Conclusion

Noise	Compliance Status	Compliant

The Noise Monitoring Program has indicated that noise emissions from the Bloomfield Colliery operations is generally inaudible at all monitoring locations during the attended monitoring campaigns and when measurable is compliant with the noise assessment criteria in Project Approval 07_0087 Schedule 4 conditions 1-4.

Results of noise monitoring indicated compliance with the consent conditions at all monitoring locations and all noise surveys during the monitoring period except for some exceedances during the night-time period at location M and N in 2015 caused by the operation of the large dump trucks on the waste emplacement areas. Corrective actions was implemented with the truck not used on the high emplacement areas at night to reduce noise levels to below the consent conditions.

4.6 Blast and Vibration

[Project Approval Schedule 3 conditions 5 to 14]

[Statements of Commitment 12.1 to 12.5]

4.6.1 Blast Monitoring Program

[Project Approval Schedule 3 condition 14]

A Blast Monitoring Program was prepared to satisfy Project Approval Schedule 3 condition 14 and submitted to the DoP on 24 February 2010 (i.e. within 6 months of the date of the Project Approval). DoP provided comments on 24 April 2010 and a revised Final Blast Monitoring Program incorporating the DoP comments was completed on 9 August 2011 to address the requirements of MOD 1. The Blast Monitoring Program was further revised on 31 May 2012. Bloomfield had not received correspondence from DP&I in relation to approval of the Blast Monitoring Program at the date of this audit (November 2015).

An Explosives Management Plan for the site details best practice using the specific requirements of blasting and protocols to be followed by the blasting supervisor. The Blast Monitoring Program includes a Pre-Blast Protocol (page 6), and Evaluation of Blasting Protocol (page 9) for the recording and reporting of each blast.

A 500m exclusion zone is evacuated around each blast site and airblast overpressure and ground vibration is monitored. A predictive meteorological modelling software program is utilised on the day of a blast to assist in planning blast operations. An automated weather station on site provides real time online data.

4.6.2 Blast and Vibration Criteria

[Project Approval Schedule 3 conditions 5 and 6]

[EPL condition L4]

[CCL condition 10]

Blast and vibration criteria are specified in Project Approval Schedule 3 conditions 5 to 14, Statement of Commitment 12.1 to 12.5, EPL condition L4 and CCL condition 10.

Table 4.6.2: Blast and Vibration Criteria

	Overpressure dB(Linear peak)		Vibration Peak Particle velocity (ppv) mm/sec	
Criteria	>115	>120	>5	>10
Allowable exceedance	5% of total number of blasts	0% of total number of blasts	5% of total number of blasts	0% of total number of blasts

4.6.3 Blast Monitoring

[Project Approval Schedule 3 conditions 5 and 6]

[Statements of Commitment 12.1 to 12.5]

The blast monitoring is conducted for each blast using four blast monitors located at residences to the south, south-east, west and north-west of open cut operations. The blast monitors are calibrated by TEXCEL and µMX Calibration Certificates are issued for each monitor calibration.

The use of a predictive meteorological modelling software program was introduced in 2011 to assist in planning blast activities. The software incorporates regional weather station data to predict daily weather events that may exacerbate overpressure impacts from blasting.

The Environmental Assessment Completion of Mining and Rehabilitation, November 2008 Appendix F section 8, presented the predictions for overpressure and vibration at identified residences around the Bloomfield Colliery proposed operations area. The blast modelling predictions presented in Environmental Assessment Table 20 have not been exceeded during the 2013 to 2015 period.

Table 4.6.3a: Blast Overpressure and Vibration Monitoring Results (January 2013 to October 2015) - Compared to Predictions in Environmental Assessment (November 2008)

Location /ID	Overpressure dBL		Vibration mm/sec	
	Range (Mean)	EA Prediction	Range (Mean)	EA Prediction
Richards / G (EPA ID 6)	80.3-113.9 (99.0)	102.1	0.04-1.6 (0.3)	1.0
Mt Vincent Rd / H (EPA ID 3)	83.8-108.1 (96.2)	96.5	0.03-0.8 (0.2)	0.4
McNaughtons / M (EPA ID 4)	93.2-118.2 (105.5)	103.5	0.1-0.9 (0.5)	1.2
Elliott / N (EPA ID 5)	88.6-115.9 (102.5)	113.0	0.2-3.7 (0.9)	4.8

The blast monitoring results for the blasts conducted in the January 2013 to October 2015 period demonstrate compliance on all occasions with the blast criteria in the Project Approval / EPL / CCL.

Table 4.6.3b: Summary of Blast Monitoring April 2012 to October 2015

		Overpressure dB(Linear peak)		Vibration mm/sec	
	No. of blasts				
Criteria	-	115	120	5	10
Allowable exceedance	-	5% of total number of blasts	0% of total number of blasts	5% of total number of blasts	0% of total number of blasts
2012 (Apr-Dec)	107	2 (1.9%)	0	0	0
2013	114	3 (2.6%)	0	0	0
2014	87	1 (1.1%)	0	4 (4.6%)	0
2015 (Jan-Aug)	67	0	0	0	0

4.6.4 Conclusion:

Blast and Vibration Status Compliant

The Blast Monitoring Program and Explosives Management Plan for the site detail best practice and specific requirements of blasting and protocols to be followed by the blasting supervisor using a Pre-Blast Protocol and Evaluation of Blasting Protocol for the recording and reporting on each blast.

Blast monitoring conducted between January 2013 and October 2015 indicated that the blast and vibration results are at or below modelling predictions in the Environmental Assessment (November 2008) and are compliant with the criteria in Project Approval Schedule 3 conditions 5 to 14, Statement of Commitment 12.1 to 12.5, EPL condition L4 and CCL condition 10.

4.7 Air Quality

[Project Approval Schedule 3 conditions 15 to 17]
[Statements of Commitment 13.1 to 13.2]

4.7.1 Air Quality Monitoring Program

The Air Quality Monitoring Program was prepared in consultation with OEH and submitted to the DoP on 24 February 2010, (within 6 months of the date of this approval). DoP provided comments on 24 April 2010 and the Final Air Quality

Monitoring Program incorporating the project area approved by the section 75W Modification 2 was completed on 9 August 2011. The Air Quality Monitoring Program was further revised on 31 May 2012 to address DP&I comments and submitted to the Director-General. No response in relation to approval had been received from DP&I/DP&E for the Air Quality Monitoring Program at the date of this audit (November 2015).

4.7.2 Meteorological Monitoring

[Project Approval 07_0087 Schedule 3 condition 17]
[Statement of Commitment 13.2]

A meteorological station was installed near the active mining area at the Bloomfield site in accordance with the requirements of Project Approval 07_0087 Schedule 3 condition 17. The meteorological station monitors rainfall, temperature, relative humidity, wind speed and wind direction and records weather data each 60 seconds. Environdata Weather Stations Pty Ltd provide and maintain weather monitoring and equipment for Bloomfield Collieries at the mine site.

4.7.3 Environmental Assessment (2008) - Air Quality

[Environmental Assessment (2008) Appendix G Air Quality Assessment]

Modelling simulations of the dispersion of dust emissions for the Bloomfield Colliery Environmental Assessment (2008) Appendix G Air Quality Assessment, was undertaken by Holmes Air Sciences (2008) using a modified version of the ISC Model (ISCMOD) to model the dispersion and deposition of emissions to the atmosphere for the project.

This report assessed the air quality impacts associated with the completion of mining at the Bloomfield Colliery. The model predictions showed the effects of the mine in isolation and when considered with other sources of dust (cumulative impact). No exceedances of any long-term assessment criteria were predicted.

The DECC/EPA annual average increment of 2 g/m^2/month for dust (insoluble solids) deposition as the limit that applies to the any impact from the project by itself. For all the other assessment criteria, the predicted values due to the project have been combined with the estimated ambient concentrations due to all other sources of dust including other mines and non-mining sources.

The average PM_{10} background concentrations were taken to be 9.6µg/m^3.

For annual average TSP concentrations, the value was taken to be 24.5 µg/m^3 and for annual average deposition (insolu ble solids) the value has been taken to be 0.5 g/m^2/month.

4.7.4 Air Quality Impact Assessment Criteria

[Project Approval 07_0087 Schedule 3 condition 15]

Dust emissions generated by the project are not to cause exceedances of the criteria listed in Project Approval 07_0087 Schedule 3 condition 15 - Tables 4 to 6 at any residence on privately-owned land, or on more than 25% of any privately-owned land.

Table 4: Long term impact assessment criteria for particulate matter

Pollutant	Averaging Period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/m^3

Table 5: Short term impact assessment criterion for particulate matter

Pollutant	Averaging Period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Table 6: Long term impact assessment criterion for deposited dust

Pollutant	Averaging Period	Max increase in dep dust level	Max total dep dust level
Deposited dust	Annual	2g/m/mth	4g/m/mth

4.7.5 Dust Monitoring

[Project Approval 07_0087 Schedule 3 condition 16]

The Bloomfield Air Quality Monitoring Program includes four (4) dust deposition gauges (D1, D6, D8 and D9) located as nominated in the Integrated Environmental Monitoring Program (IEMP) plus a further six (6) dust deposition gauges (DD2, D3, D4, D5, D7 and D10) around the project area. A high-volume air sampler (HVAS) is located at Buttai to the south of the project area, to monitor particulate matter (PM_{10} and TSP).

Table 4.4: Dust Monitoring Locations

Site ID	Monitoring Site Location
On Bloomfield Consolidated Coal Lease 361	
D1 (IEMP)	Adjacent to Buttai Reservoir
D2	Adjacent to Main Haul Road
D3	Plantation Site (2012) then Communications Tower
D4	Off Haul Road West of Stoney Pinch Reservoir / then adjacent to John Renshaw Dr
D9 (IEMP)	Shamrock Lane
Off Bloomfield Consolidated Coal Lease 361 (as part of the IEMP)	
D5	Bali Close Ashtonfield
D6 (IEMP)	Off Four Mile Road
D7	New England Highway Avalon Estate
D8 (IEMP)	Adjacent to Main North Rail Line at Rail Loop
D10	Private property adjacent to John Renshaw Drive Buttai
HVAS	Private property adjacent to John Renshaw Drive Buttai

4.7.5.1 Dust Deposition

The dust gauges were installed and managed generally in accordance with AS/NZS 3580.10.1 (2003). PM_{10} and TSP monitoring is carried out in accordance with AS/NZS 3850.9.6 (2003) and AS/NZS 6850.9.3 (2003) respectively. Dust analysis is performed by an accredited National Association Testing Authority (NATA) laboratory.

Table 4.7.5.1: Dust Deposition Gauge Monitoring Results 2012 – October 2015 (mg/m^2/month)

Site ID	Annual Average Dust Deposition			
	2015	2014	2013	2012
D1	1.1	1.2	1.7	1.5
D2	1.2	1.4	1.6	1.7
D3	1.6	1.6	2.5	1.9
D4	1.4	1.5	1.6	3.1
D5	1.2	1.5	1.5	1.4
D6	1.1	2.5	2.4	3.4
D7	1.1	1.4	1.7	1.8
D8	1.2	1.7	1.6	1.6
D9	0.9	1.1	1.2	1.1
D10	1.4	1.5	1.8	2.2
Deposited Dust Criteria	Annual Average	Maximum increase in deposited dust level - $2g/m^2$/mth		
		Maximum total deposited dust level - $4g/m^2$/mth		

Dust deposition gauge sites D3 and D4 are located well within the Bloomfield CCL adjacent to mining operations, and D6 is adjacent to the Four Mile Creek Road Workshop with operational dust contributing to any elevated results from these sites. The increased levels at D3, D4 and D6 are unlikely to impact sensitive receivers off site. Site D8 is adjacent to where the Bloomfield rail loop joins the Main North Rail Line 4.4km from the Bloomfield loading operations from the conveyor to the wagons.

