



RIXS CREEK MINE - CONTINUATION OF MINING PROJECT

Environmental Impact Statement

Response to Submissions

Prepared for
The Bloomfield Group
Four Mile Creek Road
Ashtonfield | NSW | 2323
Australia



Response to Submissions Report

SSD_6300 Rix's Creek Mine Continuation Project

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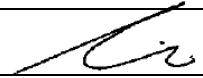
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Executive Summary

Introduction

Bloomfield Collieries Pty Ltd (the Proponent) is a subsidiary of The Bloomfield Group, which owns and operates the Rix's Creek Mine (the Mine), an open cut coal mine in the Hunter Valley Coalfields of NSW. The Proponent is seeking approval for the continuation of existing multi-seam benching open cut mining operations, the Rix's Creek Mine Continuation of Mining Project (the Project), within Coal Lease (CL) 352 and Mining Lease (ML) 1432. The Project would allow the Mine to continue its open cut mining operations and utilisation of existing mine infrastructure to process up to 3.6 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal beyond the life of its current consent, extending the life of mining until approximately 2038. The Project also includes a new mine lease area (currently known as Mine Lease Application Area (MLA) 487) to the west of the existing ML to accommodate the proposed new overburden emplacement area.

Approval for the Project is being sought as State Significant Development (SSD) under Division 4.1, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project meets the SSD requirements set out in Schedule 1, Clause 5 of the *State Environment Planning Policy (State and Regional Development) 2011*, being development for the purpose of coal mining. The Project is declared to be SSD for the purposes of the EP&A Act and the Minister for Planning is the approval authority. For large coal mining projects however the Minister has delegated the planning approval powers to the NSW Planning Assessment Commission (PAC). The Project will be subject to an assessment by the PAC under Division 4.1, Part 4 of the EP&A Act.

Environmental Impact Statement

In accordance with the requirements of the EP&A Act, an EIS was prepared, to assess the potential environmental impacts of the Project and to address the Director General's Requirements issued for the Project. The EIS was submitted to the Department of Planning and Environment (DP&E) and placed on public exhibition between 3 November 2015 and 3 December 2015.

The EIS was made available on the DP&E website and in hard copy at several locations for public viewing. Hard copies were also provided to key stakeholder agencies for exhibition or review purposes. During public exhibition of the EIS, a range of consultation activities were undertaken by the Proponent to raise awareness of the public exhibition, to provide information about the EIS and to advise community members on how to make a formal submission.

Changes to the Project since the Exhibition of the EIS

Following the public exhibition of the EIS in November 2015, the Proponent entered into an agreement to purchase the Integra Open Cut Mine which lies to the immediate north of the Rix's Creek Mine. Following the purchase, the Integra Open Cut Mine is now known as the Rix's Creek North (RCN) Open Cut Mine. The Integra operation was previously placed in care and maintenance in August 2014, and since its purchase, The Bloomfield Group has been undertaking activities to enable mining activities to recommence. The Integra Mine has a maximum consent production level of 6 ROM Mtpa, and exported its first coal during June 2016. The Integra Mine will operate in accordance with Project Approval 08_0102 issued under Part 3A (repealed) of the EP&A Act.

Whilst the Rix's Creek Mine and Integra Mine are separate operations, operating under separate approvals, synergies between the two operations have allowed The Bloomfield Group to reevaluate elements of the proposed Project. This has presented The Bloomfield Group with opportunities to enhance mine site production, while improving environmental performance and social and economic outcomes.

The purchase of the Integra Rail Loop means that there is no longer a need to construct a rail loop at Rix's Creek (as approved under DA 49/94 MOD 5), and The Bloomfield Group commits to surrender of this modification as part of the current Project. This would mean that potential impacts predicted as a result of the construction of the rail loop would not occur.

The current designed production levels for the Integra Mine are 2.2 ROM Mtpa. The utilisation of the Integra resource means the planned maximum production levels from the Rixs Creek Mine can be reduced during the peak years of 2021 to 2025, and still allow for the fulfilment of long term customer requirements. The mine schedule for the Project has therefore been amended to reflect these changes. Instead of mining up to 4.5 ROM Mtpa over the three year period 2021 – 2023, a lower annual maximum of 3.6 ROM Mtpa would be mined over the five year period 2021 – 2025. All other scheduled production years remain unchanged.

A reduction in the maximum production levels for the Project would result in subsequent reduction in the noise and air quality impacts experienced as a result of the Project. Also, the purchase of the Integra Mine has allowed The Bloomfield Group to integrate a large percentage of the acquired mobile plant and critical spare parts into its Rixs Creek Mine operation. The immediate integration of the noise attenuated rear dump trucks and front end loaders (now surplus to the Integra Mines' requirements) effectively results in earlier implementation of key noise control measures. This would tend to reduce noise emission in the earlier stages of the Project.

Key benefits associated with the purchase of the Integra Mine include:

Environment and Community benefits:

- The mines will be centrally managed to achieve integrated rehabilitation and environmental outcomes over both sites instead of being run independently;
- The same Australian owned company with a good track record of community engagement and consultation will now be available for community consultation across both mines;
- Both sites can be run collectively to achieve reduced environmental impact. For example a water balance across both sites may reduce the need to import or dispose of water to either mine; and
- From a regulatory perspective regulators can work with a single entity to achieve common goals across both mines.

Economic benefits

- Mobile plant replacement costs reduced by the utilization of excess Integra mobile plant;
- Large inventory of mobile plant critical spare parts that will reduce repair and maintenance costs in the early years of the Project;
- Reduction in management costs with Integra production effectively spreading corporate costs across increased production levels; and
- Acquisition of the Integra Rail Loop, removing the access costs to use the rail loop that Rixs Creek had been paying to Vale.

Rixs Creek Mine has a well-established rehabilitation program, which includes short, medium and long term measures to achieve the overall rehabilitation objectives for the site. The purchase of the Integra Mine provides the future opportunity to integrate the environmental management and rehabilitation activities between the two operations, which may improve the connectivity of rehabilitation sites within the Project area.

Another Project change that has occurred since the exhibition of the EIS, involves the removal of the requirement to divert Stonequarry Gully. Following further consideration by the Proponent, the diversion of Stonequarry Gully as proposed in the EIS has been removed from the Project and approval is no longer being sought for this part of the Project. This diversion was originally proposed in order to provide access to a coal resource of approximately 300,000 tonnes, and would not have been required until approximately 18 to 20 years into the Project lifespan. Should changes to the operation in the future make it desirable to access this resource, The Bloomfield Group would enter into a separate approval or modification process to obtain the approvals necessary for the Stonequarry Gully Diversion.

Submissions

During the public exhibition of the EIS, 140 submissions were made, including 8 from Government agencies, 1 from Singleton Council, 16 from special interest groups or organisations, and 115 from individual community members. Of the 115 community submissions received, more than two thirds (79) were in support of the Project, and less than one third (36) raised objections to the Project.

Key issues raised in Government agency submissions related to:

- Groundwater modelling;
- Water licensing;
- Air quality impacts;
- Noise impacts;
- Threatened species mapping and biodiversity offset calculations; and
- Flooding impacts.

Key issues raised in special interest group and individual public submissions included:

- Climate Change;
- Air Quality impacts, particularly relating to PM₁₀;
- Noise impacts to local residents;
- Blasting management;
- Transport of coal (including rail congestion and covering of coal wagons);
- Biodiversity offset areas and impacts to biodiversity as a result of loss of habitat;
- Surface water impacts;
- Groundwater impacts;
- Final void;
- Economic assessment; and
- Cumulative impact assessment.

An overview of the issues raised in submissions is provided in **Section 4.0** of this Response to Submissions (RTS) Report.

Response to Submissions

This RTS Report has been prepared to detail and provide responses to issues raised in the submissions received during the EIS exhibition period. Each of the submissions has been individually examined to understand the issues raised. Where similar issues were raised in different submissions, these have been combined and only one response has been provided.

A detailed response to each of the issues raised in the submissions from government agencies and local council is provided in **Section 5.0**. A response to the issues raised in the submissions from special interest groups and individual community members is provided in **Section 6.0**.

Revised Environmental Management Measures

The safeguards and mitigation measures provided in the EIS were reviewed as part of this response to submissions process. A final summary of the safeguards and mitigation measures to be implemented for the Project is provided in **Section 7.0**.

Conclusion and Next Steps

This RTS Report has provided additional information to address the issues raised in the submissions. This has included additional information relating to the groundwater modelling, water licensing, air quality assessment, remapping of vegetation communities, recalculation of biodiversity offset credits, potential flooding impacts, noise impacts, and economic assessment.

The DP&E will now assess the Project in consultation with other relevant agencies, and the assessment process will include review of the EIS and this RTS Report. The DP&E will then prepare a draft assessment report for consideration by the Minister for Planning or his delegate. The Minister for Planning has delegated his role in the determination of coal mine projects to a PAC. Therefore, the Project will be referred to the PAC, and the PAC will review the assessment and provide a determination on the Project.

1.0 Introduction

1.1 Overview of the Project

Bloomfield Collieries Pty Ltd (the Proponent) is a subsidiary of The Bloomfield Group, which owns and operates the Rix's Creek Mine (the Mine), an open cut coal mine in the Hunter Valley Coalfields of NSW. The Proponent is seeking approval for the continuation of existing multi-seam benching open cut mining operations – the Rix's Creek Mine Continuation of Mining Project (the Project) – within Coal Lease (CL) 352 and Mining Lease (ML) 1432. The Project would allow the Mine to continue its open cut mining operations and utilisation of existing mine infrastructure to process up to 3.6 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal beyond the life of its current consent, extending the life of mining until approximately 2038. The Project also includes a new mine lease area (currently known as Mine Lease Application Area (MLA) 487) to the west of the existing ML to accommodate the proposed new overburden emplacement area. The Project includes the continued use of all development for or associated with mining within the Project area at the date of determination.

The proposed development would use open cut mining methods to extract coal from the Hebden, Barrett, Liddell, Arties, Pikes Gully and Lemington seams of the Whittingham Coal Measures within the bounds of CL 352 and ML 1432. Once the coal has been extracted, it would be processed at the Mine's existing Coal Handling Preparation Plant (CHPP) and coal clearance facilities, and then transported via the approved existing Integra Mine rail loop to the Port of Newcastle for export.

The components of the proposed development comprise:

- Continuation of open cut mining of Pit 3 (West Pit) and future North Pit Area;
- Reject and tailings disposal to existing approved emplacement areas until capacity is reached;
- Establishment of new emplacement areas to facilitate the extension of Pit 3;
- Continued use of existing Mine access and surface facilities including:
 - CHPP;
 - Coal stockpiles;
 - Administration buildings and amenities; and
 - Rail loading facilities and mine rail loop.
- Continued rail transport of coal to the Port of Newcastle;
- Mine closure, final landform and rehabilitation;
- The continued use of all development for or associated with mining within the Project area at the date of determination;
- Water Management; and
- Construction of an additional mine road crossing of the New England Highway.

A detailed description of the Project can be found in Section 6.0 of the Environmental Impact Statement (EIS) prepared for the Project, and the proposed final landform is shown in **Figure 1-1**.

1.2 Overview of Approval Process and Exhibition

Approval for the Project is being sought as State Significant Development (SSD) under Division 4.1, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project meets the SSD requirements set out in Schedule 1, Clause 5 of the *State Environment Planning Policy (State and Regional Development) 2011*, being development for the purpose of coal mining. The Project is declared to be SSD for the purposes of the EP&A Act and the Minister for Planning is the approval authority. For large coal mining projects however, the Minister has delegated the planning approval powers to the NSW Planning Assessment Commission (PAC). The Project will be subject to an assessment by the PAC under Division 4.1, Part 4 of the EP&A Act.

In accordance with the requirements of the EP&A Act, an Environmental Impact Statement (EIS) was prepared to assess the potential environmental impacts of the Project and to address the Director General's Requirements (DGRs) issued for the Project on 3 March 2014. The EIS was submitted to the Department of Planning and Environment (DP&E) in November 2015.

Section 89F of the EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulation), requires the EIS to be placed on exhibition for not less than 30 days. The EIS for the Project was placed on public exhibition by DP&E between 3 November 2015 and 3 December 2015.

The EIS was made available on the DP&E web site (<http://majorprojects.planning.nsw.gov.au/>) and in hard copy at several locations for public viewing (further detail provided in **Section 2.0** of this report). Hard copies were also provided to key stakeholder agencies for exhibition or review purposes, including:

- NSW DP&E;
- Singleton Council;
- NSW Department of Primary Industry (DPI);
- NSW Department of Primary Industry - NSW Office of Water;
- NSW Department of Industry – Resources and Energy (DTIRIS);
- NSW Environment Protection Authority (EPA);
- NSW Office of Environment and Heritage (OEH);
- Heritage Division, NSW - OEH;
- Hunter New England Population Health;
- Roads and Maritime Services (RMS); and
- Nature Conservation Council.

1.3 Purpose of this Report

During the exhibition of the EIS, 140 submissions were made. In accordance with clause 85A of the EP&A Regulation, the DP&E provided copies of the submissions to the Proponent, and requested the preparation of a report detailing a response to the issues raised in the submissions.

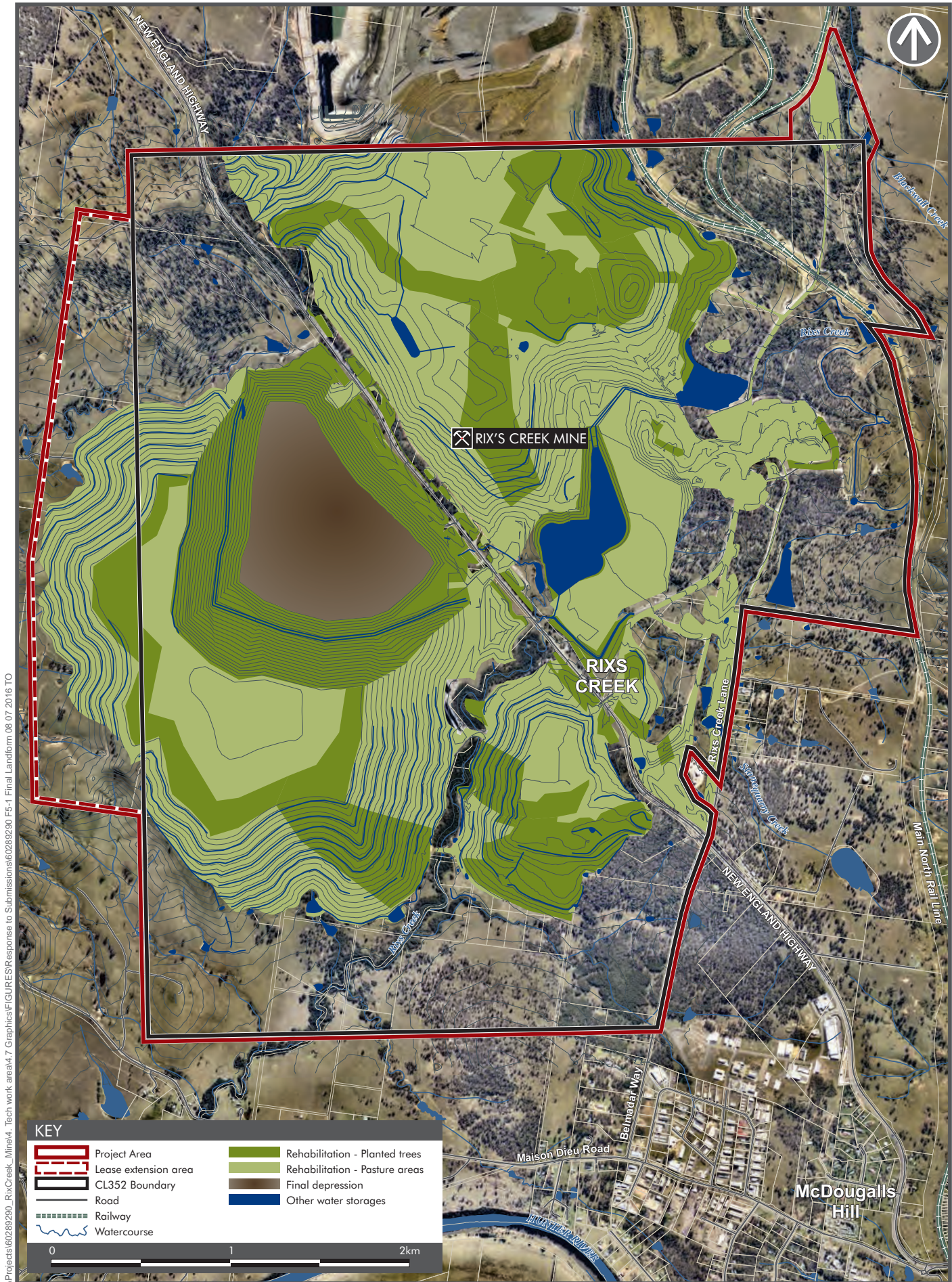
The purpose of this Response to Submissions (RTS) Report is to detail and provide responses to issues raised in the submissions received during the EIS exhibition period.

1.4 Structure of this Report

The RTS Report has been set out to address each of the issues raised in the submissions and is structured as follows:

- **Section 1** - provides an overview of the Project, the EIS process and the RTS Report purpose and structure.
- **Section 2** - provides a description of amendments made to the Project subsequent to the public exhibition of the EIS.
- **Section 3** - provides a summary of the community engagement activities that were undertaken during the preparation and exhibition of the EIS.
- **Section 4** - provides a summary of the submissions received, and an outline of the issues raised by Government agencies, local council, key stakeholders (interest groups / organisations) and individuals.
- **Section 5** - provides responses to the issues raised in submissions received from Government agencies and local council.

- **Section 6** - provides responses to the issues raised in submissions received from community stakeholders (organisations and individuals).
- **Section 7** - presents a revised set of Project management and mitigation measures that have been reviewed following consideration of the submissions as detailed in this report.
- **Appendices** - includes submissions received during the exhibition period and additional technical reporting compiled in response to those submissions and the revised mining schedule.



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2.0 Project Update

2.1 Integra Mine Purchase

Following the exhibition of the Project EIS in November 2015, Bloomfield Collieries Pty Ltd entered into an agreement to purchase the Integra Open Cut Mine which lies to the immediate north of the Rix's Creek Mine, sharing common mining lease and property ownership boundaries. The Integra complex also includes an underground mine however this was purchased separately by Glencore and has become a separate operation on a separate lease area. Following the purchase, the Integra Open Cut Mine is now known as the Rix's Creek North (RCN) Open Cut Mine. To avoid confusion, this RTS will continue to refer to RCN as Integra.

The Integra operation was previously placed in care and maintenance in August 2014, and since its purchase The Bloomfield Group has been undertaking tasks to enable mining activities to recommence. The Integra Mine has a maximum consent production level of 6 ROM Mtpa, and expects to export its first coal during the second half of 2016.

The purchase of the Integra Mine included the following elements:

- Mining tenements;
- Integra Complex Coal Handling Preparation Plant;
- Rail Loop; and
- Open cut mobile plant including:
 - 5 Overburden Drills;
 - 4 Large Excavators;
 - 3 Large Front End Loaders;
 - 25x180T Rear Dump Trucks;
 - 10 Large Bulldozers;
 - 3 Mine Graders; and
 - 3 Water Carts.

The Integra Mine will operate in accordance with its own Project Approval 08_0102 issued under Part 3A (repealed) of the EP&A Act.

2.1.1 Rix's Creek North Relationship with Rix's Creek

The Rix's Creek Mine and Integra Open Cut were under separate project approvals, EPLs and environmental management systems. The Bloomfield Group took possession of Integra since late 18 December 2015 and has spent the majority of the interim taking steps to move Integra out of care and maintenance and into production.

Bloomfield is progressing with the integration of the Integra operation into a combined Rixs Creek. All employment opportunities resulting from re-commencement of Integra production will be as Rixs Creek employees under the management of Rixs Creek. To assist with gaining the best possible operational efficiencies Rixs Creek has worked with the regulatory authorities to achieve a combined EPL, combination of separate and combined environmental management plans and current consent modifications that allow for the opportune utilisation of the sites CHPP's. Glencore and Bloomfield currently had a consent modification approved on 23 August 2016 to allow the separation of the Integra Complex consent into separate Open Cut and Underground Consents.

Rix's Creek will manage the integrated mine to ensure the separate development consent conditions on the site are adhered to. For the purpose of determining the Rixs Creek Continuation of Mining Project the current Integra consent is to be considered outside the scope of this determination. For clarity, no combining of the Integra consent and the Rixs Creek consent is proposed as part of the Project. It should however be noted that the existing Integra consent allows Mine coal to be transported to, washed and exported from the Integra rail loading facility. Rixs Creek Coal Mine DA

49/94 MOD 7 and Integra Open Cut Project 08_0102 MOD 5 granted 26 February 2016 allows Rix's Creek ROM coal to be processed at the Integra CHPP and Integra ROM coal to be processed at the Rix's Creek CHPP. These approvals would be maintained for the Project.

2.1.2 Project Amendments as a Result of Integra Mine Purchase

Whilst the Rix's Creek Mine and Integra Mine operate under separate approvals, synergies between the two operations have allowed The Bloomfield Group to re-evaluate elements of the proposed Project. This has presented The Bloomfield Group with opportunities to enhance mine site production, while improving environmental performance and social and economic outcomes. The key examples of this are The Bloomfield Group no longer requiring the security of a separate rail approval for the Rix's Creek Mine, and the Project mine schedule now able to be adjusted to account for the new coal resource obtained by The Bloomfield Group at Rix's Creek North. These and other synergies are discussed further below.

Rix's Creek Rail Loop

The Mine currently uses the Integra Mine rail loop to export coal from site. The Bloomfield Group has historically had access to the Integra rail loop through an access agreement with the previous owners of the Integra Mine. For commercial reasons and to ensure the Mine would always have an access to a rail loop The Bloomfield Group had previously sought approval to construct its own rail loop so it could operate independently of Integra. In November 2013, The Bloomfield Group was granted approval (DA 49/94 MOD 5) to construct a stand-alone rail loop at Rix's Creek Mine.

With the purchase of the Integra Mine and associated rail loop there is no longer a need to construct a rail loop at Rix's Creek. Therefore as part of this Project The Bloomfield Group now commits to the surrender of its rail loop approval. This would mean that potential impacts predicted as a result of the construction and operation of the rail loop, as incorporated into the EIS, would not occur.

Amendment of Proposed Project Mine Schedule

The Bloomfield Group has taken initial steps to integrate the Integra Mine and Rix's Creek Mine into its overall customer demand calculations. The current designed production levels for the Integra Mine are 2.2 ROM Mtpa. The utilisation of the Integra resource means that following closure of the Bloomfield Open Cut Mine at East Maitland, the planned maximum production levels from the Rix's Creek Mine can be reduced during the peak years of 2021 to 2025, and still allow for the fulfilment of long term customer requirements. The mine schedule for the Project has therefore been amended to reflect these changes. Instead of mining up to 4.5 ROM Mtpa over the three year period 2021 – 2023 (as originally proposed in the EIS), a lower annual maximum of 3.6 ROM Mtpa would be mined over the five year period 2021 – 2025. All other scheduled production years remain unchanged. The adjusted indicative production rates over the life of the Project are presented in **Table 2-1** with the production rates that were included in the EIS for comparison. The Mine Operations Plan for the Project (Section 6.3.2 of the EIS) would remain unchanged at key Project years 2017, 2020, 2023, and 2026.

Table 2-1 Adjusted Indicative Production Rates over the Life of the Project

Years	ROM Coal (Mtpa)		Saleable Coal (Mtpa)	
	EIS Rate	Adjusted Rate	EIS Rate	Adjusted Rate
2017 - 2020	2.5	2.5	1.5	1.5
2021 - 2025	4.5	3.6	2.7	2.2
2026 - 2028	1.6	1.6	1.0	1.0
2029 - 2032	1.5	1.5	0.9	0.9
2033 - 2036	1.0	1.0	0.6	0.6
2037	0.8	0.8	0.5	0.5

Environmental Impact

Whilst the Project disturbance area would remain unchanged, a reduction in the maximum production levels for the Project would result in subsequent reductions in the noise and air quality impacts experienced as a result of the Project during peak production times. The amended production rate would see slightly modified (reduced) environmental impacts, particularly in relation to air quality and noise. These are discussed in detail in the relevant sections of this RTS report.

Current designed production levels for the Integra Mine are 40% of the approved maximum production levels. This has allowed The Bloomfield Group to integrate a large percentage of the acquired mobile plant and critical spare parts into its Rixs Creek Mine, Bloomfield Mine and Four Mile Workshop fleets. The immediate integration of the noise attenuated rear dump trucks and front end loaders (now surplus to the Integra Mines' requirements) effectively results in earlier implementation of key noise control measures. This would tend to reduce noise emission in the earlier stages of the Project.

Mining at the current designed production levels at Integra Mine would mean that a large amount of recoverable coal would still be available at completion of the current Integra consent period (31 December 2035). At the appropriate time, The Bloomfield Group may make an application to extend the consent mining period for the Integra Mine, to allow for the recovery of all available open cut resources from the Integra Mine tenements.

Social / Economic Impact

The social impact as a result of the amended Project would be largely unchanged. There would be a reduction in the maximum employment levels during the period of maximum production. Maximum employment levels were previously estimated (Section 6.8 of the EIS) to be 234 during the period of maximum production. Smoothing of the maximum production levels during 2021 – 2025 would result in maximum employment levels of 217. There would be no reduction in total roster hours over the 5 year peak period, with no resultant change to total wages obtained by the Mine employees. It is noted that the recommencement of production operations within the Integra Mine has currently enabled employment of an additional 60 employees at Rixs Creek.

As noted above, noise and air quality impacts would be reduced as a result of the lower maximum peak production levels, and this would benefit the local community where potential impacts are anticipated.

The economic impacts of the integration of Rixs Creek Mine and Integra Mine have also been assessed, and are further discussed in **Section 6.15**. Key benefits associated with the purchase of the Integra Mine include:

- Mobile plant replacement costs reduced by the utilization of excess Integra mobile plant;
- Large inventory of mobile plant critical spare parts that will reduce repair and maintenance costs in the early years of the Project;
- Reduction in management costs with Integra production effectively spreading corporate costs across increased production levels; and
- Acquisition of the Integra Rail Loop, removing the access costs to use the rail loop that Rixs Creek had been paying to Integra.

Rehabilitation

Rixs Creek Mine has a well-established rehabilitation program, which includes short, medium and long term measures to achieve the overall rehabilitation objectives for the site.

Under a Department of Mineral Resources 1998 Approval to mine the Barrier Pillar between Rixs Creek and Integra Open Cut Mines, both mines had responsibility for co-establishment of the final landform in this area. The majority of this final landform is currently formed and stable. The integration of the final landform design and rehabilitation of this area under Rixs Creek management will continue.

It is noted that the Rixs Creek Mine and Integra Mine may in the future be operated as an integrated complex. Land rehabilitation will be managed under existing site based management plans, until such a time as a whole of site based approach is developed. At such time, the management plans would be

developed from a whole of complex perspective, providing the opportunity to integrate the environmental management and rehabilitation activities between the two operations.

2.2 Stonequarry Gully

Following further consideration by the Proponent, the diversion of Stonequarry Gully as proposed in the EIS has been removed from the Project and approval is no longer being sought for this part of the Project. This diversion was originally proposed in order to provide access to a coal resource of approximately 300,000 tonnes. The resource would require reasonable movements of overburden ratio (>10:1) per tonne of coal and would not have been required until approximately 18 to 20 years into the Project's proposed lifespan.

At the time of required extraction this resource may no longer be economical, or may not be required to satisfy Bloomfield customer requirements in the future. Should changes to the operation in the future make it desirable to access this resource, The Bloomfield Group would enter into a separate approval or modification process to obtain the approvals necessary for the Stonequarry Gully Diversion.

3.0 Community Participation

The EIS was placed on public exhibition for 30 days from 3 November 2015 to 3 December 2015. During this time a range of consultation activities were undertaken to raise awareness of the public exhibition, to provide information about the EIS and to advise community members on how to make a formal submission. These additional activities are described in the following sections.

3.1 Static Display of the Environmental Impact Statement

The EIS and supporting material were available to view and download on the DP&E website (<http://majorprojects.planning.nsw.gov.au/>).

Hard copies of the development application and EIS were also provided at three display locations as follows:

- Department of Planning and Environment, 23-33 Bridge Street, Sydney;
- Singleton Shire Council, Administration Centre, Corner of Queen Street & civic Avenue, Singleton; and
- Nature Conservation Council, Level 2, 5 Wilson Street, Newtown.

3.2 Shopfront Display

During the exhibition period, the Mine established a shopfront in Shop 8 of the Singleton Town Square Shopping Centre, John Street Singleton. The Shopfront provided opportunity for any interested member of the community to access hardcopies of the EIS, view project plans and enter into discussions with key Mine staff to answer questions or express opinions regarding the Project. USB sticks containing the EIS documentation were also made available for community members to take home. The shopfront was open on the 10, 12, 16, 17 and 24 of November from 3:00pm – 6:00pm. The Shopfront was staffed by two or more senior Mine representatives at all times.

3.3 Advertisements

Advertisements were placed in local newspapers to announce the public exhibition of the EIS and to invite feedback on the EIS as follows:

- Singleton Argus – 2 November 2015; and
- Newcastle Herald – 3 November 2015.

3.4 Community Newsletters

During the preparation and exhibition of the EIS, community newsletters were delivered to residences in Singleton and immediately around the Mine site. The following newsletters were issued:

- Newsletter No. 1 February 2014 – Issued to coincide with the initiation of the Project and submission of the Preliminary Environmental Assessment (PEA) for the Project;
- Newsletter No. 2 September 2014 – Issued during the preparation of the EIS to provide the community with an update on the progress of the environmental assessment for the Project and initial outcomes; and
- Newsletter No. 3 October 2015 – Issued to coincide with the public exhibition of the EIS to inform the community that the EIS would be on public exhibition and providing details on how the community can view the EIS and provide feedback.

3.5 Doorknocks to Nearby Residents

Prior to and during the exhibition of the EIS, senior Mine staff members undertook meetings with residents in the immediate vicinity of the Mine to inform them of the EIS exhibition period and offer hard and electronic copies for them to view.

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intentionally.

4.0 Summary of Submissions

4.1 Submissions Received

During the exhibition period, and for a short period thereafter, submissions in relation to the Project were accepted by DP&E. Submissions were provided to the Proponent for response. All submissions were reviewed and issues raised have been addressed in this RTS Report.

A total of 140 submissions were received in response to the EIS, as summarised in **Table 4-1**.

Table 4-1 Summary of submissions received

Submission group type	Number of separate submitters*
State government agencies	8
Local councils	1
Interest groups / organisations	16 (6 supporting the Project, 10 objecting to the Project)
Individual public / community members	115 (79 supporting the Project, 36 objecting to the Project)
Total	140

* Note that submitter details were withheld at the request of some submitters. In the absence of being able to identify each submitter, these submission statistics may overestimate the number of different submitters.

Each submission has been individually examined with issues collated, and responses to the issues provided in **Section 5.0** and **Section 6.0** of this RTS.

Submission authors have not been identified in this report (excluding agencies, councils and other key stakeholders). Submission authors have been assigned a unique identification number which is referred to in this report as a 'submission identification number'.

4.2 Matters Raised – State Government Agencies

Eight State government agencies made submissions, raising a range of issues relevant to their respective areas of interest and responsibility. A copy of the government agency submissions is provided at **Appendix A**. A high level summary of the comments provided and issues raised in each agency's submission is provided below, with a detailed response to specific issues provided in **Section 5.0**.

4.2.1 Department of Primary Industries

DPI Fisheries and DPI Lands raised no issues in relation to the Project.

DPI – Agriculture advised that they had no outstanding issues of concern and provided some general comments on the Agricultural Impact Statement prepared as part of the EIS.

DPI – NSW Office of Water raised a number of issues relating to:

- Groundwater, including recommendations for improvement of the information and management measures as follows:
 - Independent review of the groundwater model; and
 - Additional information required to be included or addressed within the Water Management Plan, should the Project be approved.
- Water licensing, including:
 - Provision of a consolidated water licensing table, listing all water licenses and approvals and correcting some errors made in the licensing tables presented in the EIS;
 - Confirmation of the quantity of increased volume of water to be removed from alluvial and hard rock water sources as a result of the Project, and demonstration that sufficient licensed entitlement is held or can be obtained to account for the maximum predicted take; and

- Quantification of the loss of run-off as a result of the loss of catchment, and demonstration that the loss is accounted for via an appropriate Water Access Licence.
- Diversion of Stonequarry Gully, including:
 - Recommendation that an impact assessment of the proposed diversion of Stonequarry be undertaken in accordance with standard hydrologic and geomorphologic assessment and design standards, including assessment of impacts on water quality and quantity, dependent ecosystems, hydrology and geomorphology; and
 - Inclusion of proposed diversion design, and demonstration that the diversion is appropriately designed.

4.2.2 Department of Resources and Energy

The Department of Resources and Energy (DRE) offered support for the Project as a responsible utilisation of the State's coal resources that would provide continued employment for around 150 personnel in a typical year of production and up to 225 personnel at full production, and bring economic benefits to the local region and the State as a whole. The following comments were also made with regard to specific areas of DRE's responsibility:

- Mining Title:
 - The Project has demonstrated sufficient title over the Project area to satisfy the requirements of section 380AA of the *Mining Act 1992*; and
 - The mining lease includes requirements for submission of a Mining Operations Plan (MOP) prior to commencement of operations, and subsequent Annual Environmental Management Reports (AEMR).
- Rehabilitation:
 - It is noted that the EIS has identified general rehabilitation strategies and objectives and adequately describes the functional domains of the Project. Specific performance objectives and standards of each domain have been satisfactorily described; and
 - Final landform design must be consistent with the surrounding topography and the EIS has provided objectives and criteria to which they will be implemented.
- Assessment of the Resource:
 - DRE has verified that the Project will provide approximately 46 million tonnes of ROM coal and approximately 25 million tonnes of product coal. The Proponent has completed the resource and reserve estimation for the Project in accordance with the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves 2012 (the "JORC code");
 - DRE has examined the coal quality data of the seams to be mined from the Project and is of the opinion that the quality of the coal from the Project area will allow the two coal products (semi-soft coking product and a thermal product) to be sold on the export market;
 - Over the life of the Project the value of the coal produced would be worth around \$3 billion in current dollars based on the expected split between export coking coal (60%) and export thermal coal (40%);
 - Export income is vital for the health of both the NSW and Australian Economy, contributing to the nation's balance of trade which provides positive benefits to both the NSW and Australian credit rating;
 - The Project is vital for the continuation of the existing Rix's Creek Mine, as without approval the current mine has a limited life that would see it close in the short term, given the low coal price environment, limited remaining coal resources and also overburden dumping issues that would be solved with Project approval;
 - Given the pit design constraints, DRE considers the Project mine plan to adequately recover coal resources; and

- DRE has calculated that in a typical full production year, the State will receive around \$9 million in royalty and \$240 million over the life of the Project. The net present value of this royalty stream would be A\$130 million using a 7% real discount rate.
- DRE recommended a number of conditions to be incorporated into the approval, relating to rehabilitation objectives and commitments, progressive rehabilitation, and preparation of a rehabilitation plan.

4.2.3 Dams Safety Committee

The Dams Safety Committee did not raise any issues with respect to prescribed dams or dam Notification Areas within the Project area.

4.2.4 Environmental Protection Authority

The EPA raised issues relating to:

- The assessment of air quality impacts including:
 - Inclusion of estimated change to diesel engine particulate matter emissions, resultant impacts and specific measures to minimise emissions from this source;
 - Inclusion of assessment of potential impacts at all potentially affected properties in Maison Dieu, at Country Acres Caravan Park, and at Maitland Diesel Service;
 - Inclusion in the emissions inventory, estimates of dust emission from all bare areas; and
 - Request for additional information on the derivation of the emission rate of NO₂ from blasting.
- Discharge of water under the Hunter River Salinity Trading Scheme;
- The requirement for amendments to the current Environment Protection Licence (EPL) 3391; and
- Recommended conditions of approval.

4.2.5 Hunter New England Population Health

Hunter New England Population Health raised issues relating to:

- Air quality, including a recommendation that air quality modelling contours be provided using annual average PM₁₀ goals of 20 µg/m³ and 25 µg/m³, as per the World Health Organisation (WHO) Air Quality Guidelines (2005) for particulate matter” and as proposed in the draft variation to the National Environment Protection (Ambient Air Quality) Measure (NEPM);
- Noise and blasting, including:
 - Recommendation that noise mitigation measures be implemented as soon as possible and strict controls be placed on operations during conditions that would lead to the noise levels predicted;
 - Recommendation that effective community consultation be undertaken to facilitate public involvement and to allow for the community to participate in the mitigation selection process; and
 - Recommendation for strict control of blast conditions to protect the public from blast fume emissions.
- Surface Water, including recommendation that private water users downstream have easy access to and can understand monitoring data and that, in the event that the water becomes unsuitable for use by private water users, that an alternative water source is offered;
- Rainwater tanks, including recommendation that the potential impacts on rainwater quality caused by dust from mining construction and operation be addressed, with consideration being given to the recommendations and standards contained within enHealth's *Guidance on use of rainwater tanks* (2010); and
- Recommendation that a management system be considered for taking complaints and rectifying issues identified.

4.2.6 Office of Environment and Heritage – Heritage Division

The Heritage Division recommended one condition of approval with respect to the “Linear Embankment and Mound with Historic Material”, and stated support for the mitigation measures proposed in the EIS for the Rixs Creek Coke Ovens and Associated Works, recommending that these be adopted with a number of additions to the proposed updated Conservation Management Plan.

4.2.7 Office of Environment and Heritage

The OEH raised a range of issues relating to:

- Vegetation Mapping, including identification of potential error in the areas mapped as Central Hunter Valley eucalypt forest and woodland, which would impact on the Project's credit requirements;
- Aboriginal heritage, including recommendations for an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Project; and
- Flood Assessment, including recommendation that a risk assessment be undertaken of the potential impact of the full range of flood events up to the Probable Maximum Flood, on the proposed water and sediment management dams.

4.2.8 Roads and Maritime Services

The RMS did not raise any concerns regarding the Project, and recommended a number of matters that should be addressed and included within the conditions of approval, including the requirement for a Traffic Management Plan, design requirements for the cut and cover tunnel, Side Track Road, and requirements for a Works Authorisation Deed.

4.3 Matters Raised – Singleton Council

A copy of the submissions from Singleton Council is provided at **Appendix A**. Singleton Council stated that there were no significant issues of concerns, and made some general comments about the Project including:

- The Rix's Creek Mine Operations has not attracted any significant level of community concern and is regarded as being well managed;
- The mine design would allow for the future access to an underground resource post open cut operations, which would require separate approval at a future time;
- It is important that noise and air quality impacts described in the EA are comprehensively assessed by the technical experts in these areas to validate the modelling;
- While it is acknowledged that mining operations are moving away from Singleton, the extent of noise impacts on potential future residential areas in North Singleton (west of Bridgman Road and north of Gardner Circuit) is not clear;
- It is acknowledged that the Project currently has and will continue to have a visual impact on the New England Highway corridor; however the proposed progressive screen planting seeks to minimise impact in this regards. Also, the visual impact for two residences located on Maison Dieu Road would be mitigated by progressive screen planting along with rehabilitation;
- Significant ongoing discussion is taking place with the mining community regarding end use of mine sites and particularly final land forms and voids, therefore it is requested that any conditions are flexible in order to enable adaptive end of mine planning which is responsive to community and industry positions over time; and
- It is noted that the Project would deliver a net social and economic benefit to the Singleton Local Government area.

4.4 Matters Raised – Interest Groups/ Organisations

A copy of the submissions received from key stakeholders or special interest groups is provided at **Appendix B**. In total, 16 submissions were received from other key stakeholders or special interest groups within the community. Other key stakeholders that made submissions regarding the Project included:

- Two submissions from peak groups and advisory organisations:
 - Hunter Business Chamber; and
 - The Australia Institute.
- Seven submissions from environmental groups:
 - Nature Conservation Council;
 - DAMS HEG;
 - Doctors for the Environment;
 - Environmental Justice Australia;
 - Hunter Environment Lobby;
 - Ryde Hunters Hill flora Fauna Preservation Society; and
 - Singleton Shire Healthy Environment Group.
- Two submissions from community groups:
 - Hunter Communities Network; and
 - Correct Planning and Consultation for Mayfield Group.
- Five submissions from local businesses and industrial companies:
 - PJ Welding;
 - Four Mile Engineering;
 - Kings Engineering;
 - WesTrac; and
 - Tolsaf Cranes.

Issues raised by these organisations / groups were generally similar to those raised by individual public submissions, and therefore these issues have been collated and considered together in **Section 6.0** along with a response to the issues raised. Where similar issues have been raised in different submissions, these have been combined and only one response provided. Care has been taken in this process to preserve the specific details of each issue raised.

4.5 Matters raised -Individual Public / Community Members

A copy of the submissions received from individual members of the community is provided at **Appendix B**. In total, 115 submissions were received from individual members of the community. Of these a total of 79 submissions indicated their support for the Project and 36 raised objections to the Project. The main issues raised by special interest groups and individual public submissions were as follows:

- Climate Change;
- Air Quality impacts, particularly relating to PM₁₀;
- Noise impacts to local residents;
- Blasting management;
- Transport of coal (including rail congestion and covering of coal wagons);

- Biodiversity offset areas and impacts to biodiversity as a result of loss of habitat;
- Surface water impacts;
- Groundwater impacts;
- Final void; and
- Cumulative impact assessment.

A response to the issues raised in the community submissions is provided in **Section 6.0**. Where similar issues have been raised in different submissions, these have been combined and only one response provided. Care has been taken in this process to preserve the specific details of each issue raised.

5.0 Response to Government Agency Submissions

5.1 Department of Primary Industries

DPI Agriculture advised that there were no outstanding issues of concern and made a number of comments regarding the Agricultural Impact Statement.

DPI – NSW Office of Water made a number of recommendations and provided detailed comments as part of Attachment A of the submission.

5.1.1 Agricultural Impact Statement

Issue Description

Although the Agricultural Impact Statement claims that the reinstalment of this disturbed area will be of the same land and soil capability it is noted that more rehabilitated land will be allocated to Class 5 land rather than Class 4. Whilst there will be a reduction in land of higher quality, the mine rehabilitation work should result in greater agricultural productivity provided the Company complies with its stated methodology and applies its research findings. Rix's Creek is actively engaged in rehabilitation programs including work with the Australian Coal Association Research Program (ACARP) using biosolids on rehabilitated land. The mine has established 375 ha of land across the Mine. The results of the grazing trial on rehabilitated land involving NSW DPI at other mine sites shown to increase beef production also supports the approach at this Mine.

Hence the attention to the rehabilitation of land to agriculture as described in the Agricultural Impact Statement should go some way to ameliorating any production impacts.

Response

This is noted.

5.1.2 Groundwater

A detailed response to each of the groundwater related issues raised in the DPI submission was prepared by RPS Water. The response is provided in full at **Appendix C** of this RTS Report, with a brief summary presented here.

Issue Description

The broad impacts of the Project are likely to be within acceptable bounds given the location in this brownfield mining area, however the information and management measures should be improved to allow for proper understanding and management of the impacts of the Project.

- As required under the Aquifer Interference Policy (AIP), an independent review of the groundwater model is required to ascertain in the expert's opinion if the groundwater model is:
 - Calibrated against suitable baseline data, and in the case of a reliable water source, over at least two years;
 - Consistent with the Australian Modelling Guidelines; and
 - Independently reviewed, robust and reliable, and deemed fit for purpose.

Response

As required by the NSW Aquifer Interference Policy, an independent review of the groundwater model has been undertaken by Peter Dundon, of Dundon Consulting Pty Ltd. A copy of the report is attached at Appendix D of the RPS Water response (included in the RPS Water report in **Appendix C** of this RTS). The review concluded that the groundwater assessment has been undertaken in accordance with the requirements of the NSW Aquifer Interference Policy.

Issue Description

A number of data and information gaps are noted in Attachment A, and these are requested to be addressed prior to preparation of the Water Management Plan. This information should be provided within (or attached to) the Water Management Plan.

Response

In response to issues raised in the DPI submission, DPI Water representatives attended a meeting at the Mine on 21 January 2016 to undertake a site tour for familiarisation, with subsequent discussion of the specific issues raised.

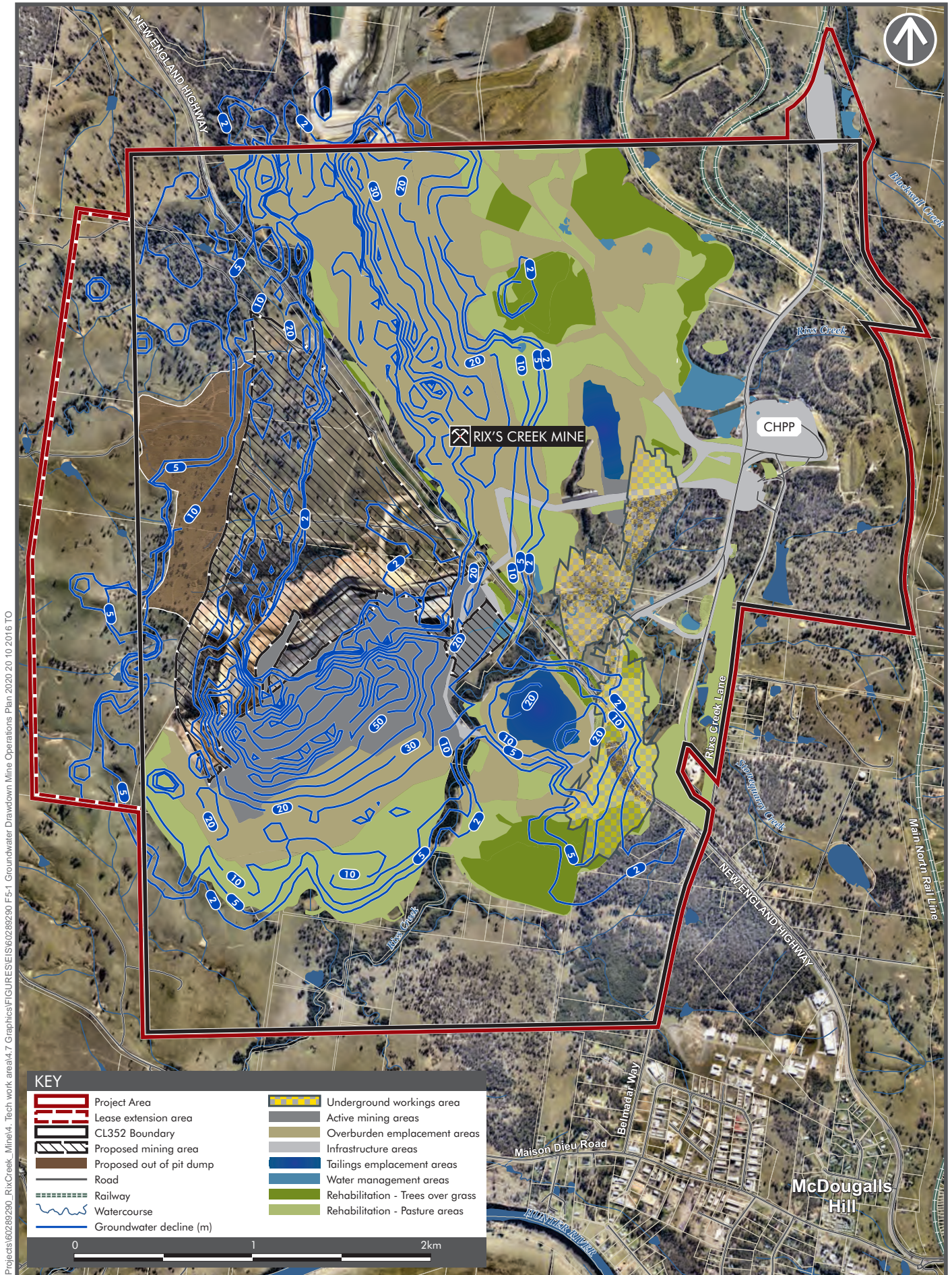
A register of DPI Water issues, including a summary of the requirements and outcomes following the site meeting, is provided in full at Appendix A of the RPS Water response (**Appendix C** of this RTS).

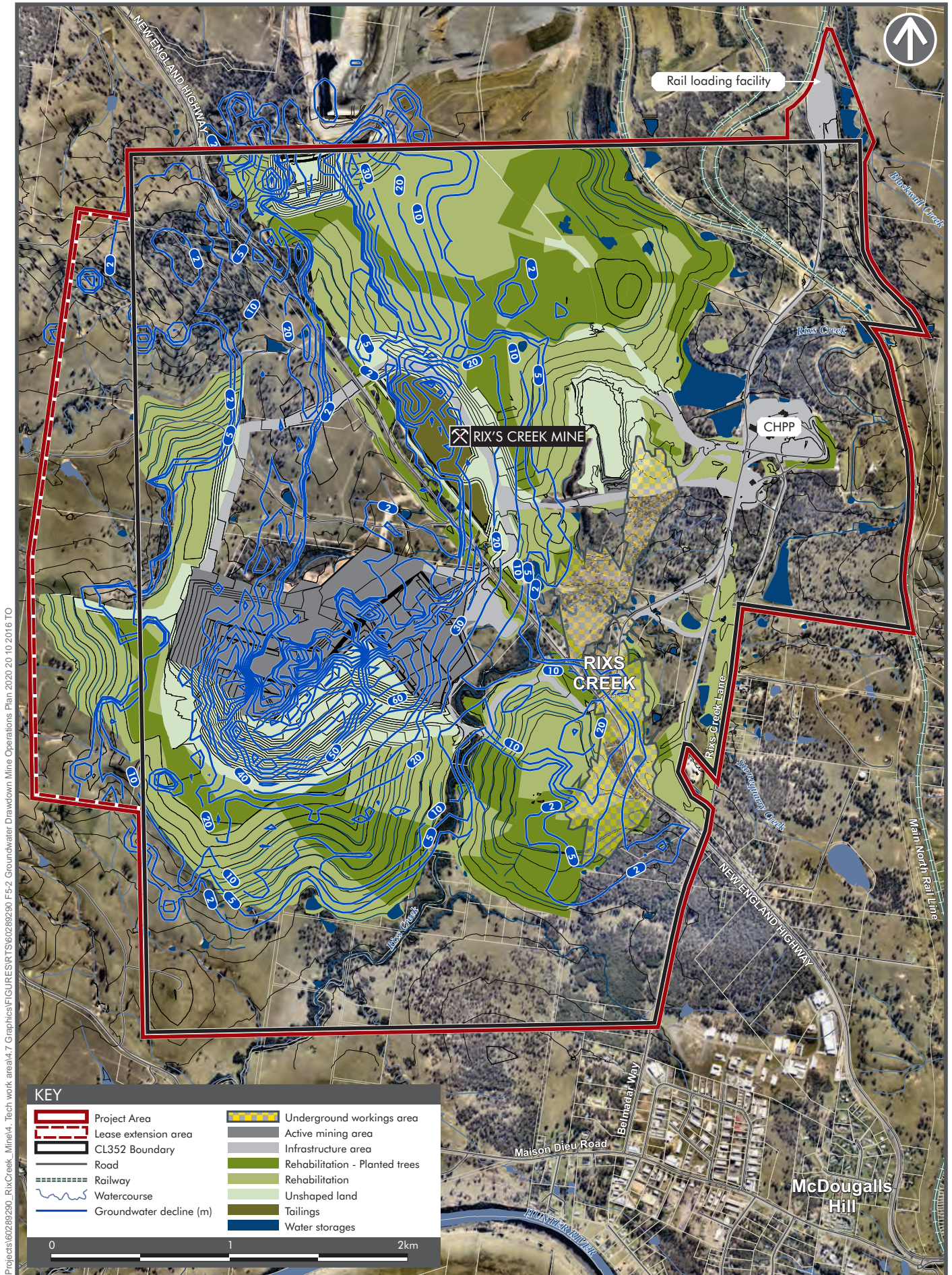
General issues raised by DPI related to uncertainty about how the groundwater is hydraulically connected between the various pits and underground workings, request for additional detail or clarification of information presented in the EIS. A number of these issues were clarified during the site meeting with DPI. Supplementary groundwater information is provided in the RPS Water response to address the remaining general issues (refer to Section 3 and Appendix A of the RPS Water response).