The potential levels of dust emissions from the Bloomfield mining operations modelled as part of the Environmental Assessment (November 2008), indicated that the annual average dust deposition for residences in the vicinity of the mine for the first 5 years would range from 0.6 to 1.7 g/m^2/month. The dust deposition monitoring for sites away from the CCL mining operations and other mine infrastructure areas, exhibited levels of 1.0 to 1.9 g/m^2/month that is generally consistent with the Environmental Assessment predictions for off-site dust deposition.

All dust deposition gauges recorded annual averages below the 4g/m^2/month limit and the long term average dust deposition rates are all within the nominated criteria.

4.7.5.2 PM_{10} and TSP

HVAS monitoring results for the PM_{10} and TSP between 2012 and October 2015 are shown in Table 4.7.5.2.

Table 4.7.5.2: PM_{10} and TSP monitoring results between 2012 and October 2015

	PM_{10} 24hr	PM_{10} Annual Average	TSP Annual Average
2015	35	15.5	34.7
2014	36	15	31
2013	46	17	38
2012	33	16	38
PM_{10} and TSP Criteria	50	30	90

All PM_{10} results recorded 24-hour averages below the 50 ug/m^3 criteria and the annual average PM_{10} results recorded were below the 30 ug/m^3 between January 2013 and October 2015.

The annual average TSP result recorded was below the 90 ug/m^3 limit between January 2013 and October 2015.

4.7.6 Conclusion

Air Quality **Compliance Status** **Compliant**

The Air Quality Monitoring Program provides adequate data to assess dust impact from the Bloomfield mining operations. The dust monitoring program has indicated that the dust deposition rate at areas surrounding the mining operations is consistent with the modelled levels predicted in the Environmental Assessment (2008) and the HVAS results have for 2012-2015 have demonstrated compliance with the PM_{10} and TSP criteria.

4.8 Water Management

[Project Approval Schedule 3 conditions 19 to 24]
[Statements of Commitment 15.1]

4.8.1 Water Management Plan

The Water Management Plan for the Bloomfield Colliery was prepared to satisfy Project Approval 07_0087 Schedule 3 conditions 19 (by Steve Perrens of Evans and Peck and Andy Fulton of Aquaterra (experts approved by the Director-General DoP), in consultation with OEH (EPA) and NOW. The Water Management Plan and submitted to the DoP by 5 April 2010. The Water Management Plan was revised on the 27 October 2011, 31 May 2012 and 18 September 2013 to address the conditions of the Project Approval Modifications 1 and 2. No response had been received from DP&I/DP&E in relation to approval of the Water Management Plan at the date of this audit (November 2015).

The Water Management Plan includes the attached documents:

- Site Water Balance (Appendix B – Evans and Peck);

- Erosion and Sediment Control Plan (Appendix C – GSS Environmental);
- Surface Water Monitoring Plan (Appendix D – Evans and Peck);
- Ground Water Monitoring Program (Appendix E – Aquaterra); and
- Surface and Ground Water Response Plan (Appendix D – Evans and Peck).

4.8.2 Water Management System

An integrated water management system has been implemented across the Bloomfield, Abel and Donaldson project sites to manage the water usage and water balance for the projects. This integrated water management system was included in the Abel Mine Project Approval 05_0136 Schedule 3 condition 11:

> ***Water Management Plan***
> *11. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must:*
> *(a) be submitted to the Director-General for approval within 6 months of this approval;*
> *(b) be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General,*
> *(c) be prepared in consultation with the DECC and DWE;*
> *(d) be integrated, as far as is practicable, with the water management plans of the adjoining Bloomfield, Donaldson and Tasman mines;……*

The Bloomfield Colliery water management was developed with three primary goals and objectives:

- separation of clean water and mine water;
- safe storage and priority use of mine water on-site;
- management of water that is discharged to comply with the conditions of EPL 396 and preserve the environmental values of Four Mile Creek and.

The main components of the Bloomfield Colliery surface water management system are:

Lake Kennerson: Water pumped from the open cuts (S Cut and Creek Cut) and run-off from other disturbed areas (i.e. high wall, haul roads, overburden dumps awaiting rehabilitation, etc) that has the potential to carry suspended solids, is directed to Lake Kennerson via open drains. Water discharges only occur in accordance with conditions of the Environmental Protection Licence (EPL 396 condition P1.2 and condition L3.1). Water samples are collected during discharge for independent water quality analysis. A monitoring station located downstream in Four Mile Creek continuously measures electrical conductivity (EC) and water level.

Lake Foster: Stored water in Lake Kennerson can be directed to Lake Foster via a valve controlled pipe which, when opened feeds any required water to Lake Foster. Lake Foster receives decant water from the tailings storage facility (U Cut) and water from the stockpile dam, which collects the run off from the CHPP and coal stockpile pads. Water primarily sourced from Lake Foster is pumped to the CHPP for use in coal processing and for dust suppression spraying on the coal stockpile pads.

Clean Water: Run off from undisturbed and rehabilitated areas is directed away from operational areas and mine water storages via diversion banks and channels into clean water dams or natural watercourses. (The major clean water storage dam is Possums Puddle north of Lake Foster). No clean water is accessed from these storages for operational purposes and these dams overflow into natural drainage systems.

Most of the operational mining areas at Bloomfield Colliery are located within the catchment of Four Mile Creek. A series of drains and levees direct Four Mile Creek around Lake Foster (mine water storage) and into Possums Puddle (clean water storage). From Possums Puddle clean water overflows or is discharged back into Four Mile Creek.

Integrated components of the water management system operating at Bloomfield include the pumping of water from the Donaldson Coal water storage dam (the Big Kahuna) to Lake Kennerson when required, for use in the CHPP. Any excess water in Lake Kennerson may be discharged to Four Mile Creek from EPA approved discharge Point 1, identified in the Bloomfield EPL 396 condition P1.2 and condition L3.1.

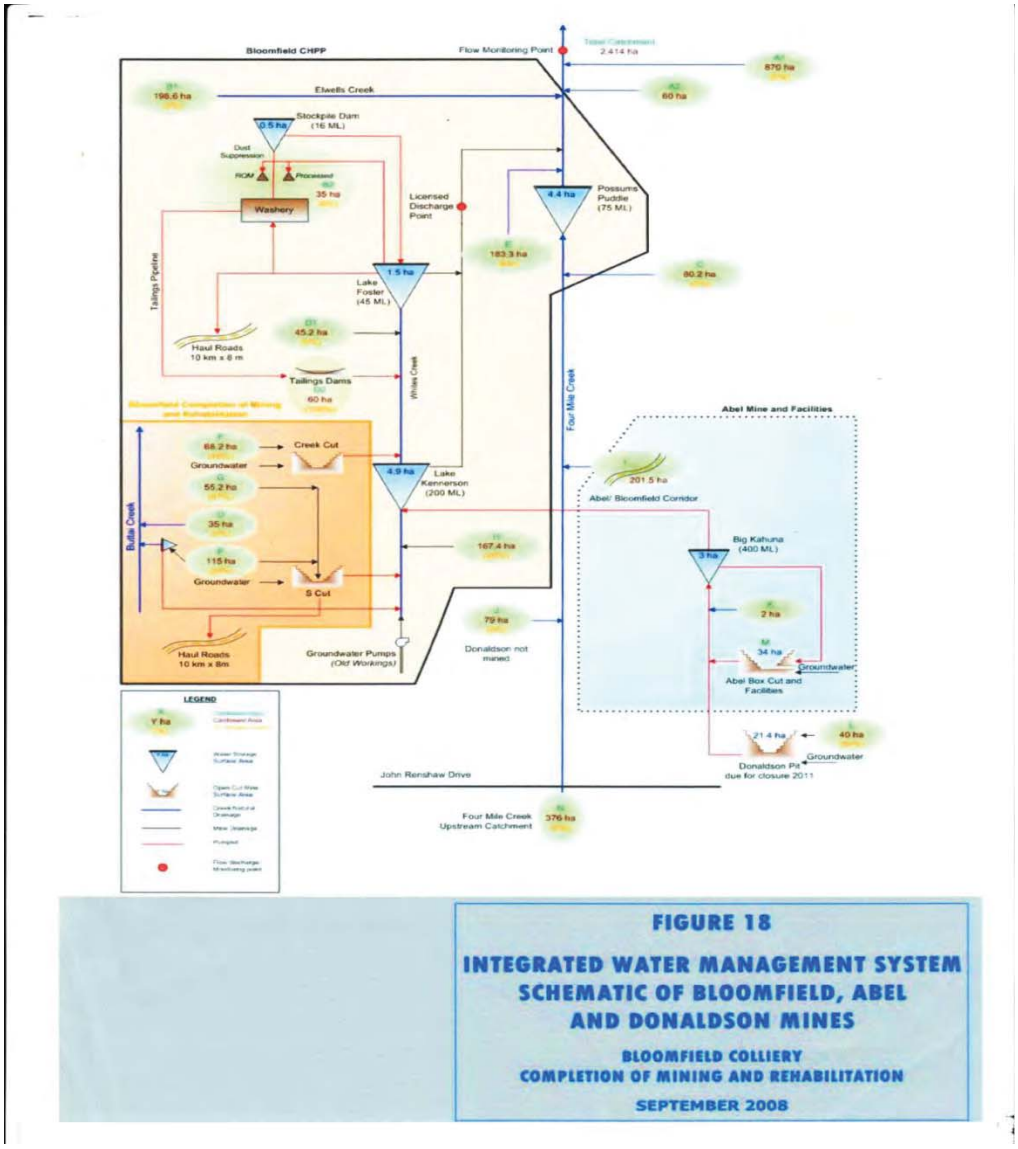


Figure 2: Integrated Water Management System

4.8.3 Site Water Balance

[Project Approval 07_0087 Schedule 3 condition 20]

The Site Water Balance was developed by Evan and Peck for Bloomfield Colliery as part of the Water Management Plan dated 31 May 2012 and includes:

- sources and security of water supply (Site Water Balance - section 2 Groundwater Inflow, section 4.3 Water Storage, section 5 Catchment Runoff);
- water use and management on site (Site Water Balance -section 4.4 Water Use);
- any off-site water transfers or discharges (Site Water Balance - Table 1-2 Schematic Diagram of Catchment and Flows, section 2 Catchments and Pits); and

- reporting procedures (Site Water Balance - section 6 Reporting Procedures); and
- measures to minimise water use by the project (Site Water Balance - section 4.4 Water Use).

The site water balance model (developed by Evans and Peck) indicated that the Bloomfield Colliery mining project would be capable of meeting all water needs for dust suppression from the groundwater inflows and surface runoff into the mine pits, and would provide a net surplus of water that will contribute to the water available for supply to the Bloomfield CHPP. The site water balances for 2012 to 2015 demonstrate that Bloomfield Colliery provides a net surplus of water from the project.