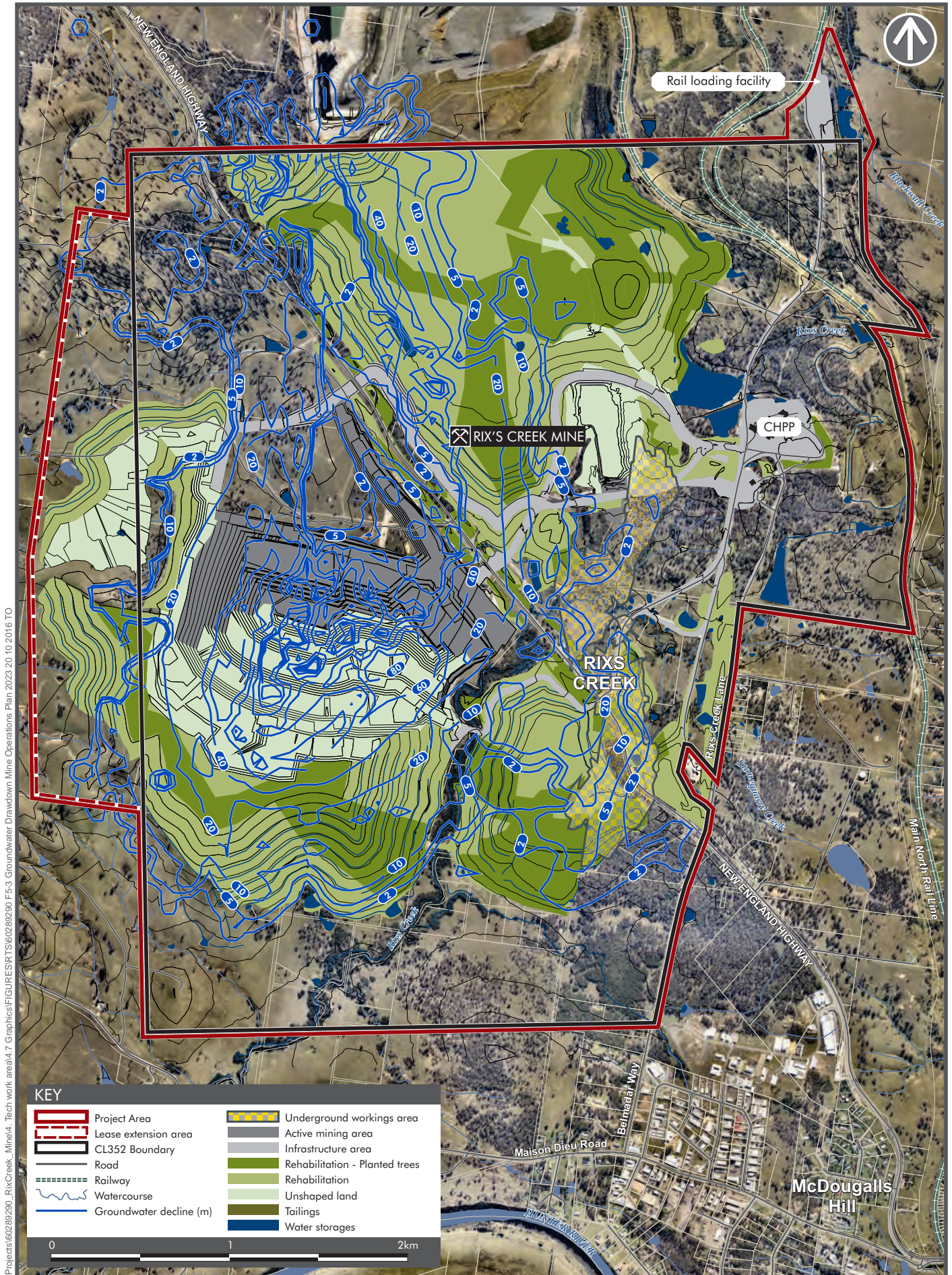
A number of issues raised related specifically to the groundwater modelling undertaken. Several of these issues resulted from the fact that modelling figures presented in the EIS were not legible, and this was a result of PDF files being subject to file size reduction. A set of revised figures pertaining to the original groundwater modelling is provided as Appendix E of the RPS Water response at **Appendix C**. Other modelling issues related to the conceptual hydrogeological model, calibration of the model, the presence of a general head boundary, and independent review of the model. Again, many of the modelling issues were clarified during the site meeting with DPI, and supplementary groundwater information is provided in the RPS Water response to address the remaining modelling issues (refer to Section 4 and Appendix A of the RPS Water response).

DPI also queried the off-site impacts, including inflows to Integra mine and impacts to Integra South Pit and Western Extension, and to Ashton Coal Underground Mine. These issues are discussed in Appendix A of the RPS Water response, with additional information shown on schematic diagrams and sections.

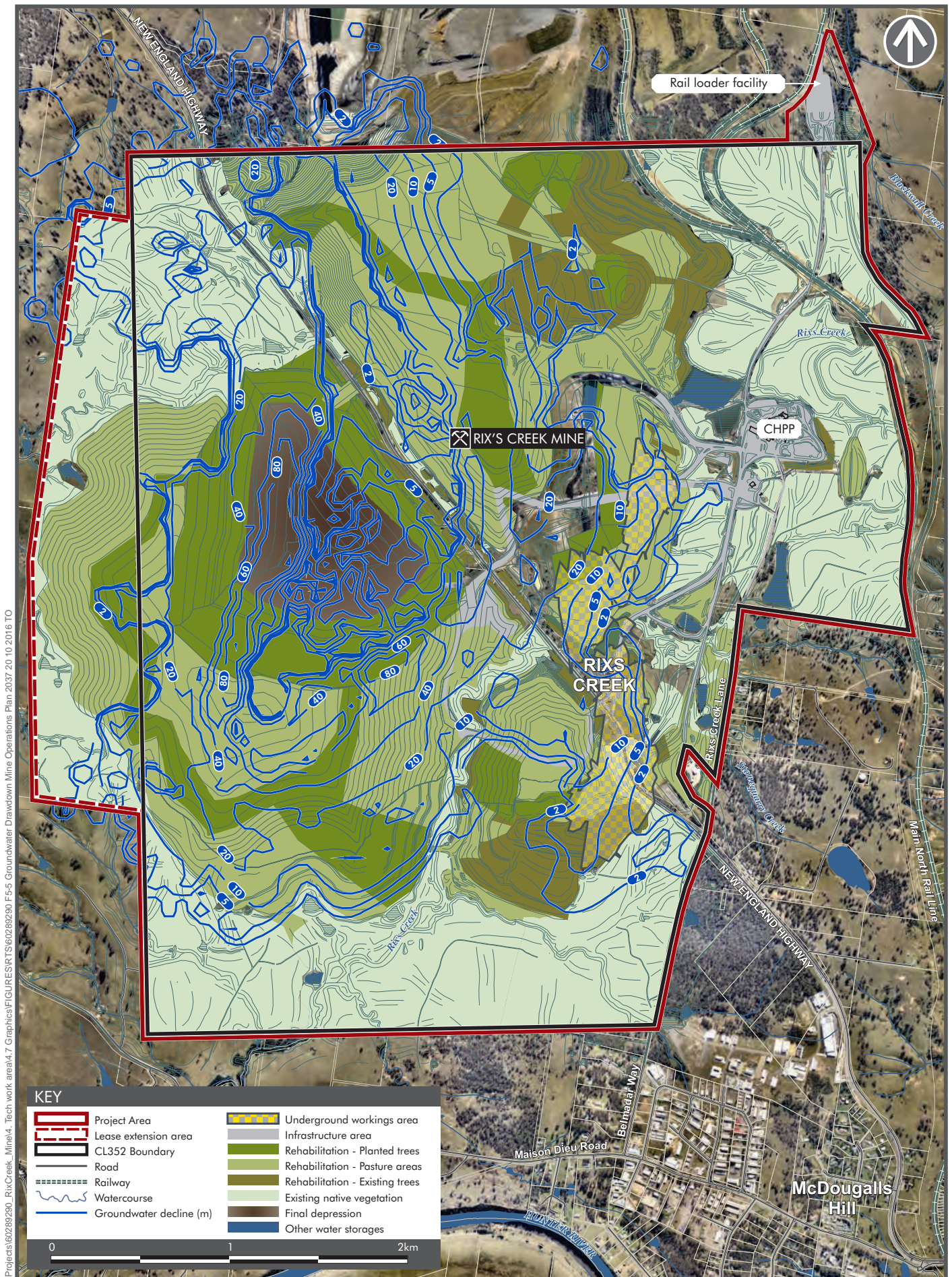
DPI made some recommendations for addressing the groundwater issues, with specific regard to the NSW Aquifer Interference Policy minimal impact considerations, aquifer conceptualisation, the location of monitoring bores and the groundwater model. These recommendations have been addressed, and details discussion is provided in Appendix A of the RPS Water response at **Appendix C**.











5.1.3 Water Licensing

Issue Description

The proponent must provide a consolidated water licensing table, listing all water licenses and approvals under the *Water Act 1912* and the *Water Management Act 2000* (WMA) for both surface and groundwater (hard rock and alluvial) related to the site. Table 15-4 in the EIS could be expanded to achieve this. The consolidated license table should correct errors in the licensing tables presented in the EIS.

The proponent must confirm the quantity of the increased volume of water to be taken from both the alluvial and hard rock water sources as a result of the proposed expansion, and demonstrate that sufficient licensed entitlement is held or can be obtained to account for the maximum predicted take. The proponent would need to apply and obtain an increase in entitlement from the porous rock aquifer to address the peak predicted take of groundwater from this water source.

The proponent must quantify the loss of run-off as a result of the loss of catchment detailed in Table 15-3 and must demonstrate that the loss is accounted for via an appropriate Water Access Licence.

Response

A consolidated water licensing table has been prepared as requested, including all surface and groundwater licenses and approvals (refer **Table 5-1**).

With regard to the increased volume of water taken from alluvial and hard rock water sources, Table 16-7 of the EIS provides the estimated licensing requirement over the life of the Project. The peak modelled groundwater inflow was predicted to occur in 2020-2021, with a total modelled inflow of 305 ML/a. The predicted annual inflow diminishes to 126 ML/a during the final full water licensing year. Given that the mine schedule has been amended as a result of the Integra mine purchase (as discussed in **Section 2.0**), this represents a conservative estimate and the actual groundwater inflow experienced is likely to be lower. The total licenced entitlement for hard rock groundwater currently held by the Mine is 100 ML/a. The Proponent has submitted an application for additional Groundwater Licence allocation to NSW Office of Water (dated 10 August 2015). The application is for an additional 205 ML on licence 20BL170863, increasing the total allocation on this licence to 305 ML. This would ensure that sufficient entitlement is held for the maximum predicted groundwater take.

It is noted that DPI Water has imposed an Embargo Order for the Hunter Water Shortage Zone, under Section 113A of the *Water Act 1912*. The Order places an embargo on any further applications for licences within the Water Shortage Zone, and took effect on 5 February 2016. For coal mines within the Water Shortage Zone, this means that new groundwater licences will not be issued to meet water demands, but operators will be required to trade with other water licence holders. The Rix's Creek Mine is located within the Water Shortage Zone. However, the Embargo Order only applies to applications lodged after the Order came into effect. DPI Water has confirmed that because the Mines' application for additional groundwater licence allocation on licence 20BL170863 was submitted prior to the embargo taking effect, the application can be assessed in accordance with the rules that applied at the time the application was lodged. This application is currently being processed.

With regard to loss of run-off as a result of loss of catchment, the surface water study, Appendix R of the EIS, Section 6.2.2 page 117 states:

"In summary, there will be a nett loss of 243 ha from the three catchments directly affected by this project. The loss of average annual runoff from reduced catchments is estimated at 75ML p.a. using average annual rainfall at Jerrys Plains of 645 mm and a volumetric runoff coefficient of 0.08 (See Table 28 in Appendix A)."

Option 5 of the Mining study details the net loss of 243 ha would result from a combination of the final mining depression and the Portal area for the proposed Underground resource. At completion of the Underground resource or if it is decided not to progress the Underground resource the designed final landform for this area would not result in any loss of catchment area. In this case the maximum net loss of catchment is 140 ha.

Water Access Licences 17992, 19024, 19027 and 19035 (totalling 541 share units of the Hunter Unregulated and Alluvial Water Sources – Singleton) are available to account for this loss.

5.1.4 Diversion of Stonequarry Gully

Issue Description

Insufficient information has been provided to allow DPI Water to assess the impacts of the proposed diversion of Stonequarry Gully. The following recommendations are made in relation to the proposed diversion:

- The proponent must undertake an impact assessment of the proposed diversion of Stonequarry Gully. This must include assessment of impacts on water quality and quantity, dependent ecosystems, hydrology and geomorphology;
- The proponent must provide proposed diversion design, and must demonstrate that the diversion is appropriately designed to mimic natural hydraulic, hydrologic, geomorphic and ecological functions of the water course; and
- The above assessment should be conducted in accordance with standard hydrologic and geomorphologic assessment and design standards, including Rutherford I. D., Jerie K., Marsh N. (2000) A Rehabilitation Manual for Australian Streams. Cooperative Centre for Catchment Hydrology. Land and Water resources Research and Development Corporation Canberra.

Response

This issue is discussed in **Section 2.2** of this RTS Report. The proposed stream diversion would not be required until approximately 18 to 20 years into the Project. During that time mine schedules and plans may change sufficiently to render any approvals gained now obsolete. Rixs Creek has therefore decided to exclude the stream diversion from the current Project and approval is no longer being sought for these works. Should the stream diversion be required in the future, Rixs Creek would carry out the necessary studies to gain approval via a consent modification, or a separate approval process under the *Water Management Act 2000*.

Table 5-1 Consolidated water licensing table

Licence / Approval number				Works	Use	Water Source	Category	Share component / Maximum annual yield or extraction limit
Water Access Licence (WAL)	Works Approval	Usage Approval	Bore Licence					
11919	20WA201037	20UA201038 20UA201039 20UA201040	-	Diversion works - pumps	Irrigation	Hunter Regulated River	General	159
11918	20WA201037	20UA201038 20UA201039 20UA201040	-	Diversion works - pumps	Irrigation	Hunter Regulated River	General	49.5
11917	20WA201037	20UA201038 20UA201039 20UA201040	-	Diversion works - pumps	Irrigation	Hunter Regulated River	General	49.5
9912	20WA201037	20UA201038 20UA201039 20UA201040	-	Diversion works - pumps	Irrigation	Hunter Regulated River	General	24
19024	20WA209900	-	-	Diversion works – pumps / storages	Water Supply Works	Singleton	Unregulated River	150
17992	20WA207389 20WA207390	-	-	Diversion works – pumps / storages	Water Supply Works	Glennies	Unregulated River	5
19027	20WA209902	-	-	Diversion works – pumps / storages	Water Supply Works	Singleton	Unregulated River	300
19035	20CA209920	-	-	Diversion works – pumps / storages	Irrigation	Singleton	Unregulated River	91
11084	20WA201499	-	-	Diversion works - pumps	Water Supply Works	Hunter Regulated River	General	1
-	-	-	20BL170863	Bore	Dust Suppression	Hard rock	-	100

Licence / Approval number				Works	Use	Water Source	Category	Share component / Maximum annual yield or extraction limit
Water Access Licence (WAL)	Works Approval	Usage Approval	Bore Licence					
-	-	-	20BL170864	Bore	Dewatering (groundwater)	Singleton	-	100
-	-	-	20BL168734	Test bore	Monitoring Bore	N/A	-	-

5.2 Department of Resources and Energy

5.2.1 Mining title

Issue Description

The proponent has demonstrated that the proposal has sufficient title over the Project area to satisfy the requirements of section 380AA of the *Mining Act 1992*.

Under the *Mining Act 1992*, mining and rehabilitation are regulated by conditions included in the mining lease, including requirements for the submission of a Mining Operations Plan (MOP) prior to the commencement of operations, and subsequent Annual Environmental Management reports (AEMR).

Response

The *Rix's Creek Mine Mining Operations Plan (March 2013)* is the current MOP for the Mine and the MOP would be revised to incorporate the proposed Project subject to approval. The Mine currently prepares an AEMR each year to report on the mining operations, environmental management and rehabilitation activities undertaken throughout the year. The Mine would continue to prepare and submit an AEMR to report on the progress of the proposed Project should it be approved.

5.2.2 Rehabilitation

Issue Description

DRE notes that the EIS has identified general rehabilitation strategies and objectives and adequately described the functional domains of the Project. Specific performance objectives and standards of each domain have been satisfactorily described.

DRE requires final landform design to be consistent with the surrounding topography and the EIS has provided objectives and criteria to which they will be implemented.

Response

This is noted. As per the commitment made in Ref# 25.6.1 of the Management and Mitigation Measures provided in Table 29-1 of the EIS, "*the proposed final landform will be consistent with the surrounding natural landscape*". The mined lands are to be rehabilitated back to pasture and areas of trees over grass. The focus on the earthworks and rehabilitation program is to provide stable landforms, compatible with the surrounding landscape that will allow optimal post mining landuse in terms of current social and economic constraints.

The proposed final landform at the Mine would address all development existing at the time of determination and proposed further development:

- Provide a post mining landscape which would be safe and non-polluting, with a stable drainage network;
- Not impact the area of Land and Soil Capability Class 2 lands;
- Provide slopes of less than or equal to 10 degrees (18% slopes) (Land and Soil Capability Class 4) over the majority (53.8%) of the site;
- Provide slopes between 10-18 degrees (Land and Soil Capability Class 5) over 34% of the site;
- Have 80.7ha of land below water in the final void; and
- Limit areas of greater than 18° (33%) slopes to 7.7% of the Project area i.e. the batters of the tunnels under the highway and sections of the batters of the final void (Land and Soil Capability Class 6), prior to the void filling with water.

The rehabilitation goals and objectives for the Project are set out in the Rehabilitation Strategy, which guides the rehabilitation program across the entire Mine site.

5.2.3 Assessment of the Resource

Issue Description

The DRE submissions made a range of comments in relation to:

- Size and quality of the resource – Confirmed the quantity of coal resource available in the Mine lease area, its suitability for use in thermal and coking applications;
- Resource recovery – DRE confirmed that based on the information contained in the EIS they consider the Mine plan has been adequately prepared to recover the available resource;
- Coal Royalty – DRE calculated that the Project would result in approximately \$9 million in royalty payments per year as a result of the Project and approximately \$240 million in royalty payments over the life of the Project; and
- Other factors – DRE noted that based on the economic assessment prepared for the Project that it would:
 - Contribute \$394 million to NSW in Gross State Product;
 - Contribute \$104 million to regional Gross Regional Product;
 - Generate a net economic benefit of around A\$250 million;
 - Spend a total of around A\$110 million in capital expenditure over its life; and
 - Will employ around 150 personnel in a typical year of production and up to 225 personnel at full production.

Response

DREs recognition of the economic benefits of the Project are noted.

5.2.4 Recommended Conditions of Approval

Issue Description

DRE recommended a number of conditions to be incorporated into the conditions of approval for the Project, if granted. These related to rehabilitation objectives and the Rehabilitation Plan to be prepared for the Project.

Response

The Project would be undertaken generally in accordance with the indicative conditions recommended by DRE, and rehabilitation activities would be undertaken in consultation with DRE.

5.3 Dams Safety Committee

Issue Description

The proposed development area does not impact any prescribed dams or dam Notification Areas, also there are no newly proposed dams within the proposal that are likely to be considered for prescription. The Dams Safety Committee has no concerns therefore with the development application proposed and has no further comments for submission.

Response

This is noted.

5.4 Environmental Protection Agency

The EPA made a number of comments, including recommended conditions of approval in Attachment 1 of its submission, and detailed comments regarding air quality in Attachment 2 of the submission.

A detailed response to the air quality issues raised by the EPA was prepared by the air quality consultant Todoroski Air Sciences. A full copy of Todoroski Air Sciences response to the EPA's comments is provided at **Appendix D** and detailed below.

5.4.1 Diesel Emissions

Issue Description

The estimation of emissions from diesel engines has been done explicitly to assess contribution to potential impacts on nitrogen dioxide (NO₂) concentrations, as shown in Section 10 of the Air Quality Impact Assessment (AQIA) (Appendix L of the EIS). Emissions of particulate matter have been included in the estimation of emissions from the movement of materials (Table 5-1 of the AQIA).

Section 5.1.1 of the AQIA states the estimated dust emissions “reflect the application of best practice dust mitigation currently being implemented at the site”. This includes use of water suppression to reduce dust emissions, listed as providing 85% control for hauling on unsealed roads. Water suppression is not applied to emission from diesel engines.

This approach leads to underestimation of emissions of particulate matter from diesel engines. As noted in Section 10 of the AQIA, there are substantial quantities of diesel used by the proposed operations, which in the EPA's experience can contribute to a significant proportion of total PM_{2.5} emissions from mine sites.

Based on the above, emissions of particulate matter from diesel engines have not been adequately estimated, and the assessment does not appear to nominate controls for particulate emissions from diesel engines. The EPA requires the Proponent determine and report the change to total emissions and resultant impacts, and specify measures to minimise emissions from this source.

Response

The US EPA AP4-2 emissions factor equations used in the AQIA for hauling activities include contributions from diesel exhaust emissions. The emission factor equations do not distinguish between separate sources of emissions from haul trucks as all of the emissions were measured when deriving the equations. Direct measurements by Todoroski Air Sciences, which included exhaust and wheel generated particulate, showed that watering was able to reduce total emissions by more than 85%. Whilst it would be correct that watering only controls wheel generated dust, it does not follow that this underestimates the total emissions, as assumed by the EPA.

In its letter, the EPA states that diesel exhaust particulate may not have been adequately estimated due to the use of the 85% control factor (that is dust suppression, typically through the use of water carts, is constantly applied to 85% of the trafficked area) for haul road emissions, and requires this to be quantified. To address the EPA requirement, some further hypothetical calculations were made, as outlined below.

To determine the level of impact of the haul truck diesel exhaust emissions, the potential diesel exhaust emissions were estimated separately and compared with the modelled emissions presented in the AQIA. The worst-case, Year 2023 emission estimates are used to address the EPA request.

To estimate potential particulate matter (PM) emissions from the diesel powered equipment, the emission factor set out in the US EPA Federal Tier II standards of emissions for diesel equipment was applied for the number of haul road vehicles obtained from Table D-3 in Appendix D of the AQIA, and assuming a load factor and average operational hours as those assumed in the NSW EPA Emissions Inventory (NSW EPA, 2012).

This resulted in an estimated amount of approximately 18,108 kg/year of total PM emissions from haul road vehicle exhaust in Year 2023.

PM_{2.5} emissions from hauling (the use of haul trucks to move overburden and ROM coal) operations are estimated to be:

- 43,455 kg/year when applying an 85% control factor as per the US EPA emission factor equations (i.e. as modelled); or

- 58,847 kg/year when applying an 85% control factor only to the emissions due to mechanical processes.

The difference of approximately 15,392 kg/year is calculated to represent the potentially underestimated emissions. A summary of changes related to vehicle exhaust to meet the EPA request to show further details, is outlined in **Table 5-2**.

Table 5-2 Summary of changes related to vehicle exhaust as requested by EPA

Parameter	TSP	PM ₁₀	PM _{2.5}
Mass of emissions at mine			
Total emissions for Year 2023 (kg)	2,951,166	1,153,296	138,112
Hypothetically underestimated haul road vehicle exhaust PM emissions (kg)	15,392	15,392	15,392
Percentage of Total emissions (%)	0.5 %	1.3%	11.1%
Concentrations of emissions from mine at most impacted private receptors			
Maximum predicted annual average result at private receptor (µg/m ³)	17	10	1
Potential change in predicted annual average result due to additional vehicle exhaust PM emissions (µg/m ³)	0.09	0.13	0.11
Percentage of criteria of potential change in predicted annual average result (%)	0.1%	0.4%	1.4%

The effect on estimated total emissions from the Mine is approximately 0.5% for TSP and 1.3% for PM₁₀.

The effect of this potential change in emissions would be a potential change in the maximum predicted concentrations at the most affected private receptors of 0.09µg/m³ for TSP and 0.13µg/m³ for PM₁₀, which is small and well within the accuracy of the modelling. Overall this indicates that even if there were any potential underestimation of emissions due to haul road vehicle exhaust, this would be negligible and would not affect the conclusions of the AQIA.

It should also be noted that no new equipment is now proposed for the Project and it would operate with the existing equipment at the site. Due to the purchase of the Integra Open Cut Mine by the Rix's Creek Mine, it is proposed that a scaling back of existing and proposed operations would occur, particularly during the peak production year of 2023. Thus predicted impacts would be lower than presented in the AQIA and shown in the above table.

Control measures that would be used to ensure emissions from diesel engines are minimised where possible include the following measures that would be applied for the Project:

- Where possible, the excess use of vehicles and plant should be minimised by scheduling operations to maximise efficiency (e.g. using plant at or near to its capacity to minimise the amount of time utilised);
- When not in use, engines of on-site vehicles and plant would be switched off;
- Any new plant or vehicles purchased will have adequate pollution reduction devices fitted;
- Vehicles and plant will be maintained and serviced according to manufacturer's specifications; and
- Fleet optimisation will be applied to reduce vehicle kilometres travelled.

5.4.2 Potentially Affected Properties

Issue Description

The assessment predicts exceedances of the air quality criteria as summarised in the tables provided in Section 9 of the AQIA. Impacts above criteria were found for fifteen receptors not owned by the mine.

Nine of these are assessed as having impacts from the Mine greater than air quality criteria, while the other six are assessed by the cumulative assessment to experience additional exceedances of the 24-hour criterion for PM₁₀.

The Executive Summary comments that of the nine directly impacted receptors, one has an existing negotiated agreement (including mitigation measures) with the Project while the other eight are included in the acquisition zone of other existing approved projects.

The cumulative assessment finding that six non-mine receptors are expected to experience additional days above the 24-hour PM₁₀ criterion should be included in the summary in Section 16 and the Executive Summary of the AQIA.

Response

This is noted. Given the proposed amendments to the mining schedule as detailed in **Section 2.0**, the proposed reduction in peak year production as originally proposed in the EIS has been scaled back. The total movement of material is proposed to be reduced by approximately 25% during the peak mining period which would lead to a reduction in total dust emissions of approximately 18%. A detailed assessment of the effects of this reduction on all sensitive receivers is provided in **Appendix X**.

Issue Description

The EPA previously queried whether the receptors used in the assessment adequately represented Maison Dieu. In the letter dated 15th October 2015, Todoroski Air Sciences, as consultants for the Proponent, respond that there are a number of receptors closer to the active mine and near this estate, providing a conservative estimate at this receptor.

Maison Dieu lies behind an arc from receptor R140 and M18. In this sense R140 is closer to the proposed extension. However, both R140 and M18 are assessed as exceeding air quality criteria. It is therefore possible that other receptors in the area could also exceed, especially given the prevalence of wind from the west-north-west. The EPA requires assessment of additional receptors in this area to identify all potentially affected properties.

Country Acres Caravan Park at 58 Maison Dieu Road lies to the south-west of the proposed pit expansion and within 500 metres. It does not appear to have been assessed as a receptor. Maitland Diesel Service is located on Rix's Creek Lane and also does not appear to have been assessed as a receptor. The EPA requires the potential impacts at these receptors to be assessed.

Response

As requested by the EPA, a further detailed assessment of the additional receptors in the area of Maison Dieu has been conducted. The analysis examines the Country Acres Caravan Park located at 58 Maison Dieu Road, (assessed in the AQIA as privately-owned Receptor 45) and Maitland Diesel Services which is owned and operated by the the Mine (assessed in the AQIA as a mine-owned receptor, Receptor M20).

Maitland Diesel Services is a diesel engine repair operation with a primary purpose to service and maintain the diesel equipment used at the Rix's Creek Mine. Maitland Diesel Service is predominantly owned by The Bloomfield Group. This receptor is considered to be associated with the Rix's Creek Mine (as it would not exist without the mine), and hence no further analysis is performed on this receptor. The predicted air quality impacts at this receptor (M20) are presented in Section 9 of the AQIA.

A contemporaneous PM₁₀ assessment per the NSW EPA Approved Methods has been performed for the Country Acres Caravan Park (Receptor 45) to determine the extent of potential impacts at this location. A summary of the findings of the contemporaneous assessment is presented in **Table 5-3**.

Time series plots of the 24-hour average PM₁₀ concentrations are presented in **Figure 5-6** and **Figure 5-7**.

Table 5-3 NSW EPA contemporaneous assessment – maximum number of additional days above criteria

Receptor ID	2017	2020	2023	2026
45 (Country Acres Caravan Park)	0	1	4	3

The results indicate that the potential cumulative PM₁₀ impact which could arise at this location may be between one to four additional days of impact. A comparison of these predictions with those predicted for Receptor 140 and Receptor 61, which are located closer to the Project than the Country Acres Caravan Park, show that the predicted number of days where exceedances may occur would likely be lower in some years, indicating that the predicted levels for the surrounding area would be of similar magnitude.

It is noted that with the recent purchase of the Integra Open Cut coal mine, The Bloomfield Group is proposing to reduce the modelled mine schedule/ activity during Year 2023. This would reduce the level of dust emissions hence the predicted impacts in the worst case year 2023 would be less than shown above and in the EIS.

The time-series plots presented in **Figure 5-6** and **Figure 5-7** indicate that **Table 5-3** is not a good indicator of potential impact. The plots are included to show how a general decline in overall impacts occurs over time (noting that Year 2023 is modelled at higher activity rates than are now proposed to occur).

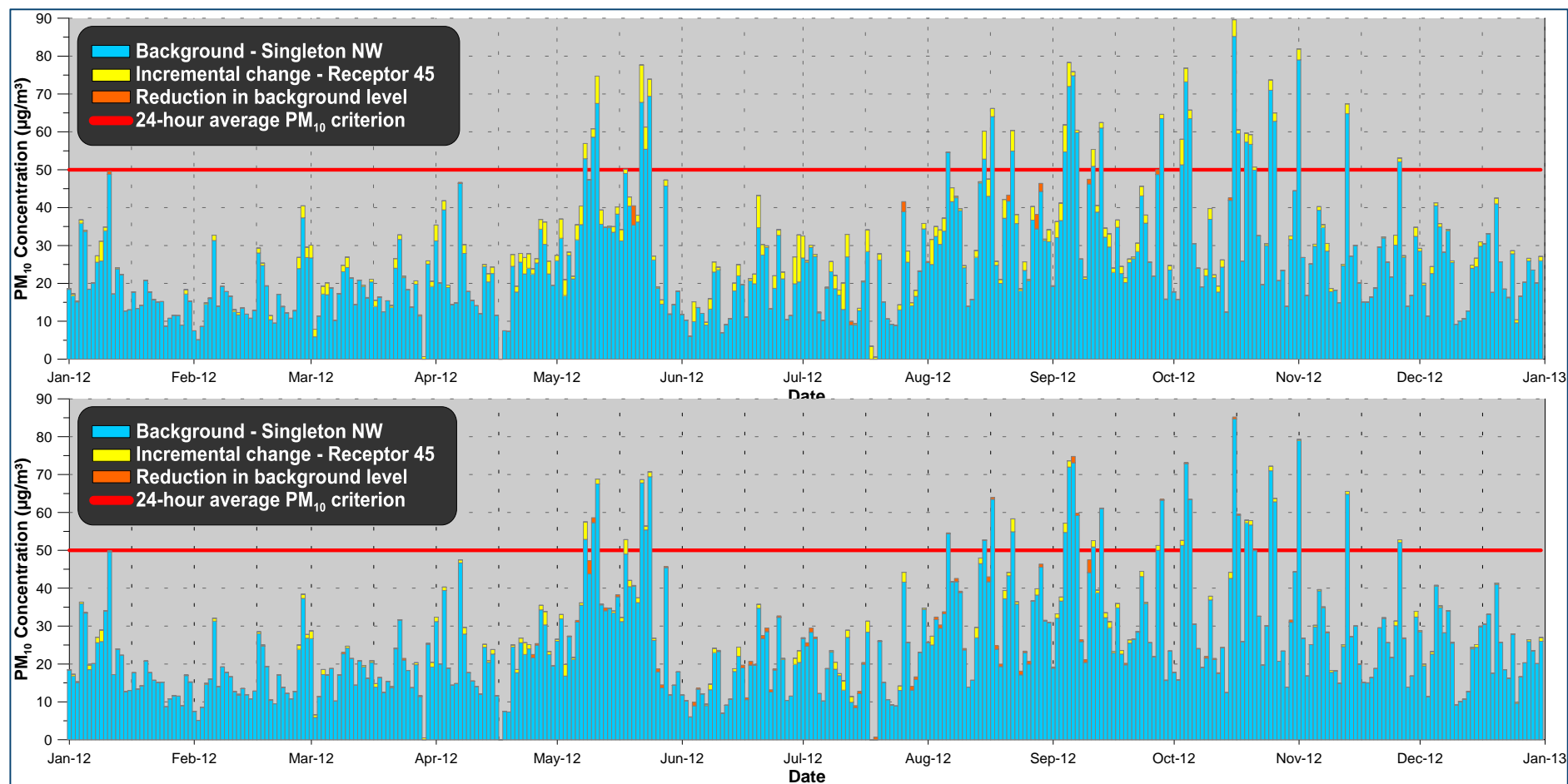


Figure 5-6 Predicted 24-hour average PM₁₀ concentrations for Receptor 45 in Year 2017 and 2020

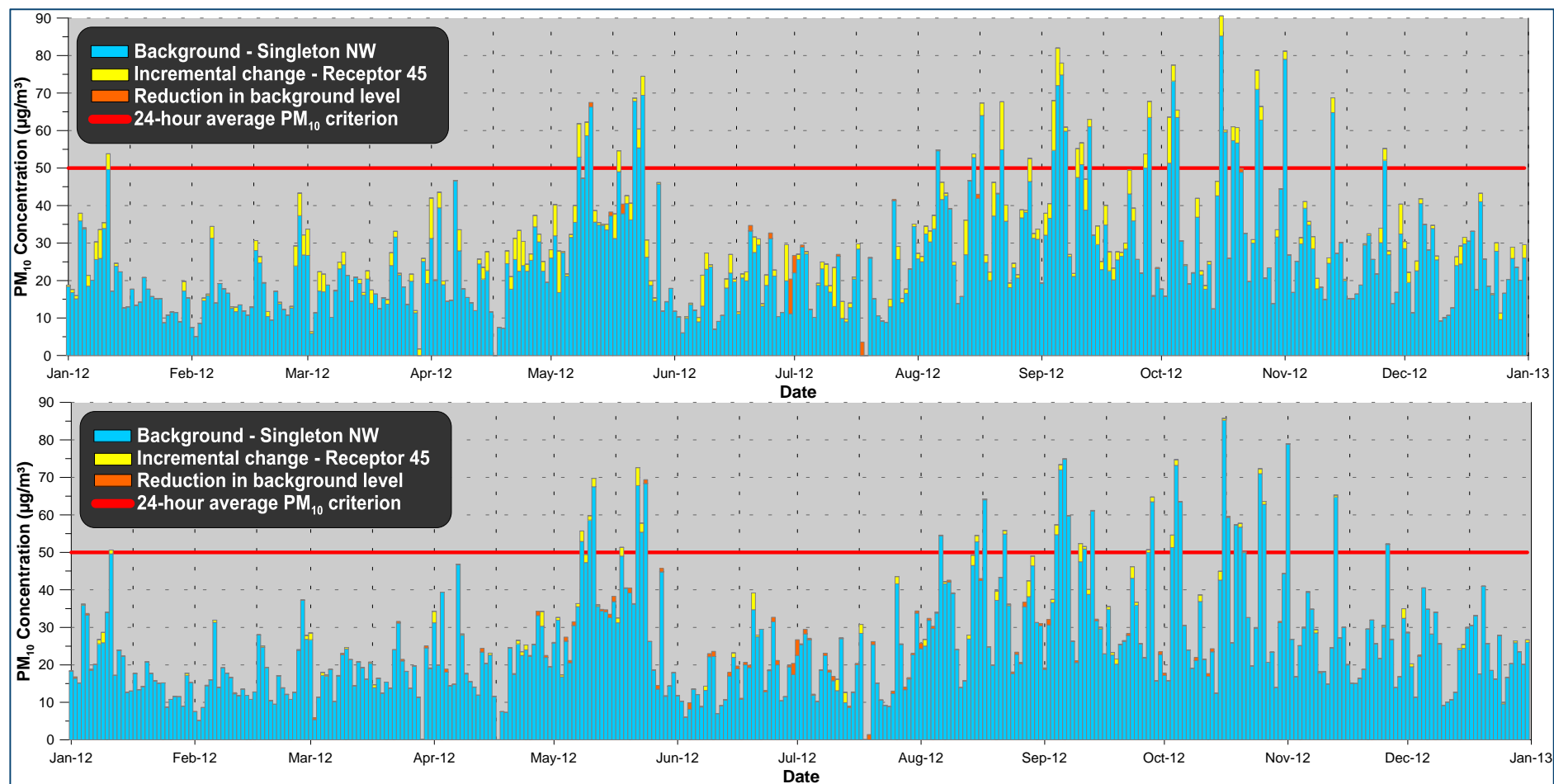


Figure 5-7 Predicted 24-hour average PM₁₀ concentrations for Receptor 45 in Year 2023 and 2026

5.4.3 Estimates of Particulate Matter arising from Wind Erosion

Issue Description

The EPA has previously queried the estimates of particulate matter arising from wind erosion as the areas set out in the revised AQIA are considerably smaller than previous estimates. Todoroski Air Sciences advised the EPA that work conducted as part of the Pollution Reduction Program (PRP) for EPL 3391 shows that much of the area has been “stabilised”. This is listed as a reason for excluding it from further consideration.

The EPA notes the measurements taken at the mine and presented in PRP report titled ‘*Coal Mine Particulate Matter Control Best Practice Final Licence Variation Notice – Exposed Area Assessment*’ (Rix's Creek, 2015). Stabilised areas are still recognised in this report as a source of dust and should be included.

The EPA further notes that the Exposed Area Assessment acknowledges that the level of stability achieved across the site was due to recent heavy rainfall and inactivity on the stability test areas due to the Christmas shutdown period.

Based on the above, all bare areas across the site are subject to wind erosion and should be included in the emissions inventory for the proposal. Active maintenance is needed to maintain stabilisation.

Response

As rainfall in the Hunter Valley is not uncommon, it would be incorrect to imply that rain or inactivity on a bare surface should be considered as extraordinary factors and not a normal circumstance that leads to reductions in wind erosion emissions. The PRP clearly shows that the bare surfaces on the site become stabilised after rainfall and also actions by Rix's Creek to ensure that inactive areas remain untouched. This is the situation for the majority of the site at any one time, as reflected in the modelling.

Dust emissions due to wind erosion from the active areas in the AQIA have been estimated using an emission factor of 0.4 kg/ha/hour. This emission factor is conservative, and is four times higher than the emission factor of 0.1 kg/ha/hour set out in the Katestone document *NSW Coal Mining Benchmarking Study: International Best Practise Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Katestone, 2011).

For the same modelled quantity of emissions arising from wind erosion, **Table 5-4** presents the area that would be exposed to wind erosion when applying the emission factor of 0.4 kg/ha/hour as modelled and 0.1 kg/ha/hour per the standard emission factor. On this basis, the modelling results are equivalent to having wind erosion from an area four times larger than that specified in the inventory.

Table 5-4 Wind erosion areas for Rix's Creek Mine (ha)

Year	Inventory overburden area	Inventory active pit area	Inventory total exposed area, per 0.4kg/ha/year	Equivalent total wind erosion area, per 0.1kg/ha/year
2012	44	34	78	312
2017	45	21	66	262
2020	32	25	58	230
2023	94	38	133	530
2026	58	62	120	481

Table 5-4 shows that the modelled emissions from wind erosion in the AQIA are representative of large exposed areas, up to 530 ha.

The modelling assumptions relating to wind erosion, are considered to more accurately represent what actually occurs at large mines, that is relatively small but dusty active mining areas and large, not dusty, inactive or stabilised areas.

The Bloomfield Group applies various measures to minimise dust emissions due to wind erosion including:

- Minimising the area of disturbance;
- Rehabilitating inactive, completed areas as soon as feasible;
- Applying interim stabilisation on areas inactive for long periods; and,
- Trafficable areas being clearly marked; and vehicle movements restricted to these areas.

5.4.4 Details on the Derivation of the Emission Rates of Nitrogen Dioxide (NO₂)

Issue Description

In the Todoroski Air Sciences letter to the EPA dated 15th October 2015, reference was made to work conducted by CSIRO stating that the maximum NO₂ in the plume is 63.3 kg. This is scaled by a factor of 1.5 to account for conversion of NO to NO₂ and generates an emission rate based on the blast lasting for five minutes. The approach taken is sound, but the derivation of 63.3 kg as an estimate of the maximum NO₂ released from blasting is not clear.

The CSIRO report – '*NO_x Emissions from Blasting Operation in Open Cut Coal Mining in the Hunter Valley*' (ACARP Project C14054) provides estimates of NO₂ by blasting as a ratio to tonne of explosive used. The report uses an average of 0.06 kg NO₂ per tonne of explosive with a range of 0.002 to 0.32. The blasts sampled in that report used from 60 tonnes of explosive to 565 tonnes of explosive. The report does not indicate whether the maximum represents worst case.

It is not clear how the proponent has derived the value of 63.3 kg. The noted high uncertainty suggests that to conservatively estimate emissions, the greatest proposed explosive charge should be multiplied by an estimate of the maximum emission flux.

The EPA requests the proponent provide further details on the derivation of the emission rate of NO₂ from blasting, including the amount of explosive assumed and the emission flux, or equivalent information.

Response

The emission rate of NO₂ was derived on the basis of the maximum mass of NO₂ emitted from any measured blast in the CSIRO study of Hunter Valley blasts (Attala et al., 2008). This value is 63.3kg and was obtained from Table 1 of the CSIRO study. The maximum mass of NO₂ was measured on 1 March 2006 (see **Figure 5-8** below).

The emission rate for NO₂ was derived on the basis of this mass of emitted NO₂, consideration of other corroborating information from confidential studies, and the assumptions set out in the AQIA for modelling the release of the NO₂ emissions from any blast.

Specifically, these assumptions were to increase the maximum measured rate by a factor of approximately 1.6 and to release all of the NO₂ emissions within a 5-minute period, i.e. 63.3 kg x 1.6 / 5 mins = emission rate (mass per unit time).

The data contained in the CSIRO study (Attala et al., 2008) suggests that there is no significant correlation between the amount of explosive used and the generation of NO₂ from a blast. The CSIRO and other contemporary studies show that blast fume emissions can vary greatly depending on a number of factors but are largely dependent on the tendency of a particular blast (or holes within the shot) to generate significant NO₂ emissions.

Accordingly, no assumptions were made in regard to the amount of explosive used, nor was any assumption or calculation made in regard to the emission flux per unit of explosive used.

7880 *M.I. Attalla et al. / Atmospheric Environment 42 (2008) 7874–7883*

Table 1
Through plume measurement results

Date	Total ANFO charge (t)	Peak NO ₂ Conc (ppm)	Plume volume (m ³ × 10 ⁻⁶)	Mass of NO ₂ (kg)	Emission flux (kg t ⁻¹ ANFO)		
					NO	NO ₂	NO _x
12/12/2005	281	3.7	1.4	9.9	0.5	0.03	0.6
13/12/2005	150	0.4	5.3	3.7	0.4	0.03	0.4
14/12/2005	119	0.0	0.0	0.0	0.0	0.00	0.0
21/12/2005	229	1.0	4.4	7.9	0.6	0.04	0.6
22/12/2005	211	0.0	0.0	0.0	0.0	0.00	0.0
23/12/2005	222	0.0	0.0	0.0	0.0	0.00	0.0
5/01/2006	177	1.0	0.2	0.4	0.0	0.00	0.0
6/01/2006	275	1.1	15.3	30.6	1.8	0.12	1.9
12/01/2006	225	1.6	6.2	18.3	1.3	0.08	1.4
18/01/2006	169	1.3	1.7	0.2	0.4	0.02	0.4
23/01/2006	139	2.1	4.2	16.7	1.9	0.12	2.0
25/01/2006	155	0.4	4.4	2.9	0.3	0.02	0.4
30/01/2006	132	0.7	5.3	7.1	0.8	0.05	0.9
22/02/2006	224	0.0	0.00	0.0	0.0	0.00	0.0
1/03/2006	194	1.6	20.6	63.3	5.0	0.32	5.3
12/05/2006	362	6.5	1.9	23.3	1.0	0.06	1.1
15/05/2006	131	0.3	3.2	1.7	0.2	0.01	0.2
19/05/2006	168	0.0	0.00	0.0	0.0	0.00	0.0
30/05/2006	100	0.8	0.00	1.0	0.0	0.00	0.0
1/06/2006	365	0.7	3.5	4.9	0.2	0.01	0.2
6/06/2006	145	0.8	11.5	17.5	1.9	0.12	2.0
15/06/2006	60	0.0	0.00	0.0	0.0	0.00	0.0
26/06/2006	254	4.3	0.3	2.1	0.1	0.01	0.2
27/06/2006	212	5.6	0.9	10.0	0.7	0.04	0.7
28/06/2006	241	0.0	0.00	0.0	0.0	0.00	0.0
6/07/2006	565	2.8	2.7	14.0	0.4	0.03	0.4
13/07/2006	184	7.0	1.0	12.6	1.1	0.07	1.2

Figure 5-8 Extract of Table 1 from CSIRO study of Hunter Valley blasts (Source: Attalla et.al, 2008)

5.4.5 Hunter River Salinity Trading Scheme

Issue Description

Section 15.3.5 of the EIS states that the mine is licensed for water discharge under current conditions of EPL 3391. Section 15.3.5 further notes “*the mine holds salt credits that would facilitate release of water under the conditions of the Hunter River Salinity Trading Scheme, if a discharge point is found to be necessary in the future*”.

Currently EPL 3391 does not permit any discharges from the site. The EPA notes the Project does not propose the introduction of any licensed discharge points at the site. As such the EPA does not have any recommended conditions of approval specifically relating to surface water discharges.

Any future proposal to discharge from the site, including under HRSTS conditions, would require amendments to the EPL and consent. This would require an assessment of potential impacts for any proposed discharge to waters.

Response

This is noted. Should a licensed discharge point be required in the future, an application would be made to amend the EPL and Project consent, and this would include an assessment of potential impacts so that applicable agencies could undertake a thorough assessment

5.4.6 Environment Protection Licence

Issue Description

If Project approval is granted amendments will be required to the current EPL 3391 or the premises. The proponent will have to make a separate application to the EPA to amend the existing EPL 3391 prior to undertaking any on site works associated with the expansion.

Response

This is noted, and an application to vary EPL 3391 would be made if approval for the Project is granted.

5.4.7 Recommended Conditions of Approval**Issue Description**

The EPA recommended a number of conditions to be incorporated into the conditions of approval for the Project, if granted. These related to noise limits, noise monitoring and noise reporting.

Response

The Project would be undertaken generally in accordance with the indicative conditions recommended by the EPA, however the specific detail of conditions relating to noise would be negotiated and agreed with the DP&E and EPA prior to approval of the Project.

5.5 Hunter New England Population Health**5.5.1 Air Quality**

A response to the air quality issues raised by Hunter New England Population Health has been prepared by the air quality consultant Todoroski Air Sciences. A full copy of the response is provided at **Appendix D**.

Issue Description

It is important that the EIS should address the likely future air quality standard for annual average PM₁₀ of between 20 and 25 µg/m³ and annual average PM_{2.5} of 8 µg/m³, as flagged in the *Proposed variation to the Ambient Air Quality NEPM*. While the EIS states (on page 102) that the "Air quality impacts were assessed having regard to the World Health Organisation (WHO) Air Quality Guidelines (2005) for particulate matter", the EIS did not use the annual goal of 20 µg/m³ recommended by WHO in the document. Our focus in this review is on average annual particulate levels because this measure is most predictive of health impacts and PM_{2.5} is considered to have more significant health impacts than PM₁₀.

Response

NSW Health is referring to the summary of the AQIA in the main body of the EIS. The complete AQIA report is included as Appendix L to the EIS and addresses the likely future annual average PM_{2.5} and PM₁₀ impacts that may arise due to the Project. The predicted impact at each location is explicitly tabled, and contour diagrams are provided in the AQIA report.

Overall, the assessment shows that the Project would reduce impacts on the population as it moves further away from the main population areas. In 2023, impacts were assessed to have potential to increase temporarily above the decreasing trend, before decreasing again in future, however this period of increased activity (in 2023) is no longer proposed, and the impacts in 2023 would be less than those assessed.

In Section 14 of the AQIA, a comparison of the proposed Project impacts with the approved impact zone shows that the proposed Project would have a greatly reduced zone of impact. It must also be noted that reduced impacts would occur due to improvements in mining methods (i.e. since the original approval), and also the proposed Project design.

The assessment explicitly considers the most relevant health metric (annual average PM_{2.5}) and makes an assessment in accordance with the NEPM advisory reporting standard in this regard.

It is important to note that NEPM air quality standards are not designed to be applied to specific Projects.

The NEPM standards apply to the average exposure to air pollutants of the general population, in each state. The NEPM requires that the states report to the Commonwealth on the trends in air quality by way of reference to the standards.

Potential air quality impacts from individual Projects on individual residents are compared to impact assessment criteria. Whilst at the time of preparing the AQIA, it was known that the NEPM was under review, the NEPM goals were not known or agreed, and it is not presently known if any revised goals might be applied in some form as future impact assessment criteria.

On page 104 in the main body of the EIS, in the section outlining the criteria applied, under the subheading of health impacts, it is stated that: *“Assessment of potential human health impacts has been carried out by reference to the WHO criteria and NEPM reporting standard for PM_{2.5}.”* This is consistent with NSW Health's focus in its review, and the AQIA includes PM₁₀ impact contours at the 20 µg/m³ level.

The WHO considers that health impacts are most closely correlated with PM_{2.5} levels, and has set health based criteria of 10µg/m³ for annual average PM_{2.5}. The WHO uses PM₁₀ criteria as a surrogate for its PM_{2.5} health criteria as measuring PM_{2.5} is costly and measurement is not as widespread as for PM₁₀. This allows the larger number of existing and generally more reliable PM₁₀ monitors to be used to manage PM_{2.5} levels, and protect health over a wider area.

The WHO PM₁₀ criterion is set at 20 µg/m³ (twice the level of the health based PM_{2.5} criterion) as PM₁₀ levels are generally twice the PM_{2.5} levels in most jurisdictions that the WHO has assessed (mainly urban areas in the Northern Hemisphere).

The WHO states that where PM_{2.5} and PM₁₀ levels are known, the PM₁₀ criteria can be adjusted to reflect the known fraction of PM_{2.5}. This means that in areas such as the Hunter Valley, where the PM_{2.5} level is generally less than half of the PM₁₀ level, a higher PM₁₀ criterion would apply to manage health.

In the Hunter Valley, approximately 35%¹ of the PM₁₀ in the ambient air is comprised of PM_{2.5}, hence the applicable WHO criterion for annual average PM₁₀ would be approximately 29µg/m³. If only the monitors outside of the three urban areas of Singleton, Muswellbrook and Denman are considered, PM_{2.5} comprises approximately 33% of the PM₁₀ and the annual average PM₁₀ criteria that the WHO would apply to manage health effects would be 31 µg/m³. Regardless, a level close to the NSW EPA criterion of 30µg/m³ would be appropriate for the Hunter Valley.