Table 4.8.3: Bloomfield Colliery Stored Water 2012 – 2015

		Stored Water Volumes (m^3) held by Bloomfield Colliery			
	2015	**2014**	**2013**	**2012**	**Storage Capacity**
Clean Water					
	90	90	90	90	90
Dirty Water					
Lake Kennerson	120	120	120	80	245
Lake Foster	20	20	20	20	45
Tailings Dam	400	400	400	400	600
Controlled Discharge Water					
EPL 396 c. L3.1 - 40ML/day Point1	<40ML/day	<40ML/day	<40ML/day	<40ML/day	-
Annual Volume	1155ML*	990 ML	1680 ML	1400 ML	-

* Annual Volume not available. Annual average for 41 days discharge to October 2015 is 29ML/day.

4.8.4 Conclusion – Site Water Balance

Site Water Balance **Compliance Status** **Compliant**

The site water balance model results prepared for the Environmental Assessment (2008) and the Water Management Plan indicated that the Bloomfield Colliery Completion of Mining and Rehabilitation project will be capable of meeting all water needs for dust suppression from the groundwater inflows and surface runoff into the mine pits and provide a net surplus of water that will contribute to the water available from Lake Kennerson for supply to the Bloomfield CHPP.

The annual water balance between 2013 and 2015 confirm that Bloomfield Colliery has adequate water to meet the demands of the project. Controlled discharge has been managed to less than 40ML/day.

4.9 Erosion and Sediment Control

[Project Approval Schedule 3 condition 21]
[Statement of Commitment 15.2]

4.9.1 Erosion and Sediment Control Plan

[Project Approval Schedule 3 condition 21]

The Erosion and Sediment Control Plan was prepared to satisfy Project Approval 07_0087 Schedule 3 condition 21 by GSS Environmental in March 2010 for Bloomfield Colliery, as Appendix C of the Water Management Plan. The Erosion and Sediment Control Plan was submitted to DoP as part of the Water Management Plan in November 2010. No response had been received from DP&I/DP&E in relation to approval of the Water Management Plan at the date of this audit (November 2015).

The recommended requirements of the guideline in *Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* (EPA 2008) Appendix C, for the preparation of an Erosion and Sediment Control Plan are summarised in Table 4.9. The Erosion and Sediment Control Plan and other Bloomfield management plans generally address the elements of the Manual.

Table 4.9: Summary of Comparison of the Bloomfield Colliery Erosion and Sediment Control Plan with *Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* (EPA 2008)

Requirements	Evidence / Comments
***Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* Appendix C.3**	
The locality of the mine	Water Management Plan Figure 1 and Figure 2
Existing site contours including catchment area boundaries	Erosion and Sediment Control Plan Figure 1 Contours and Catchment Areas Site Water Balance Table 2 Catchment Areas
Location of existing vegetation	Erosion and Sediment Control Plan Figure 1 Aerial Photo showing vegetation
Location of critical natural areas requiring special planning of management	No critical natural areas requiring special management identified in the Bloomfield Colliery site.
Stages of mining	Mining Operations Plan 2012-2016 Maps 3A to 3E
Nature and extent of earthworks, including cut and fill	Mining Operations Plan Map 2 Mine Domains
Location of all soil stockpiles.	Erosion and Sediment Control Plan section 2.1.3 Mining Operations Plan Map 2 Mine Domains
Location of proposed roads	Erosion and Sediment Control Plan section 2.2.3
Location and types of proposed erosion control measures.	Erosion and Sediment Control Plan Figure 1 Sediment Dams
Site rehabilitation proposals including final contours.	Mining Operations Plan 2012-2016 section 6.2 Mining Operations Plan 2012-2016 Map 4 Final Rehabilitation
***Managing Urban Stormwater: Soils and Construction (Volume 2E – Mines and Quarries) Manual* Appendix C.4**	
Supporting information for the ESCP should include a brief description of:	
Site characteristics (slopes, topography etc.)	Erosion and Sediment Control Plan Figure 1 Contours Mining Operations Plan 2012-2016 Map 1
Major soil types present, including description and depth of each layer.	Not described in the Erosion and Sediment Control Plan.
Existing vegetation species.	Group Flora and Fauna Management Plan
Any vulnerable lands present	No vulnerable lands are reported to be present within the Bloomfield Colliery site.
Catchment areas above and within the site including drainage patterns.	Erosion and Sediment Control Plan Figure 1 Contours and Catchment Areas Site Water Balance Table 2 Catchment Areas
Integration of vegetation management with the proposed extraction plan	Erosion and Sediment Control Plan section 3.0 Revegetation
Any areas within the site with serious erosion or sedimentation potential, together with details of special planning or management requirements proposed for their protection.	Soils within the Bloomfield Colliery site are border-line between Class D and F. No areas of the site require special planning or management requirements for their protection.
The construction sequence over the life of the development in the form of a chart or table outlining the sequence of works including erosion and sediment measures.	Mining Operations Plan section 2.2 Activities over the MOP Term
The erosion control strategy including the criteria used to select, locate and schedule control measures.	Erosion and Sediment Control Plan section 2 Erosion and Sediment Control
Measures to be used to control sediment on site including the criteria used to select, locate and schedule such measures.	Erosion and Sediment Control Plan section 22 Long-term Erosion and Sediment Control Structures; section 22 Short-term Erosion and Sediment Control Structures
The extraction program	Mining Operations Plan section 2 Proposed Mining Activities
Progressive rehabilitation	Mining Operations Plan section 5.3 Rehabilitation Phases
The revegetation program including revegetation species.	Erosion and Sediment Control Plan section 3.0 Revegetation; and

Requirements	Evidence / Comments
The maintenance strategy for all control measures including the nomination of responsibility for follow-up maintenance of any permanent control measures.	Erosion and Sediment Control Plan section 4.0 General Maintenance and Monitoring of erosion and sediment control structures

4.9.2 Erosion and Sediment Control Monitoring

Erosion and sedimentation control is an integral part of the Bloomfield Colliery site water management system. The design of rehabilitated areas incorporates water management structures to effectively shed run-off water, whilst minimising erosion and sediment load.

The settlement dams currently receiving sediment laden runoff water from disturbed areas of the mining operation are reviewed and their location and storage capacity updated periodically to reflect the requirements during the various stages of mining and rehabilitation. Site drains used to transport mine water, or natural catchment flow, are inspected for erosion or damage as part of the site Environmental Management System, with remedial maintenance works conducted as necessary. The regular inspection and maintenance of permanent structures ensures that the water management system and erosion controls remain effective.

The Erosion and Sediment Control Plan section 4 outlines regular monitoring and management of erosion and sediment control structures to ensure runoff is managed appropriately. A summary of the regular monitoring schedule is provided in Table 4.9.2.

Table 4.9.2: Erosion and Sediment Control Monitoring Schedule

Bloomfield Colliery Element	Management/Monitoring Strategy	Frequency
CHPP Haul Road Drainage	Erosion along the side of haul road is inspected to ensure the toe of the rehabilitated batter is stable and not undercutting. Maintenance of the haul road is undertaken as required.	Weekly and following high intensity storm events.
Sediment Ponds/Dams	Inspection of sediment build-up and integrity of structures. De-silt dams as required.	Quarterly
Constructed Drainage Lines (as marked on ESCP Figure 1)	Inspect of drainage lines occurs to ensure they are stable, with no active erosion and adequate capacity is maintained. Clean out or repair as required.	Quarterly
Natural drainage lines in Southwest corner of mine boundary	Inspect drainage lines for sedimentation from upstream catchment.	Quarterly
Pipe outflow from pit sumps	Pipe outflow from pit sumps Inspect pipe outflow sites for erosion and scouring. Implement protection as required.	Monthly and following relocation
Rehabilitation areas and drainage lines on rehabilitated slopes	Inspect rehabilitation and drainage lines for adequate surface protection, ensuring sediment build-up in drainage lines is not adversely affecting drain capacity.	Each 2 years
Proposed clearing activities ahead of mining	Inspect sites to be cleared ahead of mining, ensuring adequate sediment controls are established prior to surface disturbance.	Prior to clearing activities

Bloomfield Colliery Element	Management/Monitoring Strategy	Frequency
Temporary sediment controls (silt fence, sandbag weirs etc)	Inspect sediment control structures for sediment build up and clean out as required to maintain adequate capacity.	Inspect sediment control structures for sediment build up and clean out as required to maintain adequate capacity
Reporting of ESCP findings and inspections	Results of ESCP inspections, maintenance activities and construction of erosion and sediment control structures are to be reported to mine management.	Monthly

4.9.3 Conclusion

Erosion and Sediment Control **Compliance Status** **Compliant**

Erosion and sediment control on the Bloomfield Colliery site was observed to be protecting the natural waterways from impact of surface runoff from the disturbed areas of the mine site. The requirements of *Managing Urban Stormwater: Soils and Construction, Volume2E Mines and Quarries* for the preparation of an Erosion and Sediment Control Plan are addressed in the Bloomfield Water Management Plan, Erosion and Sediment Control Plan and Mining Operations Plan.

4.10 Surface Water Monitoring

[Project Approval Schedule 3 condition 22]
[Statement of Commitment 16.1]

4.10.1 Surface Water Monitoring Program

The Surface Water Monitoring Program (dated 31 March 2010) was prepared by Evans and Peck as part of the Water Management Plan. The Surface Water Monitoring Program includes baseline data on Elwells Creek and Buttai Creek (section 1.2), Surface Water and Stream Health Impact Assessment Criteria (section 1.3), an outline of the surface water monitoring program and routine water quality monitoring frequency and parameters and reporting procedures.

The Surface Water Monitoring Program is consistent with and forms part of the Integrated Environmental Monitoring Program section 4.4 Surface Water Monitoring (dated December 2007) prepared for the Abel, Donaldson, Tasman and Bloomfield projects. The Bloomfield Surface Water Monitoring Program has additional monitoring locations that supplement the integrated program, providing adequate data for the assessment of any potential impacts from the Bloomfield mining activities on the natural waterways that may be affected by the operations.

4.10.2 Surface Water Monitoring

The surface water monitoring program at Bloomfield consists of discharge sampling, which is under licensed mine water discharge, and background monitoring. The background monitoring sites are centred on Four Mile Creek and its tributaries and Wallis Creek tributaries to the west of the mining lease. Location of the surface water monitoring sites is provided in Table 4.10.2a. The Bloomfield surface water monitoring program includes the locations from the Integrated Environmental Monitoring Program with additional monitoring sites for background and Four Mile Creek monitoring.

Table 4.10.2a: Surface Water Monitoring Locations

ID	Sampling Site	Sampling Location	Reference
W1	Wallis Creek tributary	Adjacent to old Rathluba Colliery	Bloomfield Colliery Surface Water Monitoring
W2	Shamrock Creek		

ID	Sampling Site	Sampling Location	Reference
W3	Ewells Creek and Four Mile Creek junction	Four Mile Creek and its tributaries	Integrated Environmental Monitoring Program section 4.4
W4	Possums Puddle Overflow		Integrated Environmental Monitoring Program section 4.4
W5	Ewells Creek		Integrated Environmental Monitoring Program section 4.4
W6	Four Mile Creek upstream of Lake Foster		Bloomfield Colliery Surface Water Monitoring
W7	Possums Puddle – surface water	On-site water storage dams	Integrated Environmental Monitoring Program section 4.4
W8	Lake Foster		
W9	Lake Kennerson		
W10	Four Mile Creek - John Renshaw Drive	Four Mile Creek and its tributaries	Bloomfield Colliery Surface Water Monitoring
W11	Four Mile Creek - New England Highway		Integrated Environmental Monitoring Program section 4.4
W12	Shamrock Creek and Four Mile Creek junction		
W13	Buttai Creek at Buchanan Road	Wallis Creek tributary	Bloomfield Colliery Surface Water Monitoring

Water quality samples collected during the surface water monitoring program are field tested and samples dispatched to a NATA registered laboratory for analysis in accordance with the Integrated Water Monitoring Program (December 2007) and Bloomfield Surface Water Monitoring Program (November 2010). The parameters analysed for the programs are shown in Table 4.9.

Table 4.10.2b: Surface Water Monitoring Program

Sampling Points	Frequency	Monitoring	Reference
WM 3, WM5, WM11, WM12 and water storages	Monthly	pH, EC, DO, TSS, TSS, TDS and filterable iron	Integrated Environmental Monitoring Program section 4.4
W1, W2, W4, W6 TO W10, and W13		pH, EC, DO, TSS, turbidity, TSS, TDS	Bloomfield Colliery Surface Water Monitoring Program
W1, W2, W4, W6 TO W10, and W13 (WM 3, WM5, WM11, WM12 and water storages are also monitored quarterly).	Quarterly	pH, EC, DO, TSS, turbidity, TSS, TDS, chloride, sulphate, alkalinity, calcium, magnesium, sodium potassium and filterable iron (laboratory analysis)	Bloomfield Colliery Surface Water Monitoring Program
WM 3, WM5, WM11, WM12 and water storages	Annually	pH, EC, TSS, TDS, chloride, sulphate, alkalinity, calcium, magnesium, sodium potassium, filterable iron	Integrated Environmental Monitoring Program section 4.4
Four Mile Creek - 500m upstream of the New England Highway	Continuous	Automated flow gauge	Integrated Environmental Monitoring Program section 4.4

4.10.3 Surface Water Monitoring Results (Background Sampling Sites):

pH levels in Four Mile Creek and its tributaries, and Wallis Creek tributaries are generally consistent with EPL criteria and ANZECC water quality guidelines (pH 6.5-8.5).

Water quality within the mine water storage dams (Lake Kennerson and Lake Foster) may vary throughout the year depending on rainfall capture in the open cut pits, CHPP water usage and frequency of discharge events from the EPA approved discharge Point 1 from Lake Kennerson. The quality in the freshwater dam (Possums Puddle) remains constant throughout the year as it is separate from and not affected by mining activities.

Electrical Conductivity (EC) (in Four Mile Creek and Wallis Creek tributaries are generally consistent with the EPL criteria in condition L2.4. Four Mile Creek is an ephemeral stream and exhibits EC slightly elevated downstream of Bloomfield Colliery with the higher results evident at the Ewells Creek and Shamrock Creek junctions and New England Highway. These higher EC results would reflect concentration of solutes in ponds during low flow periods.

The water collected from the drainage line adjacent to Rathluba (sampling location W1) west of the Bloomfield CCL area, exhibits lower pH than values recorded from other sampling sites. This drainage line carries surface flow from non-mining land and old rehabilitated mining land that may be influencing the water quality in the area.

4.10.4 Mine Water Discharge Monitoring Results

Mine water is discharged in accordance with EPL 396 condition P1.2, L2 and L3.1 that allows up to 40ML of mine water per day within water quality limits to be released, dependent on rainfall. Grab samples of the water are collected at EPA approved discharge Point 1 and at the Four Mile Creek monitoring station during each day of discharge. Samples are tested on site for pH, EC/TDS, turbidity (TSS) to ensure discharge water is within the allowed water quality limits, and samples are dispatched to a NATA registered laboratory for analysis.

A permanent monitoring station located on Four Mile Creek, approximately 500m upstream of the New England Highway also records EC and water level every 15 minutes (via pressure sensor and V-notch weir).

Discharge water quality results generally exhibited compliance with the EPL water quality criteria in EPL 396 condition L2.4 and L3.1 between 2012 and October 2015 except for the following:

- 17 November 2012 a discharge with an EC of 6010 µS/cm exceeded the EPL criteria. This incident was reported to the EPA Pollution Line (ref. Notification No. 13146).
- May 2014 surface water incident when a leak in the recycle water pipeline from the tailings dam occurred resulting in potential loss of water off site into Four Mile Creek. The incident was reported to the EPA in accordance with EPL 396 conditions.
- April 2015 water discharge during a heavy rainfall event in when a total of 425 mm of rain was received between 20 and 22 April. After 150 mm of rain had fallen and was continuing, the water storage dam started to overflow through the spillway and it was decided to continue with the controlled non-compliant discharge to prevent possible overtopping of the dam wall. On the 21 April 2015 the TSS was thought to exceed the EPL concentration limits. The suspected exceedance was reported to the EPA Pollution Line on 22 April 2015. Due to the ongoing storm activity and power failures the automatic sampler was not functional and manual collection of discharge water occurred for laboratory analysis. Analysis results for the discharge water were received on 24 April 2015 that exhibited TSS levels of 156mg/l on 21 April and 350mg/l on 22 April. It is noted that upstream samples exhibited TSS levels of 289mg/l on 22 April. While the discharge from the water storage dam was not compliant with EPL396 limits it was necessary to continue the discharge and prevent possible overtopping of the dam wall.

Table 4.10.4: Surface Water Monitoring Results Summary

Parameter	Date	Range	Average	EPL criteria
pH	2014	7.8-8.5	8.2	6.5 – 8.5
	2013	7.7-8.4	8.2	
	2012	7.8 – 8.5	8.2	
EC	2014	3860-5970	4052	6000 µS/cm
	2013	2040-5710	5387	
	2012	1710 - 4760	3569	
TSS	2014	1 – 24	9	<30 mg/L
	2013	1-27	9	
	2012	1 - 24	11	
Filterable iron	2014	<0.05	<0.05	<1 mg/L
	2013	<0.05	<0.05	
	2012	<0.05 – 0.77	<0.1	
Discharge	2014	5 – 40	28	40 ML/day
	2013	20-40	39	
	2012	40	40	

4.10.5 Conclusion

Surface Water Monitoring Compliance Status Compliant

The Bloomfield surface water quality monitoring is conducted in accordance with the Integrated Environmental Monitoring Program and the Bloomfield Water Management Plan - Surface Water Monitoring Program. The Bloomfield Surface Water Monitoring Program also has additional monitoring locations that supplement the Integrated Environmental Monitoring Program, providing adequate data for the assessment of any potential impacts from the Bloomfield mining activities on the natural waterways

Bloomfield surface water quality monitoring has demonstrated that surface water quality results in waterways potentially affected by the Bloomfield mining operations have been generally consistent with the EPL criteria for pH, EC, Total Suspended Solids and Filterable iron during 2012 and October 2015, except for one EC of 6010 µS/cm reported for the discharge on 17 November 2012 that exceeded the EPL criteria of 6000 µS/cm.

4.11 Groundwater Monitoring

Project Approval Schedule 3 condition 23]
[Statement of Commitment 17.1]

4.11.1 Groundwater Monitoring Program

A Groundwater Management Plan (including a Groundwater Monitoring Program - section 2.4) was prepared by Aquaterra, for the Bloomfield Colliery as part of the Water Management Plan. The Water Management Plan was submitted to DoP in November 2010. No response in relation to approval of the Plan had been received by Bloomfield at the date of this audit (i.e. November 2015).

4.11.2 Groundwater Monitoring

The groundwater monitoring program was described in the Groundwater Management Plan as:

> *"The groundwater monitoring program that has been operating on the Bloomfield mine since 2007 will be continued and expanded to include the neighbouring Donaldson, Abel and Tasman areas, as an integrated monitoring system covering all four sites. It will also be integrated with the surface water monitoring program.*

The groundwater monitoring program includes:

- *Quarterly measurement of water levels in the existing network of piezometers to be monitored through the life of the project.*
- *Six monthly sampling of all standpipe piezometers, for laboratory analysis of electrical conductivity (EC), total dissolved solids (TDS) and pH.*
- *Annual collection of water samples from all standpipe piezometers for laboratory analysis*
- *of a broader suite of parameters:*
- *Physical properties (EC, TDS and pH)*
- *Major cations and anions (Ca, Mg, Na, K, Cl, SO4, HCO3 and CO3)*
- *Nutrients*
- *Dissolved metals.*
- *Record pump time from the pit to estimate the volume of mine water pumped from the open cut mine."*

Groundwater impact was not identified as a significant risk in the groundwater assessment and investigations undertaken for the *Environmental Assessment - Completion of Mining and Rehabilitation,* dated November 2008. The groundwater assessment concluded that small impacts on stream base flows were predicted for Wallis and Buttai Creeks with rapid recovery post-mining, and no adverse impacts on groundwater quality were expected as a result of the completion of mining and rehabilitation at Bloomfield Colliery.

Quarterly monitoring and six monthly sampling in accordance with the Groundwater Monitoring Program was undertaken during the 2012 to October 2015 period and although groundwater depth and quality across the Bloomfield Colliery Consolidated Coal Lease site is variable, the groundwater levels, pH and EC results are relatively consistent within each piezometer location and do not demonstrate any real trends over the period.

The Bloomfield Colliery Groundwater Management Plan and monitoring program are adequate for the ongoing assessment of the Bloomfield Colliery mining activities on the local groundwater regime. (Collated data from the groundwater monitoring described in the Integrated Environmental Monitoring Program provides a perspective of the effects of mining activities on the regional groundwater).

4.11.3 Conclusion

Groundwater Monitoring Compliance Status Compliant

The Bloomfield Colliery Groundwater Management Plan and monitoring program are adequate for the ongoing assessment of the Bloomfield Colliery mining activities on the local groundwater regime. Groundwater monitoring during the 2012 to October 2015 period did not demonstrate any trends in groundwater depth or water quality. The groundwater assessment conclusions in the *Environmental Assessment - Completion of Mining and Rehabilitation,* November 2008 predicted the groundwater would demonstrate consistent quality with no real trends in exhibited in the individual groundwater bores over time as a result of the mining operations.

4.12 Surface and Groundwater Response Plan

[Project Approval Schedule 3 condition 24] and [Statement of Commitment 16.2]

4.12.1 Surface and Groundwater Response Plan

The Surface and Groundwater Response Plan was prepared as Part F of the Water Management Plan for Bloomfield Colliery by Evans and Peck, to satisfy Project Approval 07_0087 Schedule 3 condition 24. The Surface and Groundwater Response Plan was submitted to the DoP in November 2010 as part of the Water Management Plan. . No comments or response from DoP had been received at the date of this audit (i.e. November 2015).

Surface and Groundwater Response Plan section 1.3 addresses Surface Water and Stream Health Impact Assessment Criteria, and section 1.4 provides Water Quality Trigger Values that would initiate response actions under the Surface and Groundwater Response Plan.

4.12.2 Surface and Groundwater Quality Trigger Values

The proposed water quality trigger values for Buttai and Elwells Creek have been based on historic data collected over several years. The upper and lower limit thresholds have been based on the 10% and 90% percentiles of collected baseline data as per ANZECC guidelines (rounded figures). The trigger values provide an appropriate level of protection for the waterway and are reflective of the community values for the catchment areas. The trigger values will be reviewed and revised as necessary.