Issue Description

The village of Camberwell is inside the contours for modelled worst case annual PM_{2.5} and PM₁₀ goals (using 30 µg/m³ as the goal) (Figures 11.7, 11.8, 11.9, 11.10). Figures 11.9 and 11.10 of the AQIA depicting modelled worst case annual average PM₁₀ only provide a 30 µg/m³ contour. Displaying a 20 µg/m³ and 25 µg/m³ contour (as relevant to the goal promoted in the variation to the Australian NEPM) would be of great use in assessing the impact on the nearby settlements such as McDougalls Hill and Singleton Heights. While the Project may only contribute a small (but not insignificant) proportion of particulate emission to the local communities, it is the total impact that is important from a cumulative impact assessment perspective. The intensive mining in this area will likely exceed current and particularly future air quality goals making it difficult to argue that increased particulate emissions are acceptable from a cumulative impact perspective. There are multiple and significant impacts on receptors 170 – 177. The EIS appears to dismiss these impacts because the properties are eligible for acquisition, however, rights to acquisition do not diminish or negate the cumulative impact to these communities (page 111).

¹ The PM_{2.5}/PM₁₀ ratio (up to 2015) at all of the thirteen Hunter PM_{2.5} monitors where PM₁₀ data are also collected.

Response

NSW Health is potentially referring to the summary of the AQIA in the main body of the EIS. The complete AQIA report is included as Appendix L to the EIS. The AQIA includes incremental and cumulative contours shown in greater detail than on in the main body of the EIS.

The impacts at residences in Camberwell and other properties in the vicinity are not intended to be dismissed because the properties are eligible for acquisition. Impacts at these locations arise due to the existing situation, irrespective of the Project, and the intention is to be clear that the impacts from all mines have been modelled, and to also show that these cumulative impacts are properly represented in the assessment. The Project makes very little difference to the levels of impact at these locations, and the predicted change would be well within any natural variation in the background levels of the ambient environment, or the modelling precision. The intention was to reasonably assess the predicted impacts in the context of the receiving environment.

To further quantify the potential impacts of the Project for receivers in Camberwell additional analyses was undertaken for receivers 170 – 177, with the exception of receivers 172 and 174 which have since been purchased by the Mine following the exhibition of the EIS. Details of this assessment are provided in **Appendix X**.

This analysis concluded that the predicted annual average PM₁₀ impact due to Project is relatively small in comparison to the other mining operations, with the exception of Receptor 171, where the contribution due to Rix's Creek in future years may be similar to the other mining operations. This receptor is currently afforded acquisition rights by other mining operations, and Rix's Creek would also offer such acquisition rights.

5.5.2 Noise

Issue Description

The noise modelling in the EIS shows the potential for some significant exceedances of Project specific noise level in all Noise Assessment Groups (NAG) during worst case scenarios. It has been explained in the EIS that, in accordance with the above policy, as this is an existing development with noise legacy issues, where the modification would have beneficial or negligible noise impacts, that the consent authority cannot grant voluntary mitigation and acquisition rights. The EIS also explained the noise mitigation measures being implemented to address these legacy noise issues. However, it would be preferable for the affected sensitive receivers if these measures were implemented sooner and that very strict controls were placed on operations during conditions that would lead to the noise levels predicted in Table 4.7: 90th Percentile Operational Predictions – LAeq, 15 minute dB.

Effective community consultation is required throughout the Project to facilitate public involvement and to allow for the community to participate in the mitigation selection process.

Response

The recent acquisition of the Integra Open Cut mine included acquisition of ten fully attenuated Caterpillar 789 rear dump trucks and one fully attenuated Caterpillar 994 loader. This will allow the coal fleet to be fully noise attenuated, including the front end loader used to load them. Only five coal trucks are typically in operation, so the remaining attenuated Caterpillar 789 trucks can be used for overburden haulage in critical areas during enhancing meteorological conditions. A Caterpillar 992K loader has recently been moved from the Bloomfield Mine to replace an older Caterpillar 992C loader, and is currently in use on the Mine's ROM pad.

These actions effectively result in earlier implementation of key noise control measures, which will tend to reduce noise emission in the earlier stages of the Project.

The Mine has developed a contemporary noise management plan, which outlines procedures for managing noise during enhancing meteorological conditions. The procedures are based on a program of proactive forecasting, attended monitoring, and reactive measures involving modifying operations to reduce noise emission to acceptable levels when required.

Community consultation has been extensive throughout preparation of the EIS and during public exhibition of the EIS, as described in Section 9.2 of the EIS and in **Section 3.0** of this RTS Report.

Community and stakeholder consultation will continue during operation of the Project in accordance with the Stakeholder Engagement Strategy prepared for the Project.

5.5.3 Blasting

Issue Description

In February the NSW Environment Protection Authority (EPA) announced the introduction of new conditions for open cut coal mines in NSW prohibiting the emission of blast fumes that are likely to cause offence to members of the public. The new licence condition states: “*offensive blast fume must not be emitted from the premises*”. We emphasise the need to ensure strict control of blast conditions to protect the public from blast fume emissions.

Response

The potential for adverse impacts as a result of blast fume emissions was assessed in Section 11.4 of the EIS. The assessment identified that blasts occurring between 9.00am and 3.00pm pose little potential for adverse blast fume impacts to occur, while during the hours of 4.00pm to 5.00pm, there is potential for adverse blast fume impacts beyond the site boundary.

As noted in the EIS, the Mine currently operates in accordance with a Blast Fume Management Strategy. This includes use of a predictive blast management tool based on forecast weather data to determine if the upcoming conditions are suitable for blasting. These blast management tools indicate the potential extent of impact at various times during the upcoming day, and allow the operators to select the least impacting time of the day at which to schedule the blast. Through the ongoing operation of this system over the life of the Project, adverse impacts as a result of blasting are considered unlikely, or in the event that they do occur, minor.

The Blast Fume Management Strategy lists the potential controls to be used for blast fume mitigation, such as sealing the top of stemmed holes with a gas bag. The Strategy also details the procedure for rating and recording post blast fumes, using the Visual NOx Fume Rating Scale. Where a risk of post blast fume is identified, the blast is videoed in order to capture any post blast fume. In the event that a blast fume is rated as a minimum of three at its highest extent as it leaves the site, DP&E is notified and an investigation is undertaken. With the predictive blast management tool in place however blasting is avoided during times of high predicted meteorological risk.

5.5.4 Surface Water

Issue Description

The EIS mentions one other licensed water user on Rix's Creek, and one other on the Un-named Tributary, that could be impacted by the reduction in catchment flows caused by the Project. However, Rix's Creek is an ephemeral stream with a flow rate of zero for 44% of the time. Presumably these two other water users are not using this water as a drinking water supply.

It is important that any private water users downstream have easy access to and can understand monitoring data. It is also important that, in the event that the water becomes unsuitable for use by private water users that an alternative water source of the same standard, quantity and quality is offered.

Response

Water quality monitoring results are easily accessible to the general public; they are provided on the website for the Mine at:

<http://www.bloomcoll.com.au/Environment/RixsCreek/EnvironmentalReports/tabid/251/Default.aspx>.

The EIS noted that given the Rixs Creek catchment is predominantly dry, small reductions in catchment loss are not expected to alter existing stream hydrological values or resulting geomorphological or riparian regimes. Due to the ephemeral nature of the catchment, it is not known if Rixs Creek is used as a drinking supply for human consumption. Regardless it is unlikely that the Project would impact on downstream water quality due to spillages from the Mine Water Dam, and there is a low risk of impacts on water quality in the surrounding catchment due to ongoing mining

operations. Runoff for working areas is generally captured for treatment (e.g. settling out of suspended sediments in a settlement pond) and tested in accordance with the Mine Water Management Plan. Further detailed discussion in regards to potential surface water impacts is provided in **Section 6.10** in response to submissions received by a community member.

5.5.5 Rainwater Tanks

Issue Description

The EIS does not mention issues associated with water quality from rainwater tanks at residences without a reticulated water supply. It is recommended that the applicant address the issue of potential impacts on rainwater quality that may be caused by dust from mining construction and operations.

The peak reference document in Australia for information in relation to rainwater tanks is enHealth's *Guidance on use of rainwater tanks* (2010). It would be appropriate to utilise this document and apply its recommendations and standards to rainwater tank systems within the vicinity of the development.

The above document states that "tanks should be inspected every 2-3 years for the presence of accumulated sediment. If the bottom of the tank is covered with sediment the tank should be cleaned". In addition, consideration should be given to the installation of first flush diverters to rainwater tanks to reduce the amount of sediment entering the tanks.

A management system of taking complaints and rectifying issues identified should be considered.

Response

The Air Quality Impact Assessment prepared for the EIS undertook dispersion modelling to assess the impacts of particulate matter generation resulting from the Project. Nine sensitive receivers were predicted to experience impacts above the relevant assessment criteria. One of these receivers has an existing negotiated agreement (including mitigation measures) for continuation of acquisition rights, and the other eight are located within the acquisition zone of other surrounding mines (i.e. they would experience an exceedance regardless of the Project). Otherwise, particulate emissions are predicted to be within the air quality criteria for the Project.

Air quality criteria have been developed specifically to protect the general health and safety and amenity of the community in relation to air quality. It is therefore considered unlikely that the Project would generate additional health impacts as a result of dust deposition in rainwater tanks. It is also noted that other sources of particulate matter would contribute to sediments found inside rainwater tanks, including vehicle emissions, wood smoke (from combustion of fires in urban areas as well as from bushfires), and wind driven dust.

Whilst the Mine is not responsible for the care and maintenance of rainwater tanks which are not under its ownership or control, it is noted that it would otherwise be the responsibility of the owners of the tanks to manage them in accordance with the enHealth's *Guidance on use of rainwater tanks* (2010) regardless of the Project proceeding. Additional mitigation measures such as first flush diverters and inspection / cleaning procedures should be considered and implemented by the landowner.

The Mine would continue to implement the air quality management measures currently used to mitigate air quality emissions from its operations. These management measures are consistent with the best practice measures outlined in the NSW EPA document '*NSW Coal Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter*'.

The Mine operates a dedicated enquiry and complaints hotline. Complaints are managed through a complaints register which includes details of the complaint and follow up actions taken.

5.6 Office of Environment and Heritage – Heritage Division

5.6.1 Recommended Conditions of Approval

Issue Description

The Heritage Division recommended a number of conditions to be incorporated into the conditions of approval for the Project, if granted. These related to the “Linear Embankment and Mound with Historic Material” and the “Rixs Creek Coke Ovens and Associated Works”.

Response

The Proponent generally agrees with the conditions recommended by the Heritage Division, however the specific detail of conditions relating to heritage would be confirmed with the DP&E in consultation with the Heritage Division prior to approval of the Project.

5.7 Office of Environment and Heritage

5.7.1 Threatened Species Mapping and Offsetting

A response to the issues raised by OEH relating to threatened species mapping and offsetting was prepared by the ecology consultant Eastcoast Flora Survey. A full copy of the response is provided at **Appendix E**.

Issue Description

After receiving advice from the Australian Government Department of the Environment (DoE), OEH is of the opinion that the areas mapped as the Central Hunter Valley Eucalypt Forest and Woodland is incorrect.

OEH requested that updated mapping of the Central Hunter Valley Eucalypt Forest and Woodland and subsequent areas be provided.

Response

The extent of threatened vegetation with potential impact from the Project was recalculated by the ecology consultants Eastcoast Flora Survey, in consultation with OEH and an accredited Biobanking assessor.

The required revision to the extent of threatened vegetation affected by the proposal was primarily due to the differing assessment requirements necessary for State and Commonwealth governments. Over the life of this Project, updates to proposed disturbance areas and threatened ecological communities under relevant legislation have meant several revisions to the original Project report, and during this process, it became evident that each level of government assessed the same vegetation differently.

In the original mapping and assessment of significance in 2013, much of the assessment area was former grazing land that, with the removal of cattle, had responded with mass germination and growth of primarily Ironbark (*Eucalyptus crebra*) saplings. Mapping of these lands consequently pulled out the larger trees and groups of trees or remnants as specific vegetation types, with the balance remaining as ‘derived native grasslands’ (DNG). Assessment under NSW legislation, which does not include such areas of derived grassland in determinations of threatened communities, was required only on the larger trees and remnants. This resulted in a potential impact on approximately 1.5 ha of State-listed threatened ecological communities. At that time, there was no Commonwealth listed affecting the land.

During assessments undertaken in 2014 for the Upper Hunter Strategic Assessment (UHSA), a program being run and co-ordinated by OEH, DNG were not specifically included in State-listed threatened communities and consequently did not trigger a significant impact. However, the UHSA did include Matters of National Significance as listed on the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and for which there is now a Commonwealth listing (Central Hunter Valley Eucalypt Forest and Woodland(CHVEFW)) occurring on land owned by The Bloomfield Group. An update of the mapping and assessment to address the Commonwealth listing was completed in October 2015 using the existing mapping, revealing the presence of approximately 6 ha

of CHVEFW. As the Commonwealth had already deemed the Project as not being a Controlled Action, no further consideration of this community was required under the EPBC Act. The purpose of mapping the extent of the CHVEFW was to maintain consistency with the Draft Biodiversity Plan for Coal Mining in the Upper Hunter Valley, NSW, which is a requirement under the UHSA interim policy.

Issues were detected, however, in the assessment of Commonwealth-listed vegetation, specifically in how the two levels of government view remnant vegetation. Under Commonwealth legislation, the definition of a 'patch' of vegetation is that with a separation distance of 30m between neighbouring 'tree' species (not the 100m separation used by NSW), which includes saplings > 1m in height (not included in NSW TECs). This meant that much of that regrowth ironbark that was formerly mapped as DNG required amalgamation into larger 'patches' under the meaning of the EPBC Act. This situation was exacerbated by the period of time that had elapsed between the original mapping of vegetation in 2013, and the subsequent assessment by determining authorities in 2015. During this period, continual growth of sapling eucalypts evidently became more pronounced in aerial imagery, meaning that considerably more vegetation met the requirements of CHVEFW.

Remapping of the CHVEFW, strictly adhering to EPBC guidelines as detailed above, in 2015 revealed approximately 95ha of this community, an increase from the 6ha originally calculated. The bulk of this was due to the regrowth ironbark that is obvious in the aerial imagery (plus the required 30m buffers into grasslands), and which effectively fills in the gaps between the more obvious remnant areas. This 95ha of threatened vegetation includes:

- All patches of *Eucalyptus crebra* and/or *Corymbia maculata* and/or *Eucalyptus moluccana* woody vegetation and saplings >1m high, with separation distances of 30m or less between adjacent trees, and where native ground cover is dominant; and
- A 30m buffer into surrounding grassland from the outer edge of these patches, as per the EPBC guidelines.

As a consequence of this process, the amount of significant vegetation protected under the Commonwealth increased to 95 ha, and owing to the requirement to include Matters of National Significance in the environmental assessment, also meant assessment of this vegetation in the UHSA and an update of ecosystem credits.

During the Project review process in 2016, OEH disputed the method in which the Commonwealth CHVEFW was interpreted for the Project (in particular, how woodland buffers and DNG were mapped), and a series of discussions and negotiations followed. These discussions included the relevant officer from the Commonwealth DoE. As OEH was coordinating the UHSA process, it considered that all projects should interpret CHVEFW in a similar way. As a consequence, staff at OEH developed a method which automated the generation of woodland buffers into derived grassland areas, adhering to the guidelines included in the listing advice for CHVEFW. The steps involved are described in the ecology consultant's response at **Appendix E**.

An additional step to this process was also implemented to improve accuracy and provide a more 'natural' flow, by incorporating a 15m buffering around the centre point of areas between woodland patches that are within 30m of each other. Applying this total process to the Project area revealed **55.93 ha** of CHVEFW (incorporating 16.82 ha of woodland and 39.11 ha of DNG). This is a reduction from the 95 ha last calculated for this EEC. A revised map showing the distribution of CHVEFW is appended to the ecology consultant's response at **Appendix E**.

Issue Description

The EIS appears to include incorrect ecosystem credit calculations. The calculation errors appear to have occurred in the Landscape Value Assessment component. OEH requested that these entries in the calculator be rectified as they can impact on the Project's credit requirements.

Response

Reason for Discrepancies in Credit Calculations

The calculation of credits for this Project has been revised. Values entered into the Landscape Value Assessment component were revised to reflect updated values resulting from finalisation of the

proposed development area. In addition, areas of DNG were included as 'native vegetation cover', when it was later advised by OEH that such areas should not be included. Other discrepancies identified included minor changes to Connectivity Value and Adjacent Remnant Area components. In addition, a typographical error in the number of hectares of DNG was detected in March 2016, which had not been identified in previous document reviews. This involved the documentation of 52.2 ha of DNG, instead of 158.37 ha. As a consequence, a revision to the credit calculations was required, which was undertaken by OEH in early April 2016.

Revised Credit Calculation

Following the revision of the credit calculation and the reassessment of the Project site, the final credit calculation for the Project is detailed in **Table 5-5**.

Table 5-5 Revised Credit Calculation

Vegetation Type/Class/Formation	Area (Ha) of vegetation type certified	Number of credits required
Zone 1_ Forest Red Gum grassy open forest on floodplains of the lower Hunter	0.80	29
Zone 2_ Bull Oak grassy woodland of the central Hunter Valley	0.10	2
Zone 3_ Swamp Oak - Weeping Grass grassy riparian forest of the Hunter Valley	0.36	11
Zone 4_ Narrow-leaved Ironbark - Native Olive shrubby open forest of the central and upper Hunter	17.83	509
Zone 5_ Grey Box grassy open forest of the Central and Lower Hunter Valley	0.62	15
Zone 7_ Narrow-leaved Ironbark - Native Olive shrubby open forest (DNG)	158.37	2,742
TOTAL	178.08	3,308
Coastal Floodplain Wetlands	0.80	29
Coastal Valley Grassy Woodlands	0.10	2
Coastal Swamp Forests	0.36	11
Hunter-Macleay Dry Sclerophyll Forests	0.62	15
North-west Slopes Dry Sclerophyll Woodlands	176.20	3,251
TOTAL	178.08	3,308
Dry sclerophyll forests (shrub/grass sub-formation)	176.82	3,266
Forested wetlands	1.16	40
Grassy woodlands	0.1	2
TOTAL	178.08	3,308

Reasonable Steps to Obtain Offset Credits

In accordance with the *Draft Guidelines for the mitigation of coal mining impacts on biodiversity Upper Hunter Strategic Assessment* (OEH, 2015), and the *Upper Hunter Strategic Assessment Risk Categories and Associated Offsetting Requirements* (OEH, 2016), The Bloomfield Group has initiated the process of obtaining the required offsetting credits for the Project, as detailed in

Table 5-6.

In the event that the UHSA has not been finalised prior to determination of this Project, The Bloomfield Group would enter into a Voluntary Planning Agreement (VPA) with the Minister for Environment. The

VPA will be an offer of an amount of money, calculated utilising current monitory credit values that will satisfy the offset requirements.

Table 5-6 Reasonable Steps to Demonstrate Attempts to Secure Credits

Reasonable Steps	The Bloomfield Group Actions
Check the approved public register for offset sites (currently the BioBanking public register) and have an expression of interest for credits on it for at least six months.	The Bloomfield Group listed its credit requirements on the Credits Wanted Register on 14 March 2016. No confirmation of credit availability was received prior to the publication of this report.
Liaise with an OEH officer and relevant local councils to obtain a list of potential sites that meet the requirements for offsetting.	Currently underway.
Consider properties for sale in the required area.	Currently underway.
Provide evidence of why offset sites are not feasible – suitable evidence may include: <ul style="list-style-type: none"> The unwillingness of a landowner to sell or establish an approved offset site. The cost of an offset site itself should not be a factor unless it can be demonstrated the landowner is charging significantly above market rates. 	Subject to further investigation of the above points.

Issue Description

OEH noted that the purchase of credits or any other form of offsetting is not regarded as mitigation. The mitigation of impacts on biodiversity will be undertaken in accordance with the draft UHSA '*Guidelines for the mitigation of coal mining impacts on biodiversity*'. Ecological rehabilitation will be undertaken in accordance with the draft UHSA '*Guidelines for the ecological rehabilitation of recognisable and self-sustaining plant community types*' where possible. These documents are currently in preparation.

Response

This is noted. Many of the mitigation measures described in the draft UHSA '*Draft Guidelines for the mitigation of coal mining impacts on biodiversity*' are already being implemented at the Rixs Creek Mine. These are detailed in the Rehabilitation Strategy prepared for the Project. For example, progressive rehabilitation of land is undertaken to minimise the area of disturbance and to rehabilitate these areas as soon as practicable post mining. The final landform has been designed to include a stable drainage network. Soil characterisation was undertaken to gain a detailed understanding of the soils capability of the area. The Rehabilitation Strategy details the growing media development processes to achieve a soil which is capable of supporting a sustainable plant community. A range of land management practices are undertaken including weed management and control activities and a vertebrate pest animal management and control program. Land clearance is undertaken in accordance with the Land Disturbance Management Procedure, which includes the requirements for pre-clearance inspections and disturbance management measures.

In addition to these mitigation measures which are currently implemented on the Mine and will continue to be implemented for the Project, the Mine proposes to offset the impacts through the purchase of ecosystem credits in accordance with the UHSA process described in the sections above. Mitigation measures and ecological rehabilitation will be undertaken in accordance with the relevant OEH guidelines.

5.7.2 Aboriginal Cultural Heritage

Issue Description

OEH concurred with the archaeological survey's assessment of scientific significance of newly and previously recorded Aboriginal sites within the Project area and made recommendations related to preparation of an Aboriginal Cultural Heritage Management Plan.

Response

As per the commitment made in Ref# 17.5.1 of the Management and Mitigation Measures provided in Table 29-1 of the EIS, an Aboriginal Cultural Heritage Management Plan will be prepared for the Project. This plan would be prepared in consultation with the OEH and the appropriate community groups. The OEH submission noted its support for the proposed key components of the Aboriginal Cultural Heritage Management Plan for the Project. The Project will be undertaken in accordance with the commitment made in Ref#17.5.1, Table 29-1 of the EIS.

5.7.3 Flooding

Issue Description

As no flood assessment has been undertaken, OEH recommended that a risk assessment is undertaken of the potential impact of a full range of flood events up to the Probable Maximum Flood (PMF), on the proposed water and sediment management dams. OEH requested that the concerns are appropriately addressed prior to Project approval. Detailed comments were provided in Attachment A of the OEH submission.

Response

A review of potential flooding impacts on the proposed extension of mining at Rix's Creek Mine was undertaken by JP Environmental. A copy of the Flooding Report, including figures showing modelled flood extents, is provided at **Appendix F**, and a brief summary is provided below.

The Flooding Report utilised flood frequency analysis and regional flood estimation to calculate a 1% Annual Exceedance Probability (AEP) peak flow and to determine a peak flow for the PMF.

The report found that flooding in the Hunter River does not impact on operation of the Mine. The influence of flooding in the Hunter River on flood water levels in Rix's Creek does not extend any further upstream than approximately 175 metres from the toe of the nearest rehabilitated slope and about 500 metres along the Creek into the Project area. Sensitivity analyses indicate that if the Extreme Flood level were 1 metre higher, the impact is unchanged.

The flood extents arising from modelled peak flows indicate that, where water levels are not influenced by structures placed within the stream, the Extreme Flood is contained within the floodplain. Average flow velocities on the floodplains for the 1% AEP flood are less than 1.2 m/s. For the Upper Limit 1% AEP, 91% of average velocities are less than 1.2 m/s and the highest average value is 1.6 m/s. For the extreme flood, 80% of average velocities are less than 1.2 m/s and the highest average value is 2.2 m/s. The floodplains generally have tree cover or are well grassed and the soils should withstand the short term velocities.

At the nearest points on Rix's Creek near the Pit 2 tailings dam, modelling indicated that water inflows at the tailings dam are likely to occur under each flow scenario modelled. As Pit 2 is an inactive pit which has recently been used for tailings emplacement and will soon be rehabilitated there would be no significant implications of minor flooding. The existing berms along the edge of the active mining area provide protection for the 1% AEP Upper Limit Flood. Under the Extreme Flood scenario, water inflows to Pit 3 are likely to occur at low points in berms around the perimeter of the open cut. Areas of the active mine and the decommissioned Pit 2 tailings dam will be subject to inundation.

Under the Extreme Flood scenario, one sediment trap is submerged. No sediment traps or dams are impacted under any of the other modelled scenarios. Rehabilitation in this area is mature and as the average velocity on the floodplain at this location is modelled at 0.41 m/s, therefore erosion is considered unlikely.

Water approaches but does not reach the toe of the Pit 3 rehabilitation on the right (western) bank in the 1% AEP and the Extreme Flood scenarios. In each case the velocity is less than 0.51 m/s, and erosion is considered unlikely.

The culvert crossing beneath the New England Highway conveys the Extreme Flood. The modelled maximum water level is about 0.8 metres below the crown of the culvert and more than 2 metres below the road shoulder. Roads and Maritime standards only require the culvert to convey the 1:100 ARI flood.

The Flooding Report also identified that the overtopping of the two mine haul road culverts, to the south of the New England Highway, has the potential to cause localised erosion, although the upstream and downstream channels at each culvert are not eroded and the embankment faces show no evidence of erosion. The short term and infrequent nature of the overtopping events warrant no more than repairs if the culverts overflow during the life of the operation and damage occurs.

However, inundation of the Pit 3 open cut and Pit 2 tailings dam due to elevated flood levels at the culvert crossings to the Pit 3 and Pit 2 tailings dams could cause personal safety, economic and environmental impacts. Mitigation measures were suggested to prevent inflows for floods up to the 1% AEP flood in Rixs Creek. The Mine has included this hazard in the recent review of its Core Risk Assessment and has placed the completion of the mitigation measures (hazard control) into the short term planning schedule.

The Flooding Report concluded that there are threats from inundation to the Pit 2 tailings dam under all flood scenarios modelled. The Pit 3 open cut is currently protected from flooding up to the 1% AEP Upper Limit Flood, however the integrity of the existing berms did not form part of the study. The report recommended the following actions, including:

- Protect the open cut and the Pit 2 tailings dam from inflows due to the 1% AEP Upper Limit flood in Rixs Creek;
- Incorporate review of flood protection measures into the design systems of the mine, specifically for Pit 3 along Rixs Creek. The purpose is to ensure containment berms are of adequate height and integrity to withstand the 1% AEP Upper Limit flood in Rixs Creek;
- Review the integrity and height of existing berms along the perimeter of Pit 3, upstream of the culvert crossing to Pit 2 tailings dam; and
- Ensure that the minimum 35 m floodway width at the culvert crossing to Pit 2 tailings dam is maintained.

The report also noted that for future proofing, it may be prudent to allow for later modification of freeboard to meet the design standards being developed for the latest version of Australian Rainfall and Runoff.

The Bloomfield Group would implement the recommendations identified in the Flooding Report. Specifically The Bloomfield Group will construct a continuous embankment between Rixs Creek and the Pit 2 tailings dam to 71 mAHD. The majority of the required embankments are already in place and only short lengths of embankment, generally less than 1 m but in some places up to 2m in height, would be required. This will provide the required protection of the open cut, Pit 2 tailings dam and Pit 3 cut. The completion of the mitigation measures has been placed into the Mines short term planning schedule.

5.8 Roads and Maritime Services

5.8.1 Recommended Conditions of Approval

Issue Description

The RMS recommended a number of conditions to be incorporated into the conditions of approval for the Project, if granted. These relate to preparation of a Works Authorisation Deed, Construction Traffic Management Plan and design specifications for the cut and cover tunnel (bridge) and associated Side Track Road.

Response

The Project would be undertaken generally in accordance with the conditions recommended by RMS. As specified in Ref#18.6 of the Management and Mitigation Measures in Table 29-1 of the EIS, a Construction Traffic Management Plan will be prepared for the Project. The EIS provided indicative concept designs for the cut and cover tunnel. As noted in Section 18.5.4 of the EIS, *'the final design would be confirmed in consultation with the RMS'*, and this will include consideration of the comments provided by RMS in Attachment A of its submission. Prior to any works taking place a Works Authorisation Deed would be entered into between The Bloomfield Group and RMS.

5.9 Singleton Council

5.9.1 Noise and Air Quality

Issue Description

Whilst the Council has no significant issues of concern, it is important that the noise and air quality impacts described in the EIS are comprehensively assessed by the technical experts in these areas to validate the modelling.

Response

This is noted, and the submissions from government agencies summarised in **Section 5.0** this RTS Report demonstrate that these issues have been comprehensively assessed by the relevant technical experts.

5.9.2 Future Residential Areas in North Singleton

Issue Description

Council is currently considering a Planning Proposal seeking to rezone land to residential in North Singleton, west of Bridgman Road and north of Gardner Circuit. While it is acknowledged mining operations are moving away from Singleton it is not clear from the EA the extent of, if any, noise impact on this area having regard to future residential land uses.

Response

Additional detail about this issue is provided in **Section 6.9**, which includes a response to a public submission about a specific parcel of land within that area which is proposed for rezoning to a residential land use. The noise consultant Global Acoustics has undertaken additional noise reporting to address this issue, and a copy of the response is provided at **Appendix G**.

While not specifically included in the original vacant land assessment, the land being considered for rezoning in North Singleton was included in the acoustic assessment by generating noise contours over the area (refer to Figure 12-4 of the EIS). This approach is standard practice for assessing vacant areas, where individual residences are not present to predict noise levels to. To improve the accuracy of the noise contours in the area, the models have been reprocessed with a higher density of receiver points over the subject lots. Updated noise contours which cover that area of North Singleton are provided at **Appendix G** of this RTS report.

5.9.3 Visual Impact on New England Highway Corridor

Issue Description

It is acknowledged that the existing visual environment along the New England Highway is impacted the current operations. The proposal will continue to impact within this corridor; however it is considered that the proposed progressive screen planting seeks to minimise impact in this regard. The EA notes that two residences to the south of the Project area, located in Maison Dieu Road, will be visually impacted, however this will be mitigated by progressive screen planting along with rehabilitation.

Response

This is noted. As detailed in Section 21.5 of the EIS, progressive rehabilitation will consist of extensive planting of grasses, shrubs and tree species endemic to the local area, as soon as possible on newly

formed landforms. Localised vegetation screens would be established in certain locations (for example, along the length of the New England Highway, particularly on the western side of the Highway) to reduce the visual impact on sensitive receivers. The Mine would also consider installation of additional localised vegetation screens if feasible, where visual impacts are identified by the community to be high during operation of the Project.

A Visual and Landscape Management Plan would be prepared to manage the potential visual impacts of the Project. This Plan would consider design and location of lighting to avoid direct line of sight and minimise light spill, progressive rehabilitation and tree planting, and retention of existing tree cover and vegetation where reasonable and feasible. Landscaping works, including shrub and tree planting, would be progressive throughout the life of the Project and these areas would be maintained to optimise visual screening.

In order to provide a better indication of the existing nature of the Mines rehabilitation works and how they have been progressively designed and undertaken to be consistent with natural landforms a number of plates have been prepared to illustrate current Mine rehabilitation works. Plates **Plate 5-1** to **Plate 5-5** have been prepared to show examples of existing Mine rehabilitation areas adjoining natural landform and the progression of rehabilitation in these key areas.

The viewpoint locations from which these images were taken are detailed on **Figure 5-9**. While the chosen viewpoints are not from New England Highway locations it should be noted that these are representative onsite examples of the sites progressive rehabilitation. Generally speaking similar views do not exist from the New England Highway due to the progression of mining and vegetative screening.

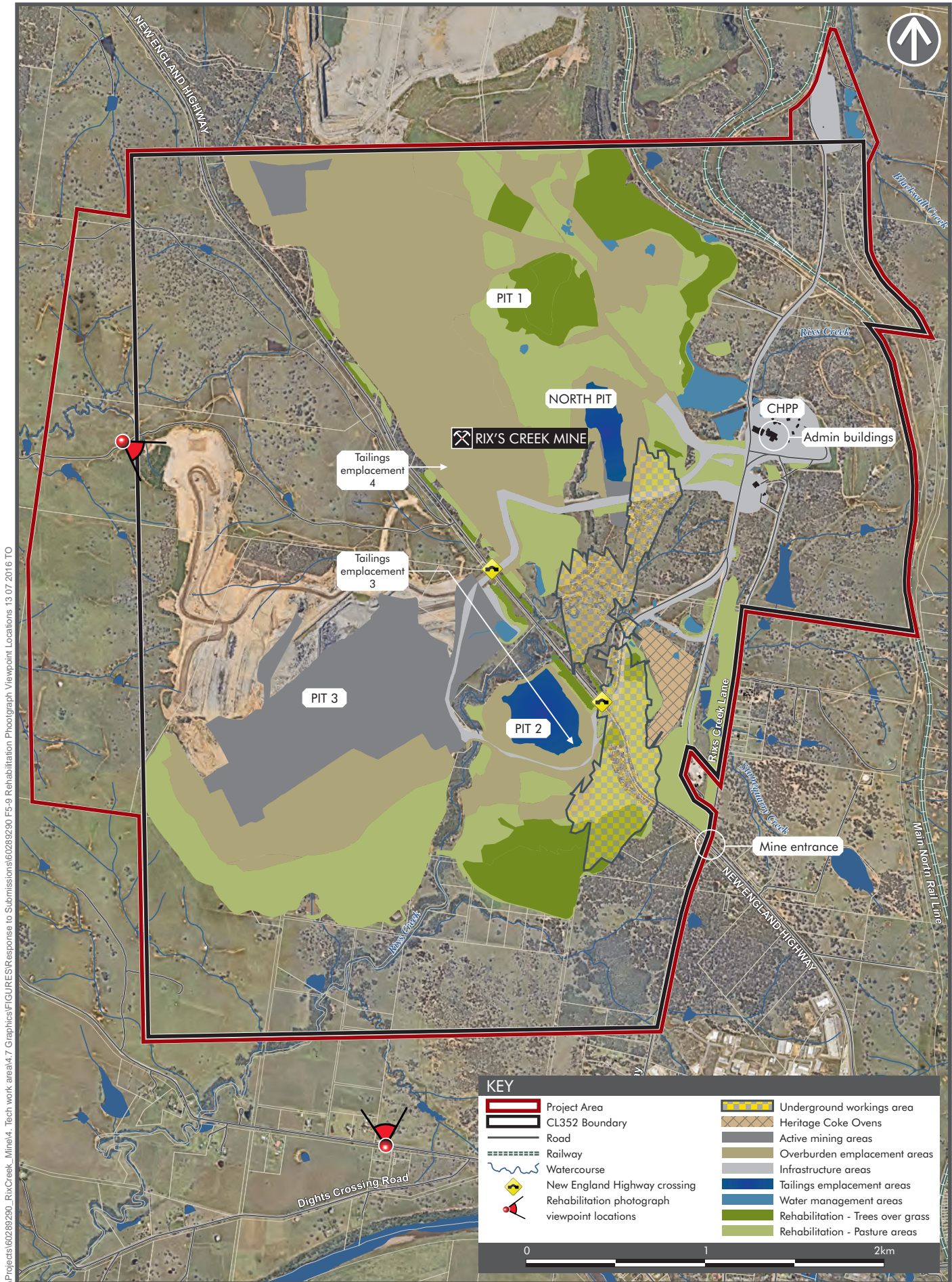
5.9.4 End of Mine Planning

Issue Description

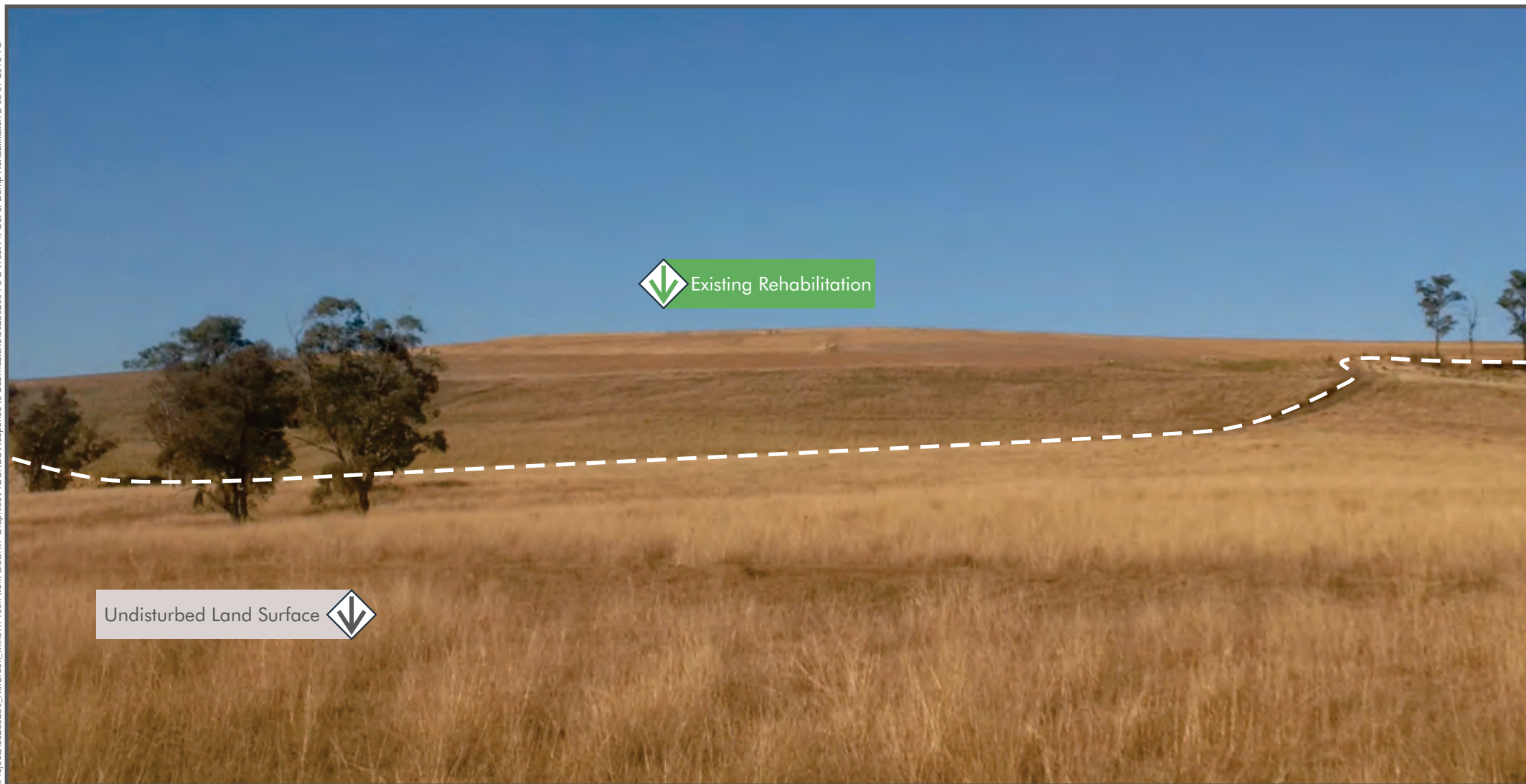
There is a significant discussion being held with the mining community regarding end use of mine sites and particularly final land forms and voids. As this is an ongoing discussion with industry being an active participant, it is requested that any conditions are flexible in order to enable adaptive end of mine planning which is responsive to community and industry positions over time.

Response

This is noted.















6.0 Response to Key Stakeholder and Community Submissions

6.1 Submissions in Support of the Project

6.1.1 Ongoing employment, local and regional economic benefit, and social partnerships

Submission Identification: SIG05, SIG06, SIG09, SIG12, SIG15, SIG16, PS009, PS010, PS011, PS012, PS013, PS014, PS015, PS016, PS017, PS018, PS019, PS020, PS021, PS022, PS023, PS024, PS025, PS026, PS027, PS028, PS029, PS030, PS031, PS032, PS033, PS034, PS035, PS036, PS065, PS066, PS067, PS068, PS069, PS070, PS071, PS072, PS073, PS074, PS075, PS076, PS077, PS078, PS079, PS080, PS081, PS082, PS083, PS084, PS085, PS086, PS087, PS088, PS089, PS090, PS091, PS092, PS093, PS094, PS095, PS096, PS097, PS098, PS099, PS100, PS101, PS102, PS103, PS104, PS105, PS106, PS107, PS108, PS109, PS110, PS111, PS112, PS113, PS114, PS115.

Issue Description

Submissions relating to the benefits of the Project such as continued employment, ongoing contribution to the local and regional economy, continued social partnerships and support of local business and charities. Submissions also identified The Bloomfield Group's commitment to minimising impact on the environment and to safe work practices. Many of these submissions highlighted the positive contribution that the Proponent makes to the local community and the fact that the Proponent is a local Australian owned business.

Response

This is noted.

6.2 Climate Change and Greenhouse Gases

6.2.1 GHG emissions

Submission Identification: SIG02, SIG08, SIG10, SIG13, PS003, PS004, PS005, PS006, PS037, PS038, PS039, PS040, PS041, PS043, PS044, PS045, PS047, PS048, PS049, PS050, PS051, PS052, PS053, PS054, PS055, PS056, PS057, PS060, PS063.

Issue Description

Submissions relating to climate change, greenhouse gas (GHG) emissions associated with coal consumption and the need to embrace renewable energy instead of coal fired power generation.

Response

The EIS included a review of the GHG emissions that would be generated directly by Project activities, and indirectly through the use of the coal in metallurgical and thermal applications. The assessment found that the contribution of GHG to Australian and global emissions as a percentage of total emissions would be minor, and concluded that the Project would have a minor impact on climate change.

As noted in Section 23.4.4 of the EIS, climate change issues are unlikely to be resolved by dealing with individual projects. A project specific approach for a coal mine would mean that the coal would simply be sourced from another mine in another area.

Coal fired power generation and renewable energies are not incompatible. Coal fired power generation is likely to continue to play an important role in the energy market, even with increased use of renewable energy. Coal can provide baseload power, which is important to minimise disruption to the electricity market while transitioning to increased use of renewable energies.

Mitigation measures would be implemented to minimise GHG emissions, as described in the EIS. This would include preparation of a Greenhouse Gas and Energy Efficiency Management Plan, to include

monitoring of fuel and electricity consumption, appropriate maintenance of plant and equipment, and development of targets for GHG emissions and energy use on site.

6.3 Air Quality

6.3.1 Dust emissions / PM₁₀ emissions

Submission Identification: SIG02, SIG03, SIG04, SIG07, SIG08, SIG10, SIG11, SIG13, SIG14, PS002, PS007, PS008, PS038, PS039, PS041, PS042, PS043, PS045, PS046, PS047, PS048, PS051, PS052, PS058, PS059, PS061, PS063, PS064.

Issue Description

Submissions relating to dust emissions and specifically to the emissions of PM₁₀, including suggestion that the annual criteria of 20 µg/m³ should be used to estimate impact.

Response

This issue has been addressed in detail in the response to the submission made by Hunter New England Population Health (refer to **Section 5.5.1** of this RTS report).

6.4 Noise

6.4.1 Noise levels from the Mine

Submission Identification: SIG02, SIG07, SIG08, PS002, PS007, PS008, PS038, PS041, PS042, PS045, PS046, PS058, PS059, PS061, PS064.

Issue Description

Submissions relating to noise impacts experienced by the local residential noise receivers.

Response

The EIS included an environmental Noise Assessment, which was summarised in Section 12.0 of the EIS and attached as Appendix M of the EIS. Results of the noise assessment indicated that exceedance of Project Specific Noise Criteria is likely during adverse meteorological conditions, but are predicted to significantly reduce as the Project progresses. The assessment considered 181 surrounding receptors and applied a worst-case scenario for both meteorological conditions and noise generation from the Mine. Noise modelling was undertaken to account for cumulative sources, including from surrounding mines and transport noise sources. Noise predictions captured this cumulative data and based on the noise predictions, solutions were identified that can be implemented to reduce operational noise levels at affected receptors. Importantly the use of a predictive noise model to identify time of potential noise enhancement, will allow Mine managers to adjust operations to minimise noise impacts at receivers. With implementation of a range of feasible and reasonable mitigation measures, it was demonstrated that the recommended noise criteria would be met.

Additional modelling was undertaken as part of this RTS Report to improve the accuracy of noise contours for areas north of Singleton. Further information is provided in **Section 6.4.1** and **Appendix G** of this report.

Noise Criteria

As detailed in the environmental Noise Assessment the proposed Project noise criteria are:

- LAeq,15minute 40 dB for Noise Assessment Groups D to O inclusive, applicable to all time periods; and
- LAeq,15minute 42 dB for Noise Assessment Groups A, B and C, applicable to all time periods.

It is noted that these criteria are higher than the Project Specific Noise Levels (PSNL) detailed in the Project environmental Noise Assessment. As detailed in **Appendix G** the calculation of noise criteria was undertaken in accordance with the INP. The intent of the INP is to use the PSNL as a planning

tool and trigger for establishing reasonable and feasible noise controls. Therefore compliance with PSNL is not necessarily required but used as a basis for establishing appropriate noise criteria. This is particularly applicable to an operation such as this Mine which is a long established operation that can be considered part of the normal acoustic environment.

The Noise Assessment indicated that the Mine would be unlikely to comply with PSNL during enhancing meteorological conditions at all receiver locations, with enhancing meteorological conditions generally only adversely impacting downwind receivers during such conditions. Therefore the Mine sought to use the PSNL having then implemented reasonable and feasible mitigation measures to then arrive at achievable Noise criteria limit.

As outlined in Section 10 of the INP and detailed in **Appendix G**, negotiation of achievable noise levels for existing operations may occur once reasonable and feasible noise mitigation options have been investigated. All reasonable and feasible noise controls were evaluated in the Noise Assessment, and noise controls and management strategies proposed for the Project are in line with industry best practice.

The Mine has historically operated standard (unattenuated) equipment, and an open sided wash plant (no cladding). With these measures in place and in unison with the predictive noise model a reasonable and feasible level of noise management is proposed against an appropriate set of noise criteria. It is considered that local receivers would not be exposed to significant levels of noise impact.

Noise Implications of Integra Open Cut Purchase.

Additionally, since the exhibition of the EIS Bloomfield has recently purchased the Integra Open Cut Mine as detailed in **Section 2.0** of this RTS. As a result of this purchase the Mine has acquired ten fully attenuated Caterpillar 789 rear dump trucks and one fully attenuated Caterpillar 994 loader. This will allow the coal fleet to be fully noise attenuated, including the front end loader used to load them. Only five coal trucks are typically in operation at one time, so the remaining attenuated Caterpillar 789 trucks can be used for overburden haulage in critical areas during enhancing meteorological conditions.

A Caterpillar 992K loader has been moved from the Bloomfield site to replace an older Caterpillar 992C loader, and is currently in use on the Mine ROM pad. These actions effectively result in earlier implementation of key noise control measures, which will allow the Mine to operate for longer periods during enhancing meteorological conditions before modifications to operations are required.

With the attenuated fleet now combined with the reduced production scenarios as detailed in **Section 2.0** and the Mine's established predictive noise model used to further avoid impacts to receivers the Mine would be able to undertake mining activities with minimal noise impact.

The Mine has committed to phasing in the attenuated equipment fleet, which combined with the cladding to the critical sides of the wash plant would improve the acoustic environment for sensitive receivers. When combined with the predictive noise model which will allow mine managers to adjust operations if noise criteria are being approached, there is considered to be an appropriate level of noise control proposed for the Project.

6.5 Blasting

6.5.1 Blast management and blast plumes

Submission Identification: SIG03, SIG14, PS002, PS008, PS046, PS059, PS061.

Issue Description

Submission related to blast plumes from incomplete reactions in Ammonium Nitrate and Fuel Oil (ANFO) blasts, and the potential for these blast plumes to travel distances from the mine site rather than disperse. Submissions also suggested that blasting be undertaken using plastic stemming plugs to prevent the release of blast emissions to the atmosphere.

Response

The potential for adverse impacts as a result of blast fume emissions was assessed in Section 11.4 of the EIS. The assessment identified that blasts occurring between 9.00am and 3.00pm pose little potential for adverse blast fume impacts to occur, while during the hours of 4.00pm to 5.00pm there is potential for adverse blast fume impacts beyond the site boundary under certain meteorological conditions.

As detailed in the EIS, the Mine currently operates in accordance with a Blast Fume Management Strategy. This includes use of a predictive blast management tool based on forecast weather data to determine if the upcoming conditions are suitable for blasting. These blast management tools indicate the potential extent of any impact at various times during the upcoming day, and allow the operator to select the least impacting time of the day at which to schedule the blast. Through the ongoing operation of this system over the life of the Project, adverse impacts as a result of blasting are considered unlikely, or in the event that they do occur, minor.

The Blast Fume Management Strategy lists the potential controls to be used for blast fume mitigation, the majority of which are to ensure any moisture in blast holes is kept separate from any non- water resistant explosives. The Strategy also details the procedure for rating and recording post blast fumes, using the Visual NOx Fume Rating Scale. Where a risk of post blast fume is identified, the blast is videoed in order to capture any post blast fume. In the event that a blast fume is rated as a minimum of three at its highest extent as it leaves the site, DP&E is notified and an investigation is undertaken. Outcomes of such investigation may lead to operational changes to prevent a reoccurrence.

It is also noted that the assessment of potential vibration impacts from blasting on sensitive receivers included blasting from the North Pit. It should be clarified that blasting in the North Pit is now complete and would not be required as part of the current Project. This was included in the assessment to provide a conservative, worst case scenario, as the North Pit is located closer to the village of Camberwell. It is also clarified that the ground vibration criteria at the Rix's Creek Coke Ovens would continue to be 5 mm/s for 100% of blasts.

6.6 Traffic and Transport

6.6.1 Congested rail network

Submission Identification: SIG10, PS039, PS051, PS052, PS063.

Issue Description

Submissions relating to the congestion of the rail network and the impacts on passenger rail services, and the damage to the tracks caused by coal trains.

Response

The potential impact of the Project on the existing rail network was assessed in Section 18.0 of the EIS. An assessment of the existing and potential rail traffic generation was made against the capacity in the rail network, and consultation with ARTC was undertaken to assess the ability of the rail network to absorb the forecast change.

The Traffic Assessment undertaken as part of the EIS assessed the impacts of the Project on rail network capacity. Based on the mining schedule proposed in the EIS, train movements would remain relatively constant until around 2023. At this point it was predicted that the Bloomfield Mine would close and production at the Mine would increase. For an approximate three year period, rail traffic was predicted to increase by approximately 115 trains per year, or one additional train every three days. From 2025 it is expected that coal production would taper off and the rail traffic generated by the Project would gradually reduce. It is noted that the mine schedule has now been amended, as described in **Section 2.1.2** of this RTS Report. The amendments would reduce the number of trains required during the peak years of the Project, and it is considered the assessment in the EIS represents a conservative estimate.

ARTC has advised that the required train paths would be available during the peak period to transport coal to Newcastle. Further confirmation of this was obtained in writing from ARTC following the

exhibition of the EIS. A copy of this correspondence is attached at **Appendix H**. It was also noted that rail network access analysis undertaken by ARTC also makes provision for passenger trains, although these account for a small portion of rail traffic. As per its contractual requirements, the Mine would continue to provide ARTC with forecast tonnages for rail transport planning purposes and would consult with ARTC regarding required upgrades (if any) necessary to accommodate the anticipated rail traffic.

6.6.2 Covering of coal wagons

Submission Identification: SIG10, SIG13, PS039, PS043, PS047, PS048, PS051, PS052, PS063

Issue Description

Submissions relating to pollution caused by coal transport, covering of coal wagons and requests for improved rail transport practices.

Response

Section 11.0 of the EIS summarised the Air Quality Impact Assessment undertaken for the Project, which included an assessment of the potential Project related coal dust emissions from train wagons. Model predictions indicated that at distances of 50m and beyond from the centre of the rail track, the predicted maximum 24-hour average PM₁₀ concentration for rural areas would be approximately 0.64 µg/m³, and for urban areas would be approximately 0.4 µg/m³. This is well below the assessment criteria of 50 µg/m³. The assessment concluded that the potential for adverse air quality impacts associated with coal dust generated during rail transport would be low and would make negligible difference to air quality.

As noted in Section 11.3.5 of the EIS, the Mine currently operates in accordance with a number of management plans to minimise and manage air quality impacts. This includes dust mitigation measures related to rail operations such as:

- Streamlined and consistent profiled coal surface within rail wagons;
- Train loading techniques and levels aimed at minimising spillage; and
- Collecting any spillage on a regular basis.