Table 4.12.2: Trigger Values

Location	pH	EC	TSS
Elwells Creek - WM5	5.2 to 8.0	430 to 4000	4 to 85
Buttai Creek at Lings Road	6.0 to 7.5	500 to 1200	3 to 30

4.12.3 Surface and Groundwater Response Plan Implementation

If surface water or groundwater monitoring results exhibit an exceedance of the water quality trigger values (Surface and Groundwater Response Plan section 1.4), an investigation into the potential sources and/or causes would be undertaken and response actions initiated in accordance with the following protocol:

- If an exceedance is detected the circumstances of the event will be immediately investigated including a review of relevant monitoring data, meteorological conditions etc;
- An assessment will be made to determine the reason for the exceedance, the potential magnitude of the impact and the level of future risk;
- If assessed as being caused by the mining operation, and it is further assessed to be likely to cause an adverse impact on an existing beneficial or environmental use of surface water, then an appropriate preventative and/or remedial strategy will be prepared for discussion with relevant authorities including the Department of Resources and Energy (DRE – within Department of Trade and Investment, Regional Infrastructure and Services) and the Environmental Protection Authority (EPA), which may comprise:
    - Additional monitoring including assessment of ecological aspects; ♦ Modification of mine water management procedures;
    - Modification to mine water management facilities; or (If appropriate) no change to operations.

4.12.4 Conclusion

Surface and Groundwater Response **Compliance Status** **Compliant**

The Surface and Groundwater Response Plan provides a sound outline for action in the event of exceedance of the trigger values adopted for the Bloomfield water quality parameters. Monitoring of surface water and groundwater quality in accordance with the Integrated Water Monitoring Program and Bloomfield Surface Water Monitoring Program did not exhibit results in exceedance of the trigger values during the 2012 to October 2015 period, therefore the Surface and Groundwater Response Plan was not required to be initiated in accordance with the Surface and Groundwater Response Plan protocol.

4.1 Land Management

[Project Approval 08_0087 Schedule 3 condition 26]
[Statement of Commitment 4.3]

4.13.1 Landscape Management Plan

The Landscape Management Plan (dated 15 June 2010) was prepared for Bloomfield Colliery to satisfy Project Approval 08_0087 Schedule 3 condition 26 by John Hindmarsh and Keren Halliday (experts approved by the Director-General on 16 December 2009), and submitted to DoP on 2 March 2010. A revised Plan was submitted to DoP on 15 June 2011 incorporating the Project Area approved under MOD 1, for approval. A further revision of the Land Disturbance Management Plan dated 10 October 2012 was submitted to DP&I including management of Aboriginal Heritage and Permit to Disturb. No response to the Landscape Management Plan had been received from DP&I at the date of this audit (November 2015).

The Landscape Management Plan established a framework for all rehabilitation and mine closure related issues and included an outline of the Rehabilitation Management Plan, Final Void Management Plan and Mine Closure Plan. The Rehabilitation Management Plan was submitted to DoP on 28 February 2010 (i.e. within 6 months of the Project Approval). A Final Void Management Plan was submitted to DP&I on 13 June 2012 and a Mine Closure Plan submitted to DP&I on 28 June 2012, following comments received from NSW DT&I. No response to the Landscape Management Plan had been received from DP&E at the date of this audit (November 2015).

A Land Disturbance Management Procedure (dated 10 October 2012) prepared by Bloomfield Mining Operations outlines the controls implemented to manage and record disturbance to native vegetation (if minor areas of vegetation need to be cleared to facilitate planned mining activities and related infrastructure), minimise any associated risk to native fauna populations, and control and record disturbance to Aboriginal artefacts (if encountered).

4.13.2 Conclusion

Landscape Management	Compliance Status	Administrative Non-Compliance

The Landscape Management Plan (dated 15 June 2010) was prepared for Bloomfield Colliery to satisfy Project Approval 08_0087 Schedule 3 condition 26 by John Hindmarsh and Keren Halliday (experts approved by the Director-General on 16 December 2009), and submitted to DoP on 2 March 2010. A revised Plan was submitted to DoP on 15 June 2011 incorporating the Project Area approved under MOD 1, for approval. A further revision of the Land Disturbance Management Plan dated 10 October 2012 was submitted to DP&I including management of Aboriginal Heritage and Permit to Disturb. No response to the Landscape Management Plan had been received from DP&I at the date of this audit (November 2015). The Landscape Management Plan establishes a framework for all rehabilitation and mine closure related issues and included an outline of the Rehabilitation Management Plan, Final Void Management Plan and Mine Closure Plan.

4.14 Rehabilitation

[Project Approval 08_0087 Schedule 3 condition 27]
[Statements of Commitment 4.1 to 4.4]

4.14.1 Rehabilitation Management Plan

A Rehabilitation Management Plan was prepared to satisfy Project Approval 08_0087 Schedule 3 condition 27 and submitted to DoP on 28 February 2010 (i.e. within 6 months of the Project Approval). A revised Rehabilitation Management Plan including the Project Area as approved by the Section 75W Modification (dated 16 May 2011), was

prepared and submitted to the DOP on 15 June 2011 and re-submitted on 13 March 2012. No response from DP&I re the Rehabilitation Management Plan had been received by Bloomfield at the date of this audit (November 2015).

The Rehabilitation Management Plan is being implemented and includes the Rehabilitation Aim and Objectives (page 9) and Appendix A – Rehabilitation Objectives (page A.4); the proposed approach to rehabilitation (page 8) and Table 2; rehabilitation Indicators and completion criteria (page 10) and assessment program (page 14); and rehabilitation monitoring protocol (page 13) and methodology (page A.9). The Rehabilitation Management Plan is also described with the mining sequences in the Bloomfield Colliery Mining Operations Plan 2011 to 2016.

4.14.2 Rehabilitation Status

Rehabilitation of the Bloomfield Project Area is occurring progressively throughout the life of the Bloomfield Project. Bloomfield is responsible for land rehabilitation within all parts of the Bloomfield Project Area, with the exception of the final void (rehabilitation of this area will occur at the completion of CHPP waste and tailings disposal under the Abel Mine Project Approval 05_0136). The post-mining rehabilitation strategy (including the final void) will incorporate Abel Mine and Bloomfield CHPP requirements, as the placement of coarse rejects and tailings and subsequent rehabilitation will continue operating after the completion of mining for the Bloomfield Project area.

The majority of the Bloomfield Project CCL area is relatively undisturbed remnant native bushland. To date 428ha of the Bloomfield CCL area has been rehabilitated. The rehabilitation of the Bloomfield site is progressing with the finished areas exhibiting established grass and vegetative cover, successful erosion control and drainage lines established for control of runoff and direction to Lake Kennerson or Lake Foster.

The program over the 2012 to 2015 period has resulted 30ha of disturbed land being rehabilitated, as only small areas of disturbed land were available for rehabilitation. The expansion of overburden emplacement over some areas previously rehabilitated has also resulted in an apparent reduction in the planned total rehabilitated area.

Table 4.14.2: Bloomfield Rehabilitation Summary 2012 - 2015

	2015	2014	2013	2012
Infrastructure Area	72	72ha	72ha	73.3ha
Active Mine Area	75ha	78ha	73ha	73.8ha
Waste Emplacements	136ha	140ha	152ha	150 ha
Tailings Emplacement	87ha	87ha	87ha	86.8ha
Total Rehabilitation	463ha	456ha	448ha	432.9ha
Pasture and grasses	458ha	451ha	443ha	427.9ha
Trees and crops	5ha	5ha	5ha	5ha

Rehabilitation Plans in the 2012 to 2015 AEMR's provide an overview of the site showing areas previously rehabilitated, areas where overburden emplacement has occurred on previously rehabilitated land (e.g. northeast Creek Cut), rehabilitation undertaken during the annual reporting period, shaped areas ready for rehabilitation, unshaped areas (active dumps), and active mining areas (as shown in Figure 4.14.2..

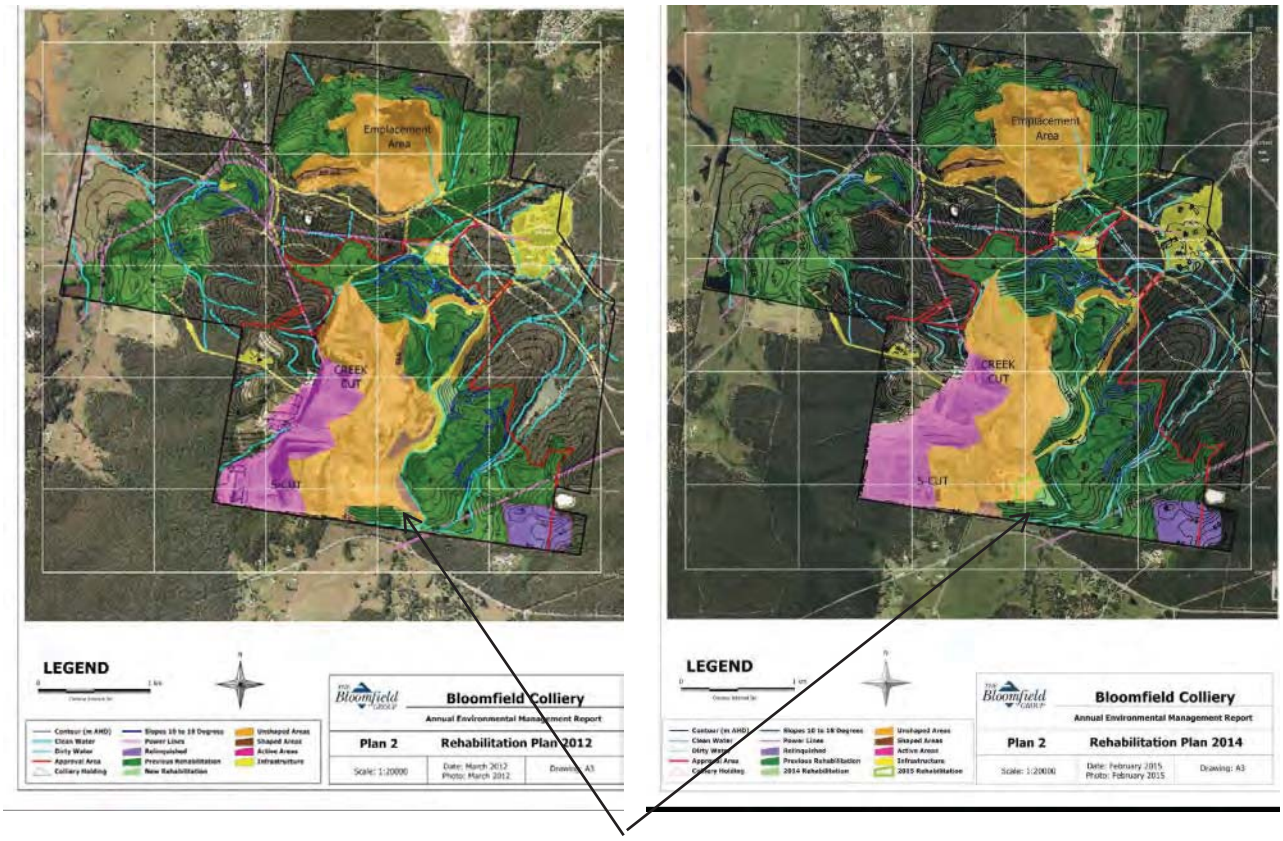


Figure 4.14.2: Bloomfield Project Rehabilitated Areas 2012 and 2015 (area reduced by overburden emplacement)

4.14.3 Conclusion

Rehabilitation	Compliance Status	Administrative Non-Compliance

The Rehabilitation Management Plan was prepared to satisfy Project Approval 08_0087 Schedule 3 condition 27 and submitted to DoP within 6 months of the Project Approval. A revised Rehabilitation Management Plan including the Project Area as approved by the Section 75W Modification (dated 16 May 2011), was prepared and submitted to the DOP on 15 June 2011 and re-submitted on 13 March 2012. No response from DP&E re the Rehabilitation Management Plan had been received by Bloomfield at the date of this audit (November 2015).