6.7 Biodiversity

6.7.1 Loss of habitat and biodiversity offset areas not identified in EIS

Submission Identification: SIG02, SIG07, SIG08, SIG10, SIG11, PS007, PS038, PS039, PS041, PS048, PS051, PS052, PS058, PS059, PS061, PS063, PS064

Issue Description

Submissions relating to the impact to biodiversity caused by loss of habitat due to mine expansion, particularly the impact to the Central Hunter Valley Eucalypt Forest and Woodland critically endangered ecological community, and the lack of detail regarding biodiversity offset areas provided in the EIS.

Response

Potential impacts of the Project on biodiversity were assessed in the Ecological Assessment (Appendix I of the EIS) and addressed in Section 13.0 of the EIS. This included assessment of the potential impact to the Central Hunter Valley Eucalypt Forest and Woodland. Additional information regarding the mapping of this vegetation community is provided in **Section 5.7.1** of the RTS Report.

The process regarding biodiversity offsets for the Project was discussed in Sections 13.1.1, 13.1.2, 13.4.6 and 13.5.1 of the EIS. As noted, the OEH is establishing a regional biodiversity impact assessment process, the Upper Hunter Strategic Assessment, to streamline the assessment and potential offsetting requirements of proposed development in the Hunter Valley, with a specific focus on the coal mining industry. The Bloomfield Group intends to provide offsetting in accordance with this

Strategy. In the event that Strategy is still under preparation. The Bloomfield Group would enter into a separate offsetting agreement, Voluntary Planning Agreement (VPA) or similar as required by the OEH and Commonwealth Minister for the Environment to provide the required offsets. Additional detail regarding this offsetting process, including revised calculations of ecosystem credits for the Project, is provided in **Section 5.7.1** of this RTS Report.

6.7.2 Squirrel Glider

Submission Identification: SIG10, PS008, PS038, PS039, PS048, PS051, PS052, PS059, PS061, PS063

Issue Description

Submissions relating to the impact to the Squirrel Glider and suggestions that this impact has not been adequately assessed.

Response

Potential impacts of the Project on fauna, including the Squirrel Glider, were assessed in the Ecological Assessment (Appendix I of the EIS) and addressed in Section 13.4.3 of the EIS. The Ecological Assessment included a significance assessment (Seven-Part test) of the Squirrel Glider. While it was identified that the Project may have the potential to disrupt the life cycle of the Squirrel Glider and its habitat through loss of foraging resources and hollow-bearing trees, the impacts were not considered to significantly affect the local population to the degree that its long term viability would be reduced.

The vegetation within the Project area is highly fragmented; however suitable connectivity exists to adjoining remnant vegetation. A large corridor of regrowth forest between the western and central patch within the Project area would be maintained. This corridor supports higher quality habitat compared to the habitat proposed to be cleared in the western and central patches which is rated low owing to the very low diversity of tree species and the absence of understorey vegetation. Habitat quality is considered higher in the eastern patch but there is a low density of mature trees to provide breeding and sheltering habitat.

It was noted that the staging of the mining process would allow for the gradual dispersal of wildlife into surrounding lands, and consequently it was considered that the cumulative impacts on wildlife would be negligible. During clearing of vegetation as part of the operational phase of the Project, there would be potential for displacement of individuals of the Squirrel Glider population. The EIS outlined the mitigation measures that would be implemented to minimise the potential impacts on the Squirrel Glider, which include:

- Mine planning will avoid the removal of vegetation and habitat where reasonable and feasible;
- Vegetation and habitat will only be removed in a staged manner with the inspection of habitat trees carried out before and during felling operations;
- Significant ecological features associated with standing and dead timber will be assessed and monitored. A qualified and experienced fauna consultant will conduct pre-clearance surveys to ensure displaced wildlife is removed or relocated at the time of clearing; and
- Inspection of hollows will be undertaken by a qualified fauna ecologist prior to and immediately after tree felling. Felled trees supporting hollows will be stockpiled for later use in rehabilitation activities to reinstate habitat where suitable and in accordance with the Project Rehabilitation Strategy.

6.8 Land capability and land use

6.8.1 Loss of arable land

Submission Identification: SIG02

Issue Description

Submissions relating to the loss of arable land due to mine expansion.

Response

Section 14.0 of the EIS discussed the potential impacts of the Project in relation to soils, land capability and land use. Land within the Project area has traditionally been used for grazing. Cattle grazing enterprises have been conducted on the land by various members of the Bowman family since 1890. There is no record of any cropping being conducted on the land.

The soils and land capability of the land within the Project area were identified as Classes 4 and 5 with moderate to low agricultural capability. It was also noted that the sections of the site that would be subject to disturbance are not currently used for significant productive agricultural purposes. As a result, the Project would not be removing any significant agricultural production from the local economy.

Existing rehabilitation and revegetation practices at the Mine are intended to return disturbed land to a condition suitable for a range of post mining land uses including the reinstatement of pre mining agricultural land use where appropriate. The EIS provides a detailed description of the rehabilitation activities proposed for the Project (Section 25.0 of the EIS). Rehabilitation of the Project area following mining would return an appropriate mix of land uses, with those areas marked for future grazing to be rehabilitated back to a mix of Class 4 and 5 land capabilities consistent with the pre-mining land capability of the site and region.

As noted in Table 29-1 of the EIS, the existing Rehabilitation Management Plan will be reviewed and updated to include areas to be disturbed and rehabilitated as part of the Project. This will include the rehabilitation of proposed agricultural areas to establish ecosystems for grazing.

6.9 Proposed rezoning of land north of Singleton to residential land use**Submission Identification: PS062**

This submission relates to an existing Planning Proposal to rezone Lots 32 and 33 DP634692, No 349 Bridgman Road, north of Singleton Heights, to enable the use of the land for residential purposes. The submission relates to a number of issues regarding the future use of the land for residential purposes, specifically with regard to dust, noise and vibration impacts from the Project.

6.9.1 Noise**Issue Description**

The submission makes the following objections:

1. Future use of the subject lots as residential land has not been considered;
2. The western part of the subject lots are not included within any Noise Assessment Group (NAG); and
3. The submission seeks assurance that the proposed expansion of the mine and continued operation will not result in unlawful noise impacts on the subject lots.

Response

1. Whilst not specifically included in the original vacant land assessment, the subject lots were included in the acoustic assessment by generating noise contours over the lot areas. This approach is standard practice for assessing vacant areas, as there are not currently individual residences to predict levels to. To improve the accuracy of the noise contours in the area, the models have been reprocessed with a higher density of receiver points over the subject lots. Updated noise contours over the subject lots and an assessment against Voluntary Land Acquisition and Mitigation Policy criteria are included in **Appendix G**.
2. Noise assessment groups (NAGs) were developed to categorise existing private residential receptors into groups with similar acoustic environment. The eastern extent of the subject lots were allocated to NAG B due to proximity to the Main North Rail Line and Mine CHPP, and, the similarity of the existing acoustic environment to the background noise logging location

approximately 900 metres north of the subject lots. Noise from the Main North Rail Line will often be considerably higher than the proposed criteria for the Project. With consideration of the proposed residential development, the western extent of the NAG B boundary should be extended west to the Main North Rail Line. The subject lots and the vacant land immediately south would be incorporated into NAG B. Notably a key component of the revised Project is the commitment by The Bloomfield Group to surrender its development consent for the Rix's Creek Mine Rail Loop which would eliminate this as a noise source.

3. If approval of the Project is granted, a development consent will be issued by DP&E, and a licence will be issued by the EPA and conditions typically set with due consideration of the EIS, ensuring all reasonable and feasible noise mitigation measures are considered and implemented. The Proponent is committed to managing noise emission from the Mine to comply with all noise limits.

Issue Description

The submission also made a number of general comments in relation to the Mine's noise management and compliance with existing and proposed noise criteria.

Response

A detailed response to the noise related comments made in the submission is provided in **Appendix G** and briefly summarised here.

The submission states that the mine does not comply with current conditions of consent in relation to noise limits. However, a review by Global Acoustics of monthly attended compliance monitoring results over the past two years indicates no exceedance of current consent criteria has occurred during that period.

The submission also states that the Mine seeks approval for a Project Specific Noise Goal which exceeds both the current conditions of consent and intrusiveness criteria under the INP. However it is noted that the current conditions of consent apply under neutral atmospheric conditions whereas proposed noise criteria for the Project would apply under enhanced atmospheric conditions.

The following general points are made in response to the submission:

- With consideration of meteorological effects, and adjustment between LA_{10} and L_{Aeq} , proposed criteria are more than 3 dB more stringent than those in the existing consent;
- Model predictions indicate a reduction in noise levels over the life of the Project. Implementation of noise controls will further reduce noise emission from the site. A general improvement in offsite noise levels is predicted relative to both historic and current situations; and
- Mine operations continue to progress in a north-westerly direction away from Singleton, and away from the subject lots. Adoption of proposed criteria and implementation of noise mitigation and management strategies including the operation of the predictive noise model, will serve to reduce noise levels in the area of concern.

6.9.2 Air Quality

Issue Description

The submission requested confirmation that there would be no adverse dust impacts on the subject lots, given that the proposed expansion of Pit 3 is located west of the New England Highway approximately 2.5km from the subject lots.

Response

Air quality impacts were assessed in Section 11 of the EIS, and in the AQIA attached as Appendix L of the EIS. Dispersion modelling was undertaken for each of the mine plan years of 2017, 2020, 2023 and 2026 to assess the potential impact of the Project at privately owned and mine owned sensitive receptor locations. Results are provided in Table 9-1 of the AQIA, and in isopleth diagrams presented in Appendix E of the AQIA. While vacant land was not specifically included as a sensitive receptor, the

subject lots were included in the assessment by generating contours of predicted dust concentrations over the area.

The EIS also included a number of figures showing the modelled worst case scenarios for all years for maximum 24 hour average PM₁₀, annual average PM_{2.5}, annual average PM₁₀, annual average total suspended solids, and annual average dust deposition. For the area covering the subject land, these predicted concentrations are shown in Figures 11-6, 11-8, 11-10, 11-12 and 11-14 of the EIS respectively. Review of these figures indicates that predicted concentrations of the air quality parameters at the subject land would be within air quality criteria.

It is also noted that under the proposed mine plan, mining activities would move away to the north-west as mining progresses, which would increase the distance of mining activities from the subject land. Consequently this would decrease the potential impacts on the subject land over time as mining progresses to the north-west.

In addition, with the proposed reducing in mining during the previously proposed peak years (Refer **Section 2.0**) overall air quality impacts are expected to reduce by approximately 18%. This has been described earlier in **Section 5.4** with modelling results provided in **Appendix D**.

6.9.3 Stakeholder Consultation of revised Project

During the preparation of the RTS report revised specialists assessments were undertaken for noise and air quality, as described above to address how the Project may impact on the Singleton Height's Planning Proposal. For reference these updated reports were subsequently provided to Singleton Council (who provided them to the proponent), the EPA and the Department of Primary Industries - Resource & Energy. Copies were also provided to DP&E's Newcastle Regional Office who is undertaking the merit assessment of the Planning Proposal.

6.10 Surface Water

6.10.1 Impact to surface water, water consumption and contamination

Submission Identification: SIG02, SIG07, SIG08, SIG10, PS001, PS002, PS039, PS041, PS042, PS046, PS048, PS051, PS052, PS058, PS059, PS061, PS063, PS064

Issue Description

Submissions concerned that impacts to surface water have not been adequately assessed, that sediment dams may overflow after strong rainfall leading to unsuitable surface water entering local waterways, and that cattle utilising the Deadmans Creek catchment may be impacted. One submission requested a timetable for the proposed increase in size of pre-existing sediment dams and requested that the new sediment dams be constructed prior to commencement of mining in those areas.

Response

Potential impacts to surface water as a result of the Project were assessed in the Surface Water Impact Assessment (Appendix R of the EIS) and addressed in Section 15.0 of the EIS. Additional information regarding potential flooding impacts has been prepared as part of this RTS. The results of the Flooding Report are discussed in **Section 5.7.3** of this RTS Report, and the full report is provided at **Appendix F**. Additionally, a specific response has been prepared by JP Environmental, to address two of the community submissions received by neighbouring landowners regarding surface water issues. The JP Environmental response is attached as **Appendix I** and is summarised below.

The response by JP Environmental included an assessment of the potential for dam overflows, water quality testing results from monitoring of sediment dams at West Pit and Deadman's Creek since 2011, the potential for clay toxicology and impacts to livestock from runoff in Deadman's Creek catchment, and provision of a sediment dam construction schedule.

Review of the dam capacity and the 2015 daily rainfall record suggests that there was potential for three or four overflow events in 2015, which is consistent with the observations of the neighbouring landowner. For the current Project, as noted in the EIS, sediment dams would be dewatered within five days of a runoff event. Where the water exceeds water quality objectives, the water would either be treated, pumped to another water storage with available capacity, or pumped into the mine water

management system. Where water quality objectives are met, the water may be release to receiving waters.

Water quality results indicate that the runoff collected in dams from mined and un-mined catchments can contain appreciable levels of sediment (that is, greater than 50 mg/l). Based on review of aerial photographs from 2013 - 2015, most dams in the Deadman's Creek catchment are turbid, reflecting the nature of the catchment soils and variable runoff across the catchment rather than any specific activity in the catchment. The average value of suspended solids from sampling in Deadman's Creek catchment was lower in 2015 (65 mg/l) when overburden placement commenced, compared to 2011 – 2014 (95 mg/l).

The majority of soils and sub-surface materials in the upper reaches of Deadman's Gully are highly erodible soils containing substantial amounts of colloidal material – clays and fine silts. High turbidity due to colloidal material can make water appear very murky and degraded and is the most likely cause of the land owners concerns about poor water quality.

The trigger level for dissolved aluminium for stock water is set at 5 mg/l in the *Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Fresh and Marine Water Quality 2000* (ANZECC 2000). Aluminium levels from water quality monitoring in the Deadman's Creek catchment and at West Pit normally range between 1 and 5 mg/l, which is acceptable for stock water. A Trigger Action Response Plan (TARP) for the site is in place which includes measures for ongoing monitoring of runoff and seepage waters in the event that data obtained from the compliance monitoring program indicates exceedance.

On balance, ingestion of suspended clays by cattle from mine sediment dam overflows was considered to pose little or no risk to the livestock. Comparable water quality conditions exist on adjacent farm lands and water quality results generally indicate acceptable levels of heavy metals and other toxicants with respect to ANZECC 200 stock trigger levels.

Sediment dams can be constructed to treat runoff from the immediate catchment that is affected, or to manage the whole of the catchment, including clean and previously rehabilitated areas. For the current Project, a whole of catchment approach was adopted in the EIS. Based on the EIS mine plans, the required sizes and timing of construction of sediment dams 6 & 7, 16 and 17 is set out in **Table 6-1** to **Table 6-3**. Sediment Dam 20 was not considered in these tables as it is a relatively small dam (4ML) when compared with the other dams.

Table 6-1 Sediment Dams 6 & 7

Catchment	2017	2020	2023	2026
Clean Catchment area (ha)	1.3	1.3	1.3	1.3
Mature Rehabilitation area (ha)	0	29.03	49.05	64.05
Disturbed Catchment area (ha)	15.01	14.1	15	0
Total Area (ha)	16.31	44.43	65.35	65.35
Required Volume (ML)	3.5	13	16	0

Table 6-2 Sediment Dam 16

Catchment	2017	2020	2023	2026
Clean Catchment area (ha)	51.51	51.51	12.23	12.23
Mature Rehabilitation area (ha)	0	0	21.27	35.67
Disturbed Catchment area (ha)	0	13.45	14.4	15.46

Catchment	2017	2020	2023	2026
Total Area (ha)	51.51	64.96	47.9	63.36
Required Volume (ML)	0	12	11	15

Table 6-3 Sediment Dam 17

Catchment	2017	2020	2023	2026
Clean Catchment area (ha)	33.3	33.3	1.5	1.5
Mature Rehabilitation area (ha)	0	27.1	18.4	43.2
Disturbed Catchment area (ha)	27.1	0	0	24.5
Total Area (ha)	60.4	60.4	19.9	69.2
Required Volume (ML)	16.3	0	8	17

In response to the landowners concerns, JP Environmental concluded that:

- The sediment dams on site should be (and are) designed in accordance with the requirements of the Blue Book. The existing dams appear to be responding to flooding/rainfall in a manner consistent with Blue Book designs;
- Sediment dams designed and operated in accordance with the Blue Book should pose little risk to the aquatic and environmental values of the Hunter River;
- A timetable of required sediment capacity for “whole of catchment” dams has been provided. It is also possible for smaller dams to be installed to manage only the recently disturbed areas and comply with the Blue Book requirements. The final dam size and locations may not be consistent with **Table 6-1** to **Table 6-3** above, but still meet the requirements of the Blue Book;
- On balance, ingestion of suspended clays in water by cattle, poses little or no health risk. Comparable conditions exist on adjacent farm lands. The main clay minerals appear to be non-toxic to humans, and, mainly by extension, animals. Clay adsorption pathways for toxicants and biological contamination are less well understood but this risk is believed to be low; and
- Aluminium levels in runoff water at West Pit and in Deadman's Creek catchment are elevated but generally remain below ANZECC 2000 trigger levels for stock water use.

Additionally all dams on site are built to engineering design principles inclusive of dam wall and spillway.

6.11 Groundwater

6.11.1 Groundwater disruption

Submission Identification: SIG02, SIG07, SIG08, SIG10, SIG11, PS039, PS041, PS046, PS048, PS051, PS052, PS058, PS059, PS061, PS063, PS064

Issue Description

Submissions concerned that impacts to groundwater have not been adequately assessed in the EIS.

Response

Potential impacts of the Project on groundwater were assessed in the Groundwater Impact Assessment (Appendix S of the EIS) and addressed in Section 16.0 of the EIS. Additional information regarding the hydrogeology of the Project area and the groundwater modelling undertaken for the

Project has been prepared as part of this RTS. The additional information is discussed in **Section 5.1.2** of this RTS Report, with full details provided at **Appendix C**.

6.12 Lighting

6.12.1 Impact as a result of night lighting

Submission Identification: PS042, PS045

Issue Description

Submission relating to the need to control night lighting to minimise impacts (eg lights on machinery to be lowered to light along the ground or light ahead horizontally).

Response

Night lighting was considered as part of the assessment of landscape character and visual amenity (Section 21.0 of the EIS). As described in the EIS, and included in *Table 29-1 Summary of Management and Mitigation Measures*, night lighting would be controlled via a Visual and Landscape Management Plan which would include measures to address:

- Design and location of new lighting to avoid direct line of sight from areas surrounding the Mine where practicable; and
- Location of operational mobile lighting to minimise light spill where reasonable and feasible.

The Environmental Management System currently in place at the Mine includes details of actions to be taken to prevent night lighting impacts, in the event that a complaint is received regarding night lighting. A 24 hour complaints line is maintained to ensure timely response to night lighting incidents. As noted in Section 8.2.2 of the EIS, the existing Environmental Management System would continue to govern environmental management for the duration of the Project, and existing plans and procedures would be updated to reflect the Project and include the recommended management, mitigation and monitoring measures set out in the EIS.

6.13 Final Void

6.13.1 Final void to be retained in the post mining landscape

Submission Identification: SIG02, SIG07, SIG08, SIG10, SIG11, PS039, PS046, PS048, PS051, PS052, PS059, PS061, PS063, PS064.

Issue Description

Submissions objecting to a final void in the post mining landscape, and requesting additional detail regarding the rehabilitation and management of the final void in the long term.

Response

Alternatives considered during the Project planning included a larger final void than currently proposed. As discussed in Section 5.5 of the EIS, the final landform design for the Project has been derived following consultation with relevant government regulators. During this consultation some issues with the original design of the final landform were identified, including the inclusion of a stable mine highwall adjacent to the New England Highway, to be utilised as the access point to the remaining underground resource. This presented a risk of inappropriate public access to the highwall and associated safety concerns. A Mining Options Strategy Review was undertaken (Appendix D of the EIS) to redesign the mining sequence to allow for:

- Highwall access to the underground resource in an area safe from public access;
- A geotechnically stable mine pit shell with particular reference to the New England Highway;
- A final landform containing no highwalls, with the maximum slope of rehabilitated landform to be limited to 18 degrees;

- A final landform that allowed for no increase in existing maximum rehabilitated landform heights and a continued westerly movement of the mining area. This was essential for control of noise, air quality and visual amenity impacts;
- Micro-relief or small scale elevation and topographic variations would be designed into the continuing rehabilitated landforms to replicate natural landscapes and habitat; and
- A Mine Operations Plan which maximised the recovery of the remaining open cut resource from within the consent area.

The final landform included in the EIS (identified as option 5 in the Mining Options Strategy Review) was designed in consultation with DRE includes:

- Access to the remaining underground resource gained from a stable highwall (north of the New England Highway) on the edge of the circa 1880's Ellsmere Colliery. Following completion of the underground resource, this area of highwall is designed to be rehabilitated to a 18 degree maximum slope surrounding a 17 hectare depression that is free draining into Rixs Creek. This depression will contain surface water runoff and be part of the upper tributaries of Rixs Creek;
- A final depression to the west of the New England Highway. This fully rehabilitated landform will contain a maximum grade of 18 degrees to enable agricultural equipment to safely work on it to establish the pasture and treed ground cover as well as presenting no safety access issues for the general public. A surface water diversion drain will be established to ensure maximum recovery of surface water flows into Rixs Creek. Below this diversion drain there will be 140 hectares of rehabilitated landform that would act as a water sink and not connect to external drainage lines. The groundwater study has calculated the groundwater resource will long term equalize at a level that creates a 80 hectare water body and 60 hectares of remaining rehabilitated land;
- Sacrificing 1.4 million tonnes of saleable coal to ensure the long term stability of the northern end of the depression and recovery of 28.5 million tonnes of saleable coal from the remaining open cut resource; and
- Substantially improved visual amenity. All landforms on the eastern side of the New England Highway will be fully rehabilitated and return all surface water runoff to Rixs Creek. The mining depression on the western side of the New England Highway is fully rehabilitated and not visible from the highway.

Section 25.6.7 of the EIS discusses issues relating to the final void, including the key planning considerations that have been incorporated into the design of the final void area. This includes creation of a final void of relatively low safety risk as the depression grades can be climbed safely by foot.

A Final Void Management Plan would be prepared for the Mine which includes predictive groundwater modelling to forecast the long-term impacts to local and regional groundwater flows, residual pit voids, spoil dump storage and long term salinity levels. The final void would be rehabilitated with vegetation species with a diversity that is appropriate for the surrounding landform. Specific issues that have been considered in the context of rehabilitation of the voids include:

- Salinity levels in the final void which result from the inflow of saline groundwater;
- Ecosystem health in the water body of the void;
- Selection of plant communities that can be developed and sustained on the batters of the void, which as the water levels rise would aid in the development of aquatic ecosystems; and
- Inclusion of appropriate measures to limit access to steeper areas around the final void to restrict cattle, pedestrian and vehicle access. These measures may include large rock placement, landform shaping, or fencing as agreed with relevant government agencies during closure planning.

As noted in the EIS, design alternatives for the final void would continually be evaluated and would be prepared as part of the closure planning process.

Figure 6-1 of this RTS Report provides a comparison between the final voids currently approved in the 1995 development consent, and the final landform proposed in the current application. The comparison shows that the overall area of depression in both final landform designs is relatively similar. As detailed above, the proposed final landform is a result of the detailed mine planning undertaken by The Bloomfield Group following the Planning Focus Meeting based on feedback from various agencies.

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AECOM

FINAL VOID COMPARISON
Rix's Creek Continuation of Mining
Response to Submissions

FIGURE 6-1

6.14 Community Consultation

6.14.1 Regional community consultation

Submission Identification: SIG07, SIG10, PS007, PS039, PS047, PS048, PS051, PS052, PS059, PS063, PS064.

Issue Description

Submissions relating to community consultation and concern that regional community groups or individuals were not consulted.

Response

Section 9.0 of the EIS described the consultation that was undertaken with government agencies, key stakeholders and members of the community. Project information was available on the Rix's Creek Mine website and other communication tools were utilised such as newsletters, letter box drops, fact sheets and an open day. Newspaper advertisements and feature articles were placed in local newspapers such as the Singleton Argus and the Coalface Publication. Additional consultation was provided to those residents in close proximity to the Mine, including meetings to discuss the Project in detail.

Regional community groups had access to Project information through the Mine website, DP&E website and the newspaper articles. Additional consultation was also undertaken during the public exhibition of the EIS is described in **Section 2.0** of this RTS Report. The EIS was available for public review at various locations, including locations in Sydney and Singleton. An advertisement announcing the public exhibition of the EIS was placed in the Singleton Argus as well as the Newcastle Herald. This allowed individuals and community groups from local or regional areas to make a submission and provide feedback or raise issues relating to the Project.

6.15 Economic Assessment

Submission Identification: SIG01.

This submission raised issues regarding the economic assessment of the Project that was undertaken by the economic consultant KPMG. Specifically the issues related to coal price assumptions, labour premiums, the quantification of external costs and the assessment of economic impact. Throughout the preparation of this RTS Report, the DP&E also raised additional queries about the economic assessment. KPMG have provided a response to the issues raised in this submission and subsequently by the DP&E. A full copy of the response is provided at **Appendix J**, and a summary is provided below.

6.15.1 Coal price assumptions

Issue Description

The submission noted that the economic assessment used forecast coal prices that were higher than the World Bank estimates for January, April, July and October 2015, which may overstate the value of the Project. The submission also suggested that revenue estimates appear to be in present value US dollars, while other costs and benefits appear to be in Australia dollars.

Response

The economic appraisal was undertaken as at July 2014 with all results reported in 2014 Australian dollars. The analysis relied on coal price forecasts published by the World Bank, *Commodity Market Outlook, July 2014*. These prices were converted to real Australian dollars based on exchange rates and the consumer price index as at time of the analysis.

The analysis assumes a long term average price of slightly below \$100 per tonne (Australian dollars). It is recognised that, given the long term nature of the Project, there will be variation in coal prices.

However, the assumed price adopted in the analysis is broadly consistent with price assumptions adopted by the NSW Department of Industry (Division of Resource and Energy), specifically:

- \$80 per tonne in the short term for export thermal coal;
- \$75 to \$100 per tonne in the medium to long term for export thermal coal;
- \$100 per tonne in the short term for export coking coal; and
- \$120 per tonne in the medium to long term for export semi soft coking coal.