The Bloomfield Colliery Rehabilitation Management Plan and Mining Operations Plan 2011-2016 provide a satisfactory strategy and rehabilitation plans for the rehabilitation of the disturbed areas of the Bloomfield CCL to meet the final land use for the Bloomfield Colliery disturbed and surrounding areas.

The rehabilitation of the Bloomfield site is progressing generally in accordance with the Rehabilitation Management Plan (dated 15 June 2011) and the Mining Operations Plan (2011-2016), with the finished areas exhibiting established grass and vegetative cover, and successful erosion control and drainage lines established for control of surface runoff to Lake Kennerson or Lake Foster.

4.15.1 Final Void Management

[Project Approval Schedule 3 condition 28]
[Statements of Commitment 5.1 and 5.2]

4.15.2 Final Void Management Plan

The Final Void Management Plan (dated 13 June 2012) was prepared to satisfy the requirements of Project Approval 07_0087 Schedule 3 condition 28, and was submitted to the DoP on 30 June 2012, as part of the Bloomfield Landscape Management Plan. No response to the Landscape Management Plan had been received from DP&I at the date of this audit (November 2015). The Final Void Management Plan includes the location of the final void (page7); Design Criteria for Final Void – Groundwater Model (page 8); monitoring (page 11), and actions and measures to be implemented in the event of any potential impacts of the final void (page 9).
The Bloomfield CHPP, rail loading facility and associated infrastructure will continue to operate after the Bloomfield Project is scheduled to be completed. A final void will be retained on the Bloomfield site after the completion of Bloomfield Project mining. The final void will be at the northern extension of S Cut where it will join with Creek Cut and this void will remain as part of an active disposal site for reject material from the Bloomfield CHPP (this continued use of the void as part of an active disposal site is approved under the Abel Project Approval).

The requirements of Project Approval 07_0087 Schedule 3 condition 28 for the final void management and ongoing use will be activated after the completion of the Bloomfield Project mining in years 10 to-12 (approximately 2017 to 2020).

Bloomfield plans to rehabilitate the reject emplacement areas, once capacity has been reached, by shaping to a stable, undulating, self-draining landform with mixed cover of pasture and native vegetation. These plans may in future be influenced by the needs of other projects that utilise the final void.

4.16 Mine Closure Plan

[Project Approval 07_0087 Schedule 3 condition 29]

The Mine Closure Plan (dated 28 June 2012) was prepared to satisfy Project Approval 07_0087 Schedule 3 condition 29 in consultation with DRE and Council and submitted to the DoP. No response to the Landscape Management Plan (which includes the Mine Closure Plan) had been received from DP&E at the date of this audit (November 2015).

The Mine Closure Plan includes future land use options including integration with adjacent mine land (page 8-9) and reference to Lower Hunter Regional Strategy (DoP, 2006), The Ashtonfield Agreement, and Stony Pinch Consortium; socioeconomic effects of mine closure (page 10); and post-closure monitoring and management measures (page 11).

The requirements of Project Approval 07_0087 Schedule 3 condition 29 for the mine closure management and ongoing land use will be activated after the completion of the Bloomfield Project mining in years 7 to 10.

4.17 Biodiversity

[Project Approval Schedule 3 conditions 29A to 29C and 30]

4.17.1 Biodiversity Management Plan

[Project Approval Schedule 3 conditions 29A to 29C and 30]

The Biodiversity Offset Management Plan (dated 20 October 2011) was prepared to satisfy Project Approval 07_0087 Schedule 3 conditions 29A to 29C and 30 and submitted to DP&I on 7 November 2011 for approval (i.e. compliant with condition 29B that required the Biodiversity Offset Management Plan to be submitted no later than 31 December 2011). No response to the Biodiversity Offset Management Plan had been received from DP&I at the date of this audit

(November 2015). The Biodiversity Offset Management Plan was resubmitted to the DP&I on 5 February 2013. No response had been received from DP&E at the date of this audit (November 2015).

The Biodiversity Offset Management Plan is generally consistent with the OEH *"Principles for the use of biodiversity offsets in NSW"* dated 17 June 2011 and includes Short, Medium and Long-term Management Measures (pages 6-7); Performance and Completion Criteria (page 7); and measures that would be implemented within the Biodiversity Offset Area for regeneration (page 8), protection, conservation and management (page 8), weeds and feral pests management (page 8), public access (page 9), and bushfire management (page 9).

4.17.2 Conservation Bond

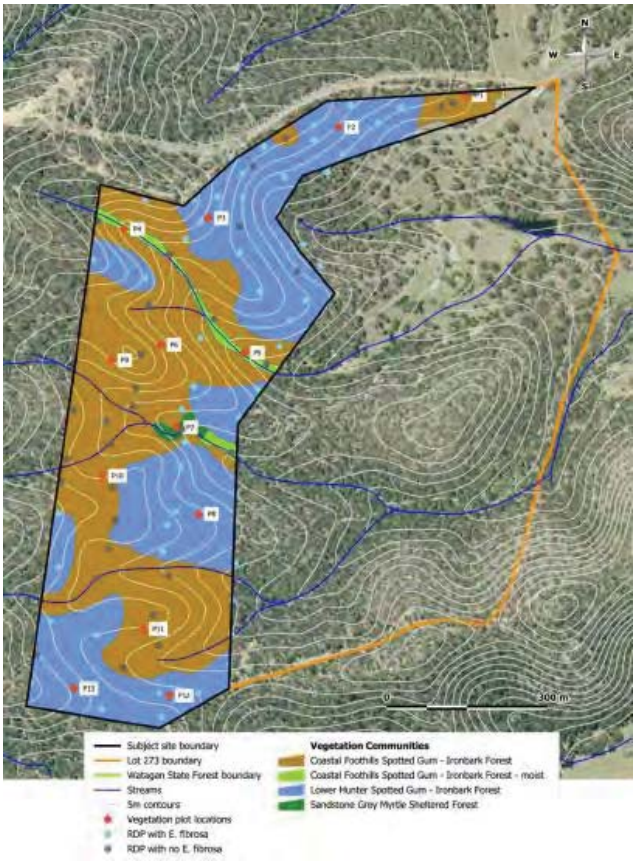


Figure 4.17.2: Biodiversity Offset Area (Part Lot 237 DP 1017683 Thursbys Road, Congewai) (Project Approval 07-0087 Appendix 6)

A Certificate of Title for Lot 2371 DP1170348, LGA Cessnock, Parish of Ellalong, County of Northumberland, was registered on 5 January 2012 to Four Mile Pty Ltd with Second Schedule condition of Restriction of Use of Land. The land defined in the Certificate of Title is consistent with Appendix 6 of the Project Approval.

Bloomfield received approval from DoP on 22 April 2010 in relation to Project Approval Schedule 3 condition 30 for the provision of funding for conservation projects in the Cessnock local government area. The approved funding was provided to the NSW Land and Property Management Authority for the Stanford Merthyr Crown Reserve Rehabilitation Project.

Contributions of $20,000 for the Stanford Merthyr Crown Reserve were made by Bloomfield in accordance with the DoP approval of the funding proposal.

4.17.3 Conclusion

Biodiversity Offset **Compliance Status** **Compliant**

The Biodiversity Offset Management Plan is generally consistent with the OEH *"Principles for the use of biodiversity offsets in NSW"* dated 17 June 2011. The Biodiversity Offset Management Plan was submitted to the DP&I on 5 February 2013. No response had been received from DP&E at the date of this audit (November 2015). The provision of a Conservation Bond is not due until 6 months after approval of the Biodiversity Offset Management Plan by DP&E. The Conservation Funding requirement (Project Approval 07_0087 Schedule 3 condition 30) has been met and the Certificate of Title for Lot 2371 DP1170348, LGA Cessnock, Parish of Ellalong, County of Northumberland, for the offset area registered on 5 January 2012 to Four Mile Pty Ltd.

4.18 Aboriginal Heritage

[Project Approval Schedule 3 condition 31]
[Statement of Commitments 10.1 to 10.5]

4.16.1 Aboriginal Cultural Heritage Management Plan

The Aboriginal Cultural Heritage Management Plan was prepared by South east Archaeology Ltd for Bloomfield Colliery and reviewed and endorsed by the Mindaribba Local Aboriginal Land Council (LALC). The section on Aboriginal Community (page 7) provides for ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on the Bloomfield site; and Onsite Aboriginal Heritage (pages 7 to12) provides guidance in relation to the measures that would be implemented to protect identified Aboriginal sites, and record and protect any new Aboriginal objects or skeletal remains are discovered during the project activities. The Aboriginal Cultural Heritage Management Plan was submitted to and endorsed by DECCW, and approved by the Director-General of DoP on 27 May 2010.

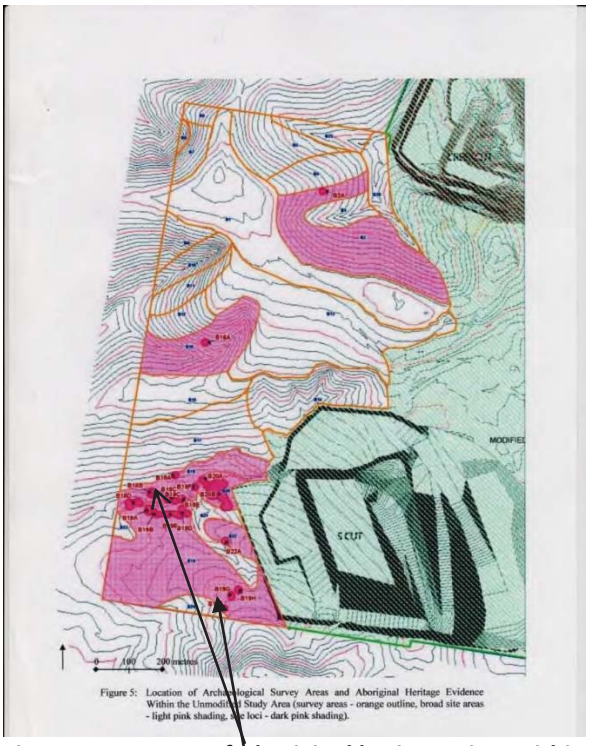


Figure 5: Location of Archaeological Survey Areas and Aboriginal Heritage Evidence Within the Unmodified Study Area (survey areas - orange outline, broad site areas - light pink shading, site loci - dark pink shading).

The Aboriginal sites identified in the Part 3A Environmental Assessment of Completion of Mining and Rehabilitation (November 2008) were salvaged in accordance with the Aboriginal Cultural Heritage Management Plan.

Representatives from Mindaribba LALC participated and monitored the process ahead of preparation any land areas for mining activities. Thirty-four (34) artefacts were salvaged and are being stored in the Bloomfield offices for the Mindaribba LALC.

No incidents relating to Aboriginal heritage occurred during the 2012 to 2015 period, and the requirements of the Aboriginal Cultural Heritage Management Plan will continue to be implemented including management of identified sites/areas.

Figure 4.11: Areas of Aboriginal heritage sites within the undisturbed areas of the Bloomfield Project where salvage of 34 artefacts occurred.

4.16.2 Conclusion

Aboriginal Heritage Management **Compliance Status** **Compliant**

The Aboriginal Cultural Heritage Management Plan prepared by South east Archaeology Ltd for Bloomfield Colliery was reviewed and endorsed by the Mindaribba Local Aboriginal Land Council (LALC) and submitted to and endorsed by DECCW, and approved by the Director-General of DoP on 27 May 2010.

No incidents relating to Aboriginal heritage occurred during the 2012 and 2015 period, and the requirements of the Aboriginal Cultural Heritage Management Plan will continue to be implemented including management of identified sites/areas.

4.17 Energy Savings Action Plan

[Project Approval Schedule 3 condition 33]

[Statement of Commitment 14.1]

4.17.1 Energy Saving Action Plan

[Project Approval Schedule 3 condition 33]

[Statement of Commitment 14 Greenhouse Gas Monitoring and Energy Efficiency]

The Energy Saving Action Plan was prepared in accordance with the requirements presented in the *Guidelines for Energy Savings Actions Plans* NSW Department of Energy, Utilities and Sustainability (DEUS) (October 2005). The Energy Saving Action Plan was implemented by Bloomfield as part of the Environmental Management System for the project. The Energy Saving Action Plan was submitted to the DoP within 6 months of the date of the Project Approval.

The objectives of the Energy Saving Action Plan are to:

- ensure compliance with the project approval conditions;
- reduce greenhouse gas emissions from the project area; and
- ensure annual reporting of greenhouse gas emissions and tracking of energy savings opportunities.

The ongoing effectiveness and efficiency of the Energy Savings Action Plan is monitored as part of normal operations management. Ongoing review of the strategy occurs as part of the Systems Review Management System.

4.17.2 Energy Efficiency Opportunities

An Energy Efficiency Opportunities (EEO) Report for the 1 July 2006 to 30 June 2011 period was prepared for the Australian Government Department of Resources, Energy and Tourism, for Bloomfield Collieries Project.. Significant opportunities and savings identified through the annual EEO assessment were:

- Recycled waste oil used in explosives at the Bloomfield Collieries (and Rix's Creek Mine site) has resulted in a direct saving of 313,000 litres of distillate not being purchased for use in explosives.
- LED light replacement trail program had a minor energy saving of approximately 1.7GJ per annum per bulb. This program is on a continual rollout. Energy saved across the project 28GJ, and greenhouse gas abated (CO2-e) 7 tonnes.
- Investigation into a trial of lighter haul truck bodies indicated a 6.5% fuel saving advantage.
- Replace older 992C Front-end-loader with 992K current model. Significant capital outlay but with an efficiency improvement that relates to an overall energy savings to perform the same work. Energy saved 296GJ, and greenhouse gas abated (CO2-e) 23 tonnes.
- Replace 992 Front-end-loader (FEL) with smaller unit IT62. Replace the existing FEL used on load the stemming truck with a smaller unit better matched to the scale of the operation. Energy saved across the project 1536GJ, and greenhouse gas abated (CO2-e) 119 tonnes.

4.17.3 Conclusion

Energy Saving	Compliance Status	Compliant Ongoing

Bloomfield has implemented the energy efficiency opportunities program demonstrating some significant energy savings in their annual Energy Efficiency Opportunities Report to the Australian Government Department of Resources, Energy and Tourism.

4.18 Waste Minimisation

[Project Approval Schedule 3 condition 34]

Management of waste from the Bloomfield site is currently contracted to a licensed waste transport contractor, supply 1.5m^3 and 3m^3 waste bins for the segregation, collection and disposal of:

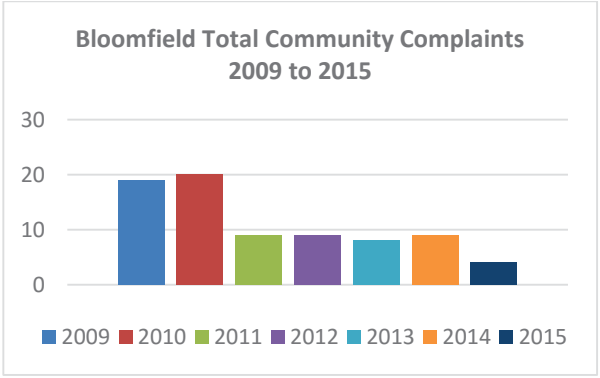
- General waste - placed in 1.5m^3 and 3m^3 waste bins are collected by a licensed contractor for recycling and/or disposal;
- Waste Paper: During the reporting period recycling bins were installed for disposal of paper and cardboard. Waste paper and cardboard waste is placed in 1.5m^3 and 3.0m^3 bins and collected by licensed waste contractor for disposal.
- Waste oil - from scheduled maintenance of mining equipment and the workshop oil separator is collected in a storage tank and periodically evacuated for reprocessing and re-use by Australian Waste Oil Refineries. The waste contractor re-synthesise the waste oil to a fuel oil product for re-use in ANFO explosive for blasting operations.
- Oil filters - Used oil filters are placed in a 3m3 bin and collected by licensed waste contractor for disposal.
- Waste metal - Bloomfield has a high rate of on-site re-use of scrap steel. If no longer suitable for re-use on site, scrap metal is collected in designated skips and sold for recycling.
- Waste tyres - Discarded earthmoving machinery tyres are used on site where possible for the protection of the base of concrete plinths and metal columns located in areas where heavy vehicles are operated. Waste tyres surplus to use on-site are disposed of progressively in the open cut void and buried. The void is progressively backfilled with overburden and rehabilitated in the normal process.
- Paint Waste: used paint drums are placed in a 1.5m^3 bin and collected by licensed waste contractor for disposal

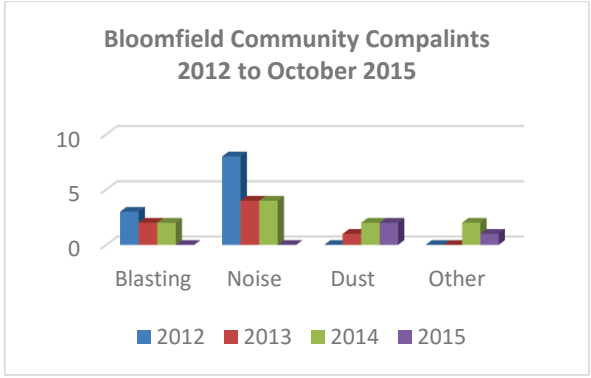
The management of waste materials on site addresses the reuse, recycle, disposal objectives of the Waste Management Plan. These are nominated areas for storage of waste and redundant equipment is stored near the CHPP and maintenance workshops for reuse where practicable and salvage of spare parts for maintenance.

4.19 Complaints

Bloomfield retains records of complaints on a Complaints Register in accordance with the Environmental Management Strategy page 10, with the following information recorded:

- date / time of the complaint;
- method by which the complaint was made (i.e. email, Bloomfield complaints telephone line, EPA Pollution Line etc);
- details of the complainant;
- nature of the complaint;
- action taken in relation to the complaint.





The total number of community complaints continue to remain low over the 2013 to 2015 period. The community complaints recorded between 2012 and 2015 are shown in the following graphs.

Blast Complaints

Complaints received between 2013 and 2015 related to blasting were investigated and all blast monitoring results were within the approved criteria:

Date	Location	Complaint / Action
31 Jan 2015	Black hill	Enquiry about blast on the 13th January. Mine Manager stated that blasting is monitored and was within limits and offered to install a blast monitor at her residence. Offer was not taken up by complainant
26 Nov 2014	Buchanan	Complained about blast impact knocked a tile off her bathroom wall. Environmental Officer responded via email stating that blast was within limits and offered to install blast monitor at complainant's residence. No reply received from complainant.
27 Oct 2014	No location	Complained about blast on morning of the 27th October. Blast within limits.

All complaints related to blasting between May 2012 and October 2015 were investigated and blast monitoring results indicated that the overpressure and vibration recorded for each blast were less than the approval criteria.

Noise Complaints

A small number of noise complaints (15) were received between 2009 and 2012, the majority of which (13) were lodged by a single complainant. The other two (2) complaints were related to noise from the CHPP hopper operations. During 2013 six (6) noise complaints were received from Buttai (2), Ashtonfield (2) and Thronton.

Date	Location	Complaint / Action
3 Mar 2015	Buttai	Dump trucks using a haul road that took them close to the southern boundary. Dump trucks made to use alternative haul road at night to shield neighbours from noise.
28 Jul 2014	Buttai	Complaint concerning mining noise of an evening during previous week. No action taken due to delay between the issue and complaint.
8 Jun 2014	Buttai	Complaint about noise from washery during early hours of Sunday 8/6/14. Determined that noise most likely to be track slap noise from reversing dozer. Nightshift operators instructed only to use first gear while reversing down stockpiles at night.
24 Mar 2014	Ashtonfield	Complaint about truck grinding noise from washery during night of 24/3/14. Mine Manager committed to undertake additional evening/night noise monitoring in Ashtonfield. Additional monitoring results were within allowable limits.
11 Mar 2014	Ashtonfield	Complaint about reversing beepers on loaders. Washery was not operating at the time of the complaint, however loader on top pad was operating. Additional evening/night noise monitoring results demonstrated noise within allowable limits

Dust Complaints

One (1) dust complaint was received from the EPA Pollution Line on 22 October 2012. The EPA advised no action was required due to lack of detail from the complainant about the dust issue that was indicated to have occurred on the 13 and 16 October 2012. One dust complaint was received in August 2013 from a Blackhill resident and a complaint was received in October 2015 in relation to a short duration visible dust generation event resulting from strong winds and a storm front.

Date	Location	Dust Complaint / Action
28 Oct 2015	Ashtonfield	Complaint about dust emanating from washery. Dust was due to windy southerly change on afternoon of 26/10/15 just prior to commencement of a rain event.

Date	Location	Dust Complaint / Action
		Weather station data showed winds peaked (52 kmh) for 10-20 minute period when change arrived.
18 Sep 2014	Black Hill	Comment about unusually loud noise from S-Cut around 9pm on the night of 17/9/14.
27 Aug 2014	Ashtonfield	Complaint about revving truck or loader noise from washery during night of 27/8/14. Modified operations on product coal stockpile pad. Stockpile face was turned 90 degrees so stockpile was between loader and Ashtonfield.
29 Aug 2103	Black Hill	Complaint about short duration visible dust generation event resulting from strong winds and a storm front.

Other Complaints

Four complaints were received between 2012 and 2015, related to dogs coming through bushland on the Bloomfield site to a property at Loth Park (2). Bloomfield organised a baiting program in response to the complaint. Two other complaints related to traffic on John Renshaw Drive not related to Bloomfield operations.

Date	Location	Complaint / Action
3 Sep 2015	No location provided	Passer-by complained of odour from the mine whilst driving along John Renshaw Drive. Determined the odour related to a small heating area in back fill. Continued clay capping to seal area.
13 Nov 2014	Louth Park	Comment about wild dogs seen leaving Bloomfield lease area. Regional baiting program being organized by Hunter Land Services.
28 Apr2014	Black Hill	Complained about odour believed to coming from the mine.

4.19.2 Conclusion

Community Complaints **Compliance Status** **Compliant Ongoing**

Community complaints are recorded in the Bloomfield Complaints Register in accordance with the Environmental Management Strategy page 10, with the location of the com plaint and action taken by Bloomfield in response to each complaint recorded. The total number of community complaints continue to remain low over the 2013 to 2015 period.

5. Summary of Compliance Status

The Bloomfield Colliery operations demonstrated a high level of compliance with the Project Approval, Environment Protection Licence and Consolidated Coal Lease conditions.

The Bloomfield response to recommendations made in the Independent Environmental Audit 2012 were addressed in a letter to the DP&I dated 17 May 2013, in accordance with Project Approval Schedule 5 condition 7.

Table 5: Bloomfield Response to Recommendations in Audit Report - Project Approval Schedule 5 Condition 7

Parameter	IEA Recommendation	Bloomfield Response	Action
Noise	It is recommended that revision of the unattended monitoring protocol in the Noise Monitoring Program should occur with the aim of identifying a more suitable logger location that would be more representative of noise from the mine operations. This may provide data more suitable for the purposes of calibrating the Noise Compliance Model in the Noise Monitoring Program.	Prior to conducting the next round of quarterly noise monitoring the SLR noise consultants, SLR have committed to revising the unattended noise monitoring program to determine what appropriate amendments can be made. In accordance with Condition 4 of Schedule 5 Bloomfield will review, and if necessary revise, the Noise Monitoring Program and resubmit to the Department for approval.	The Noise Monitoring Program was revised in November 2013 and the unattended monitoring locations reviewed and the Location N was replaced by a site at 699 John Renshaw Drive closer to the Bloomfield operations.
Blasting	The design and planning of blast events should follow the Blast Monitoring Program and Explosives Management Plan procedure/processes to minimise the potential for exceeding the blast overpressure criteria.	All blasts are conducted in accordance with the Blast Monitoring Program and Explosives Management Plan procedure/processes. In addition predictive meteorological modelling software is used to assist in blasting operations.	The blasts conducted between 2013 and 2015 have occurred in accordance with the Blast Monitoring Program and all blast events between 2013 to 2015 were compliant with the overpressure and vibration criteria.
	As providing an accurate up-to-date blasting schedule on the web is difficult to variables (e.g. mine planning and resource delineation, coal requirements, market variability, meteorological conditions, etc), it is recommended that Bloomfield consult with DP&I to have this condition revised to remove this requirement.	As noted in the auditor's comments an accurate up to date blasting schedule on the web is difficult. This is mainly due to meteorological conditions which means blasting decisions are often made on the morning of a proposed blast. However, by the end of May, Bloomfield will have a schedule on the website which will be kept as up to date as possible.	Bloomfield provide an indicative blasting schedule on their website each week. It is noted that the blasting dates and times are subject to change due to meteorological conditions.
Erosion and Sediment Control Plan	To demonstrate consistency with the Appendix C of Managing Urban Stormwater: Soils and Construction, Volume2E Mines and Quarries guideline, reference to other relevant Bloomfield Colliery document sections should be included in any future revision of the Erosion and Sediment Control Plan.	In accordance with Condition 4 of Schedule 5 Bloomfield will review, and if necessary revise, the Water Management Plan and resubmit to the Department for approval.	The Water Management Plan including the Erosion and Sediment Control Plan was revised on the 18 September 2013 and submitted to the DP&I.

Parameter	IEA Recommendation	Bloomfield Response	Action
Annual Review	The annual reporting of environmental performance should follow the requirements of Project Approval Schedule 5 condition 3 for the format of future Annual Review Reports, by including trends in monitoring data, and identify any discrepancies between the predicted and actual impacts of the project from the EA and analyse the potential cause of any significant discrepancies where relevant.	Future AEMR's will contain further analysis of data trends and identification and analysis of any discrepancies between predicted and actual impacts of the project from the EA.	The AEMR's produced for 2013 and 2014 have included an analysis of data trends and a statement of identified discrepancies with the EA (where relevant).
DP&I / DP&E Approval of EMPs	Approval of EMPs Bloomfield Colliery should correspond with the DP&I to gain approval for the environmental management plans and environmental monitoring programs submitted to DP&I in accordance with the Project Approval conditions, to ensure full compliance with the requirements of the relevant conditions.	Correspondence has been received from DP&I, dated 13 May 2013, requesting a review of the management plans in accordance with Condition 4 of Schedule 5 and requested re-submission of the plans to the Department for approval. Bloomfield will resubmit the plans in accordance with Condition 4 of Schedule 5.	Bloomfield re-submitted the Management Plans to DP&I as requested. Further conversation with DP&E in September 2015 resulted in an email from Bloomfield to DP&E tabulating the date of submission of the Management Plans to the Department for follow-up on the approval status.

Each of the recommendations in the 2012 Independent Environmental Audit have been actioned and address the intent of the recommendations made by the auditor.

6. Conclusions and Recommendations

The Independent Environmental Audit of the Bloomfield Project was conducted in November 2015 in accordance with the requirements of Project Approval 07_087 Schedule 6 condition 6.

The Bloomfield Colliery operations demonstrated a high level of compliance with the Project Approval, Environment Protection Licence and Consolidated Coal Lease conditions. The non-compliance identified in the audit findings were mainly Administrative Non-Compliances related to documentation, and two low risk Non-compliances related to noise:

Administrative Non-Compliances

Following the granting of the Project Approval 07_087 for the Bloomfield Colliery Project, environmental management plans and monitoring programs were prepared to satisfy the Project Approval conditions and submitted to DoP/DP&I in the required time frame in each condition, for approval by the Director-General.

No response had been received by Bloomfield Colliery from DP&I / DP&E for the Environmental Management Strategy, Air Quality Monitoring Program, Blast Monitoring Program, Water Management Plan, Landscape Management Plan, Rehabilitation Management Plan, Final Void Management Plan, Mine Closure Plan, Biodiversity Offset Management Plan or Energy Saving Action Plan at the date of this Independent Environmental Audit (November 2015).

Bloomfield Colliery has been operating in accordance with the developed environmental management plans and monitoring programs prepared to satisfy the requirements of the Project Approval conditions since their preparation and submission to the DoP/DP&I.

This audit of the Bloomfield operations has concluded that the environmental management plans and monitoring programs have been implemented and are satisfactory for the protection of the environment and community from the potential impacts of the Bloomfield Colliery Project operations. Although no response had been received from DoP/DP&I/DP&E at the date of this Independent Environmental Audit (November 2015), the auditor considers the environmental management plans and monitoring programs to be adequate for the management of the Bloomfield Project activities.

As the management plans and monitoring programs had not been approved by DoP/DP&I/DP&E, the relevant Project Approval conditions are ranked as Administrative Non-Compliances (i.e. A technical non-conformance with a condition of the consent that would not result in any risk or material harm to the environment) in accordance with the DP&E Independent Audit Guideline October 2015).

Table 5: Management Plans and Monitoring Programs Awaiting DP&E Response of Approval

Schedule/ condition	Project Approval Condition	Comment	Status
3/13	The Proponent shall prepare and implement a Blast Monitoring Program for the project to the satisfaction of the Director-General……	A Blast Monitoring Program was prepared and submitted to the DoP on 24 February 2010. DoP provided comments on 24 April 2010 and a revised Final Blast Monitoring Program incorporating the DoP comments was completed on 9 August 2011. The Blast Monitoring Program was further revised on 31 May 2012.	**Awaiting DP&I Approval**
3/16	The Proponent shall prepare and implement an Air Quality Monitoring	An Air Quality Monitoring Program was prepared in consultation with OEH	**Awaiting DP&I Approval**

Schedule/ condition	Project Approval Condition	Comment	Status
	Program for the project to the satisfaction of the Director-General.	and submitted to the DoP on 24 February 2010. DoP provided comments on 24 April 2010 and a revised Final Air Quality Monitoring Program incorporating the DoP comments was completed on 9 August 2011. The Air Quality Monitoring Program was further revised on 31 May 2012.	
3 / 19 to 24	The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General.	The Water Management Plan was prepared in consultation with OEH (EPA) and NOW and submitted to the DoP by 5 April 2010. The Water Management Plan includes the Site Water Balance, Erosion ns Sediment Control Plan, Surf ace Water Monitoring Program, Groundwater Monitoring Program and Surface and Groundwater Response Plan. The Water Management Plan was revised and resubmitted to DP&I in May 2012.	**Awaiting DP&I Approval**
3/26	The Proponent shall prepare and implement a detailed Landscape Management Plan for the project to the satisfaction of the Director-General and DRE.	The Landscape Management Plan was submitted to DoP on 3 March 2010 for approval. Plan was revised and resubmitted to the DoP on 4 November 2011, and further revised and submitted to DP&I on 13 June 2012 (with Final Void Management Plan).	**Awaiting DP&I Approval**
3/27	The Rehabilitation Management Plan must include: a) the rehabilitation objectives for the site; b) a description of the short, medium, and long term measures that would be implemented to: • rehabilitate the site; and • manage the remnant vegetation and habitat on the site	A Rehabilitation Management Plan was submitted to DoP on 28 February 2010 (i.e. within 6 months of the Project Approval). The Landscape Management Plan submitted to DoP on 3 March 2010 was revised and resubmitted to the DoP on 4 November 2011, and a further revision and submitted to DP&I on 13 June 2012.	**Awaiting DP&I Approval**
3/28	The Final Void Management Plan must: a) justify the final location and future use of the final void; b) incorporate design criteria and specifications for the final void……	The Final Void Management Plan was prepared part of the Landscape Management Plan and sub mitted to DP&I on 13 June 2012 as part of the Landscape Management Plan.	**Awaiting DP&I Approval**
3/29	The Mine Closure Plan must: a) be prepared in consultation with DRE and Council; b) define the objectives and criteria for mine closure	The Mine Closure Plan was prepared part of the Landscape Management Plan and submitted to DoP on 28 June 2012.	**Awaiting DP&I Approval**
3/29B	By 31 December 2011, the Proponent shall prepare and implement a Biodiversity Offset Management Plan	The Biodiversity Offset Management Plan was prepared and submitted to	**Awaiting DP&I Approval**

Schedule/ condition	Project Approval Condition	Comment	Status
	to the satisfaction of the Director-General. ……	DP&I on 7 November 2011 for approval.	

Recommendation:
It is recommended that Bloomfield continue to consult with DP&E to obtain approval of the management plans and monitoring programs that have been prepared in accordance with the Project Approval conditions to satisfy the requirements of each condition and eliminate the Administrative Non-Compliance that is a s a result of no DP&E response to the documents submitted.

Low Risk Noise Exceedance

Noise monitoring conducted between 2013 and 2015 in accordance with the Bloomfield Noise Monitoring Program and the Integrated Environmental Monitoring Program demonstrated general compliance with the operational noise impact assessment criteria. Two noise exceedances were recorded during the 2013 to 2015 period:

Date	Exceedance	Response	Status
Quarterly noise monitoring (June 2013)	An exceedance of the noise criteria at one privately owned property M located to the south of the Bloomfield site on John Renshaw Drive (daytime exceedance 8dBA and evening 2dBA).	In response to the monitoring results Bloomfield re-assessed the timing of switching from the day time dump location operations to a night time dump location that reduced exposure of the receiver to noise emitted from the waste emplacement area.	Non-compliant (Low risk)
Quarterly noise monitoring (May 2015)	An exceedance of the noise criteria was recorded at two privately owned properties to the south of the Bloomfield site on John Renshaw Drive (M daytime exceedance 1 dBA; and location N evening 2dBA and night-time 6dB$L_{A1(1minute)}$).	The cause of the noise exceedance was haul trucks being parked on a high stockpile dump at the end of afternoon shift. In response Bloomfield has put in place measures to prevent haul trucks being parked up on high dumps at the end of shifts.	Non-compliant (Low risk)

The action taken by Bloomfield Colliery operations reduced the potential for re-occurrence of the noise exceedance at privately owned residences M and N.