As outlined above and reiterated in the Economic Addendum Report (Refer **Appendix J**), the economic appraisal was undertaken as at July 2014 with all results reported in 2014 Australian dollars. The analysis relied on coal price forecasts published by the World Bank (in July 2014). These prices were converted to real Australian dollars based on assumed CPI (3 per cent) and the US dollar exchange rate at the time of the analysis (AU\$1 = US\$0.85).

As detailed in **Appendix J**, the analysis assumed a long term average price of slightly below \$100 per tonne (Australian dollars). As the analysis extends beyond the forecast years, the forecast price for 2020 was adopted as the assumed price for the remaining analysis years. The assumed coal prices are outlined in **Table 6-4**.

Table 6-4 Assumed coal prices in Australian dollars

	2014	2015	2016	2017	2018	2019	2020-2038
Coal price (\$/tonne)	93.06	95.25	96.15	97.05	97.95	98.72	99.49

In considering the impact of changes in coal prices in the short to medium term, changes in costs of the Project should also be considered. Recent consultation with The Bloomfield Group suggests that, since the completion of the economic analysis in 2014, there have been a number of changes that have potential to reduce the costs associated with the Project. The changes are primarily associated with purchase of the Integra Open Cut mine and include:

- Acquisition of the Integra rail loop that is expected to result in cost savings of approximately \$4.5 million per annum that would otherwise be required in access fees. These cost savings are expected to result from savings in rail loop access charges (previously paid to the owner of the rail loop) net of expected rail loop operational expenses;
- Excess mobile plant and mining machinery purchased through the Integra acquisition will be used to refresh the Rix's Creek fleet and provide savings in forecast mobile fleet replacement capital expenditure of approximately \$85.6 million over the first 16 years of the Project;
- Excess mobile mining machinery will also realise savings on repairs and maintenance with newer machinery replacing older less efficient machines that require more frequent maintenance. Excess components and inventory purchased through the Integra acquisition will reduce repairs and maintenance costs by \$6.5 million over the first 2 years; and
- The operation of the Mine and Integra will utilise predominantly the existing management personnel. The effect of this will be a reallocation of management salaries overheads from the Mine to Integra. This is expected to result in a saving of 30 per cent of management overheads or \$2.8 million per annum.

It is noted that the submission made by DRE included an assessment of the size, quality and availability of the coal resource as well as an estimate by DRE of the future coal price and expected royalties. The DRE submission also stated support for the Project as a responsible utilisation of the State's coal resources that would provide continued employment and bring economic benefits to the local region and the State as a whole.

6.15.2 Cost-Benefit Analysis

Issue Description

The cost-benefit analysis does not appear to include:

- An estimation of royalties to be received by NSW;
- The proportion of company tax to be received by NSW;
- The net producer surplus; or
- A full analysis of the cost of mitigating environmental and social impacts (a cost to the company) as compared to the base-case (no mining from 2019).

Response

Royalties and tax are typically excluded from an economic appraisal as they represent a transfer from one party to another. In the case of the analysis of the current Project, royalties and company tax represent a cost to The Bloomfield Group and an equivalent benefit to government. Accordingly, inclusion of royalties and company tax has no net impact on the overall analysis result. It is noted that inclusion of royalties and company tax impacts the distribution of costs and benefits. However, distributional impacts were not the focus of the KPMG analysis.

Net producer surplus is equivalent to the revenue from operations less the costs of the Project. While not specified in the analysis as a benefit, producer surplus is effectively included in the analysis. The economic analysis considers full revenue and full costs associated with the Project. The difference between these two analysis components, the producer surplus, forms part of the analysis results.

The costs of mitigation activities that would be undertaken by The Bloomfield Group is included in the costs associated with operating the Project. Specifically, these costs include:

- Environmental monitoring;
- Waste management;
- Rehabilitation costs;
- Licenses;
- Other environmental related activities; and
- Equipment replacement.

6.15.3 Labour premiums

Issue Description

The submission queried the inclusion of a wage premium and the assumption that labour is not priced at its opportunity cost.

Response

The economic assessment includes quantification of the economic benefit to workers associated with the Project. Inclusion of this benefit is consistent with the recently finalised NSW Government *Guidelines for Economic Assessment of Mining and Coal Seam Gas Proposals* (see Table 3.1 in the guidelines).

The rationale for inclusion of the wage premium is recognition of the economic benefits associated with continued operation of the Mine for the local community. Importantly, as outlined Section 3 of the KPMG report (Appendix W of the EIS), the number of unemployed persons in the Hunter Valley region has increased significantly over the last two years and average individual taxable income is significantly lower in the region relative to the State average.

The potential for labour premiums is increasingly compelling as some excess capacity emerges in the resources sector. Cessation of operations at the Mine would likely result in personnel alternate

employment. These employees may face difficulty in obtaining alternate employment at their current wage levels given the lower commodity price environment.

Social impact analysis relating the Rix's Creek expansion assessed the areas of resilience and risk in the local community. The analysis identified that the “...*lack of economic diversity in the Hunter region and dominance of mining industry employment and associated occupations...*” potentially made the region “...*vulnerable to changes in mining activity...*”.

6.15.4 External costs

Issue Description

The submission raised a concern that no attempt to quantify external costs other than greenhouse gas was made and noted that while this may be necessary due to data limitations, the economic assessment did not consider any degree of uncertainty around environmental impact (such as biodiversity and noise). The DP&E noted that the valuation of the greenhouse gas emissions is based on a very low European carbon price and requested a sensitivity analysis.

Response

As outlined in Table 4.1 of the KPMG report (Appendix W of the EIS) and the Economic Addendum Report (**Appendix J**), environmental externalities were identified as a potential cost associated with the Project. The report draws on various third party publications pertaining to the specific development to highlight the potential environmental externalities, including:

- Air quality;
- Ecology (vegetation);
- Noise;
- Soils and geology;
- Surface water;
- Groundwater; and
- Heritage.

The third-party environmental impact reports generally concluded that the environmental impacts were manageable and established appropriate mitigation measures. An assessment of air quality impacts quantified the air quality impacts although noted that these would likely be ameliorated. Despite this amelioration, these air quality impacts were quantified and included in the economic costs. It is noted that since the finalisation of the economic analysis in July 2015, noise and air modelling have been revised. It is agreed that economic analyses should be based on the most recent information and any future analysis should consider any subsequent technical and environmental analysis findings. It is also noted that environmental externalities reflect a small proportion (less than one per cent) of total project costs and minor changes are unlikely to have a significant bearing on overall analysis results.

The unit price of Greenhouse Gas (GHG) emissions adopted at the time of the analysis (2014) was based on advice from the Department of Environment (Commonwealth) and was based on the Renewable Energy Target (RET) Review undertaken in the months leading up to the date of the analysis. It is recognised that there is some speculation regarding an appropriate assumption for valuation of GHG emissions and a sensitivity analysis would demonstrate the impact of variation in this assumption on analysis findings.

In order to provide further details regarding how variation in carbon price assumptions may impact on the findings of the economic assessment an indicative sensitivity analysis was performed. The outcomes of this sensitivity analysis are detailed in **Table 6-5**.

Table 6-5 Indicative Sensitivity Analysis Results – Carbon Price Assumptions

Carbon price assumption (\$/tonne)		Benefits (\$m)	Externalities (\$m)	Other Costs (\$m)	Total Costs (\$m)	NPV ² (\$m)	BCR ³
\$4.75	50% decrease	1,072.2	2.3	816.0	818.3	253.9	1.31
\$9.50 ¹	Assumed price based on RET scheme	1,072.2	4.5	816.0	820.6	251.6	1.31
\$14.25	50% increase	1,072.2	6.8	816.0	822.9	249.4	1.30
\$19.00	100% increase	1,072.2	9.1	816.0	825.1	247.1	1.30
\$28.50	200% increase	1,072.2	13.6	816.0	829.7	242.6	1.29

1. Price assumed in Project economic assessment
2. NPV = Net Present Value
3. BCR = Benefit Cost Ratio

6.15.5 Residual Value of Land

Issue Description

The DP&E noted that although not material to the cost benefit analysis due to its low value, the calculation of residual value of land (or cost of agricultural production foregone) is not provided in the interests of transparency.

Response

The residual value of land was estimated based on the total land area (185 hectares) included in the Project and an average land value of \$10,000 per hectare. The average land value assumption was adopted based on information provided by The Bloomfield Group pertaining to recent sales in the area of equivalent land.

The value of agriculture production foregone was estimated based on an assessment of the productive potential of the site prepared by Neil Nelson Agvise P/L (as referenced in the KPMG report at Appendix W of the EIS). The assessment found that the site had a cattle carrying capacity of between \$20,000 to \$30,000 per annum. If the site was managed intensively, the annual capacity may be as high as \$45,000 per annum.

6.15.6 Economic Impact Assessment

Issue Description

The submission suggested that no information was provided as to the data used in the computable general equilibrium (CGE) model, the assumptions that the model was based on, and the type of CGE model used. Specifically the submission referred to the estimate that the Project would increase mining employment in the wider NSW mining industry by a greater amount than in the local area.

Response

As outlined in Section 2.6 of the KPMG report (Appendix W of the EIS), comparative static CGE modelling was used to estimate the economic impact of the Project. Input-output (IO) tables published by the ABS for 2007-08 underpin the CGE model and provide details on the upstream and downstream linkages of sectors. Key assumptions adopted in CGE modelling were consistent with widely accepted values based on empirical studies and qualitative assessments of cost and sale structures in sectors.

6.16 Project Justification

6.16.1 Economic/employment justification

Submission Identification: SIG07, SIG10, PS007, PS051, PS052, PS058, PS059, PS061, PS063, PS064

Issue Description

Submissions suggesting that the justification for the Project (relating to revenue and provision of jobs for employees of Rix's Creek Mine and the Bloomfield Mine in East Maitland due to close in 2020) is no longer relevant, given that the proponent has recently purchased the adjacent Integra Open Cut Mine.

Response

The Bloomfield Group has longstanding export contracts to fulfil which are currently supplied by combined production from both Rix's Creek Mine and the Bloomfield Mine. Additionally Bloomfield's recommencement of production from the Integra Open Cut Mine is being utilised to service former long term Integra customers as well as the Bloomfield long term customer base. Upon closure of the Bloomfield Mine, it is anticipated that combined production from Rix's Creek Mine and Integra would supply these contracts. This does not change the Proponent's intention to retain staff from the Bloomfield Mine where possible. Bloomfield Mine staff could be transferred to work at the Rix's Creek Mine or at the Integra, depending on resource and production requirements.

Section 31.0 of the EIS summarised the justification for approval of the Project, which included biophysical, economic and social considerations. It was concluded that impacts from the Project could be suitably managed through the implementation of a range of management plans and with operations controlled to minimise impacts on the environment and community. Significantly, the Mine would build on its existing management system to minimise impacts for the duration of the Project. As the existing management system has demonstrated success to date, there is confidence that the proposed resource can be extracted in a manner which maximises benefits to the local and wider area as well as the State, while minimising potential impacts.

6.17 Cumulative Assessment

6.17.1 Cumulative impacts not adequately assessed

Submission Identification: SIG08, SIG10, SIG11, PS038, PS039, PS041, PS046, PS048, PS051, PS052, PS059, PS061, PS063, PS064

Issue Description

Submissions concerned that the cumulative impacts (eg air quality, noise, biodiversity, surface water, groundwater, and Aboriginal cultural heritage impacts and social impacts such as change to hours of operation and buffer zones for communities) have not been assessed adequately.

Response

Potential cumulative impacts were assessed in Section 26.0 of the EIS. Specific consideration of cumulative impacts was also incorporated into the impact assessment for certain environmental aspects including:

- Air quality (Section 11.4.4 of the EIS);
- Noise, vibration and blasting (Section 12.5.3 of the EIS);
- Groundwater (Section 16.4.7 of the EIS);
- Traffic and transport (Section 18.5.6 of the EIS); and
- Landscape character and visual amenity (Section 21.4.5 of the EIS).

Table 26-2 provided an assessment of the potential cumulative impact of the Project (which includes the continued use of all development for, or associated with, mining within the Project area at the date of determination) for all aspects addressed in the EIS, including air quality, noise, vibration and blasting, biodiversity, soils, land capability and land use, hydrology and water quality, groundwater, Aboriginal and cultural heritage, traffic and transport, social, economic, landscape character and visual amenity, hazards and risks, greenhouse gas, waste management and rehabilitation.

The cumulative assessment included consideration of two separate levels of impact: localised cumulative impacts of the Project on the Project area, and regional interaction with other developments, including other mining projects in the Hunter Coalfields.

Some submissions raised a concern about the social impact of a change to operations 24 hour per day, 7 days per week. However as noted in the EIS (Section 1.1.2), the Mine currently has approval to operate 24 hours per day, 7 days per week and currently operates as required to meet production demands.

7.0 Revised Management Measures

The Project EIS included a summary of the management measures that would be incorporated into the construction and operation of the Project. Following the receipt and consideration of submissions these management measures were reviewed and additional mitigation measures have been recommended in this RTS Report. The final summary of Project management measures is provided in **Table 7-1**.

Table 7-1 Summary of Management Measures

Ref#	Factor	Management and Mitigation Measures	Timing
Air Quality			
11.6	Air Quality General	Air quality management measures currently used to mitigate air quality emissions from current operations will continue to be implemented. An air quality monitoring network will be maintained to provide feedback into the predictive air quality management systems.	Duration of the Project
11.6	Dust Generation (Cut and Cover Tunnel)	Dust suppression measures such as the use of water carts and sprays will be utilised during construction activities to manage potential dust generation. Dust generating activities will be minimised during adverse (windy) weather conditions to reduce dust generation.	Duration of the Project
11.6	Dust Generation (Cut and Cover Tunnel)	A CEMP will be prepared and include details of construction specific air quality management measures, and implementation and enforcement during the construction period.	Prior to commencement of construction activities
11.6	Diesel fume management	Control measures that would be used to ensure emissions from diesel engines are minimised where possible include the following measures that would be applied for the Project: <ul style="list-style-type: none"> Where possible, the excess use of vehicles and plant will be minimised by scheduling operations to maximise efficiency (e.g. using plant at or near to its capacity to minimise the amount of time utilised); When not in use, engines of on-site vehicles and plant will be switched off; Any new plant or vehicles purchased will have adequate pollution reduction devices fitted; Vehicles and plant will be maintained and serviced according to manufacturer's specifications; and Fleet optimisation will be applied to reduce vehicle kilometres travelled. 	Duration of the Project
Noise Vibration and Blasting			
12.6	Construction Noise	As part of the Cut and cover tunnel CEMP, noise management measures will be included consistent with the requirements of the Interim construction Noise Guidelines (ICNG) (DECC, 2009).	Prior to commencement of construction activities
12.6	Construction Noise	Construction work will be limited to standard construction hours as per Section 2.2 of the ICNG where practical.	During construction activities.
12.6	Operational Noise	The Mine will operate under an updated version of its existing Noise Management Plan.	Duration of the Project
12.6	Operational Noise	Noise model predictions will be used at the daily production meetings to plan evening and night time operations.	Duration of the Project
12.6	Operational Noise	Modifications to operating configurations will be planned to minimise potential off-site noise impacts if elevated noise levels are predicted.	Duration of the Project
12.6	Operational Noise	Trained site personnel will undertake attended noise monitoring during the night period, with priority given to receptor areas for which elevated noise predictions were provided (if any).	Duration of the Project
12.6	Operational Noise	Operations at the site will be modified to reduce noise emission. Modifications include	Where noise levels

Ref#	Factor	Management and Mitigation Measures	Timing
		operating within the pit, in areas that provide a high degree of topographical shielding, and/or, progressively shutting down equipment, starting with plant operating in the most exposed areas.	exceeding a trigger level criterion are measured
12.6	Operational Noise	Follow-up attended monitoring will be undertaken to determine the effectiveness of modifications implemented.	Where noise levels exceeding a trigger level criterion are measured
12.6	Operational Noise	Measurements and actions will be documented for reporting to relevant stakeholders.	Duration of the Project
12.6	Operational Noise	Independent attended monitoring will be undertaken by noise consultants in addition to the Mine internal attended noise monitoring program to fulfil the Mine's EPL requirements.	As required by EPL
12.6	Operational Noise	Appropriate overburden emplacement levels/heights will be determined to allow shielded emplacement to occur deeper in the pit during adverse meteorological conditions.	Duration of the Project
12.6	Operational Noise	Haul route alignments within the pit will be designed to maximise the available topographical shielding provided by the pit shell.	Duration of the Project
12.6	Operational Noise	At an appropriate time in the progression of mining, two high elevation emplacement areas will be developed, to the north and south of the pit, separated by approximately 1300 metres.	Prior to 2023
12.6	Operational Noise	The Mine fleet replacement forecast program will plan the phase in of attenuated plant in accordance with the timeframes modelled in the Environmental Noise Assessment.	Duration of the Project
12.6	Operational Noise	A 4.5 metre high earth bund will be established to reduce noise emission to the south of the coal haul route.	Commencement of the Project
12.6	Operational Noise	An earth barrier will be maintained to the east side of the ROM pad (already constructed).	Duration of the Project
12.6	Operational Noise	Noise attenuation sheeting will be installed on the south and east facades of the CHPP.	Commencement of the Project
12.6	Operational Noise	Specific night operating configurations will be implemented during or prior to times of meteorological enhancement of noise (temperature inversions) subject to the specific meteorological conditions and the required level of noise mitigation required.	During or prior to times of meteorological enhancement of noise
12.6	Vibration and Blasting	The Explosive Management Plan will be updated to include established methodology for calculating blast limits for blasting in close proximity to the Rix's Creek Coke Ovens.	Commencement of the Project
12.6	Vibration and Blasting	The Explosive Management Plan will be updated to include monitoring requirements for compliance with ground vibration limits at the Rix's creek Coke Ovens.	Commencement of the Project
12.6	Vibration and Blasting	Checks to manage the potential impact of blasting on the stability of the New England Highway including details of changes to blasting practice and other appropriate measures which may need to be applied will be incorporated into the Explosive Management Plan.	Commencement of the Project
12.6	Vibration and Blasting	Controls for the design of blasting and loading practises to be implemented to minimise Flyrock generation consistent with existing operations will be incorporated into the Explosive Management Plan.	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
12.6	Vibration and Blasting	Traffic control on the New England Highway when blasting approaches closer than 500m to the Highway will be in accordance with the existing management plan prepared in consultation with RMS (include requirements in the Explosive Management Plan).	Commencement of the Project
12.6	Vibration and Blasting	Continuous vibrations recording instruments will be used when monitoring blasting events to provide closer scrutiny of the actual airblast measurements and more accurate reporting (incorporate into the Explosive Management Plan).	Commencement of the Project
Ecology			
13.5	Potential impacts to biodiversity	Mine planning will avoid the removal of vegetation and habitat where reasonable and feasible.	Duration of the Project
13.5	Potential impacts to biodiversity	Vegetation and habitat will only be removed in a staged manner with the inspection of habitat trees carried out before and during felling operations.	Duration of the Project
13.5	Potential impacts to biodiversity	Upper Hunter Strategic Assessment ecosystem credits will be purchased, or equivalent via a VPA or agreement with the Minister for the Environment.	Duration of the Project
13.5.1	Potential impacts to biodiversity	The Mine will provide offsets in accordance with the Upper Hunter Biodiversity Plan including monetary contributions to the Upper Hunter Offset Fund as calculated through OEH calculators.	Duration of the Project
13.5.2	Potential for native fauna to be displaced from habitat during native vegetation clearing.	Significant ecological features associated with standing and dead timber will be assessed and monitored. A qualified and experienced fauna consultant will conduct pre-clearance surveys to ensure displaced wildlife is removed or relocated at the time of clearing.	Duration of the Project
13.5.3	Potential for native fauna to be displaced from habitat during native vegetation clearing.	Inspection of hollows will be undertaken by a qualified fauna ecologist prior to and immediately after tree felling. Felled trees supporting hollows will be stockpiled for later use in rehabilitation activities.	Duration of the Project
Soil, Land Capability and Land Use			
14.7	Geotechnical Stability Management	The Mine stability monitoring program will continue to be implemented for the duration of the Project.	Duration of the Project
14.7	Geotechnical Stability Management	Prior to Mining activities reaching the extent of the 2026 conceptual Mine Operations Plan (whether that occurs before or after 2026), 3D mathematical computer modelling of the rest of Project (2026 – 2037) mining stability will be undertaken to reassess the potential stability impact of ongoing mining.	Prior to Mining activities reaching the extent of the 2026 conceptual mine plan

Ref#	Factor	Management and Mitigation Measures	Timing
14.7	Soils Management	<p>A soil stripping and management plan will be prepared to guide all topsoil stripping activities. As a minimum the management plan will include the following measures:</p> <ul style="list-style-type: none"> • Details regarding appropriate soil stripping depths for the various soil types across the Mine. • The planned usages of anticipated top soils volumes as they become available. Stripping and stockpiling quantities will be matched to the Mine's ability to reuse stockpiled topsoils to minimise the time it is stockpiled. • Soil will preferably be stripped in a slightly moist condition. Material will not be stripped in either excessively dry or wet conditions. Whilst mining and construction schedules dictate stripping times, consideration should be given to near term weather forecasts. • Stripped material will be placed directly onto areas to be rehabilitated and spread immediately (if mining sequences, equipment scheduling and weather conditions permit) to avoid the requirement for stockpiling. Stockpiles will not be placed near major drainage lines. • Soil will be graded or pushed into windrows with graders or bulldozers for later collection by open bowl scrapers or for loading into rear dump trucks by front-end loaders. • Soil transported by dump trucks will be placed directly into storage. Soil transported by scrapers will be pushed to form stockpiles by other equipment (e.g. bulldozer) to avoid tracking over previously laid soil. • The surface of soil stockpiles will be left in as coarsely structured a condition as possible in order to promote infiltration and minimise erosion until vegetation is established. • As a general rule, a maximum stockpile height of 3 m will be maintained. Clayey soils will be stored in lower stockpiles for shorter periods of time compared to coarser textured sandy soils. • If long-term stockpiling is planned (i.e. greater than 12 months), stockpiles will be seeded and fertilised as soon as possible. An annual cover crop species that produces sterile florets or seeds should be sown. • Prior to re-spreading stockpiled topsoil onto reshaped overburden, an assessment of weed infestation on stockpiles will be undertaken to determine if individual stockpiles require herbicide application and / or "scalping" of weed species prior to topsoil spreading. • An inventory of available soil will be maintained to ensure adequate topsoil materials are available for planned rehabilitation activities. • Topsoil will be spread, treated with fertiliser and seeded in one consecutive operation. 	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
14.7	Post Mining Land Use Agriculture	A Mine Operations Plan will be prepared and implemented in consultation with DRE to establish a rehabilitation framework.	Commencement of Project
14.7	Post Mining Land Use Agriculture	The existing Rehabilitation Management Plan will be reviewed and updated to include areas to be disturbed and rehabilitated as part of the Project. This will include the rehabilitation of proposed agricultural areas to establish ecosystems for grazing.	Commencement of Project
Hydrology and Water Quality			
15.5.1	Surface Water	Where required the Water Management Plan will be updated and extended to include the additional water storages and regional catchments impacted by the Project.	Duration of the Project
15.5.2	Water Balance	The existing site water balance will be revised in consultation with NOW. The revised site water balance will include the proposed operating requirements of the Project and detail management measure to be implemented for the management of water at the Mine.	Commencement of the Project
15.5.3	Surface Water Runoff	All sediment dams and water management systems will be designed in accordance with relevant standards (DECC, 2008). Regular testing of the water quality runoff will be conducted to ensure that water released from site is in accordance with regulatory standards. Any runoff water from disturbed areas identified to not be suitable for release will be pumped into the mine water management system.	Duration of the Project
15.5.3	Surface Water Runoff	Within five days of a runoff event, the proposed sediment dams (in disturbed areas) will be dewatered to provide free storage capacity of at least the settling zone volume.	Within five days after a runoff event
15.5.3	Surface Water Runoff	Sediment dams may be dewatered to receiving waters where TSS concentrations are less than the selected water quality objectives after a runoff event.	Within five days after a runoff event
15.5.3	Surface Water Runoff	Where TSS exceeds the water quality objective, water in basins must be either: <ul style="list-style-type: none"> Flocculated to reduce TSS; Pumped to another water storage with available capacity; or Pumped into the mine water management system. 	When TSS exceeds the water quality objective
15.5.3	Surface Water Runoff	All surface water diversion drains, outlets, contour drains, catch drains and other waterways will be designed to convey peak runoff discharge rates for a 20 year ARI storm event.	Duration of the Project
15.5.3	Surface Water Runoff	The following measures would be implemented to manage flooding as part of the Mine Water Management framework: <ul style="list-style-type: none"> Protect the open cut and the Pit 2 tailings dam from inflows due to the 1% AEP Upper Limit flood in Rixs Creek. The nature of the protective actions should be decided by the mine operator; Incorporate review of flood protection measures into the design systems of the mine, specifically for Pit 3 along Rixs Creek. The purpose is to ensure containment berms are of adequate height and integrity to withstand the 1% AEP Upper Limit flood in Rixs Creek; 	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		<ul style="list-style-type: none"> Review the integrity and height of existing berms along the perimeter of Pit 3, upstream of the culvert crossing to Pit 2 tailings dam; and Ensure that the minimum 35 m floodway width at the culvert crossing to Pit 2 tailings dam is maintained. 	
15.5.4	Water Quality	<p>A water management system will be implemented which includes:</p> <ul style="list-style-type: none"> Diversion of runoff from undisturbed catchments away from disturbed areas, wherever possible, using surface drains; Treatment of runoff from overburden emplacements using sedimentation dams prior to discharge from the site; and Collection of runoff from mining areas (including coal stockpiles) within Mine water dams for recycling on site. 	Commencement of the Project
15.5.5	Off Site Water	<p>Where the Mine requires access to off-site water the following options may be taken:</p> <ul style="list-style-type: none"> The mine will negotiate water sharing agreements with neighbouring mines to access sources of excess water on the sites known to be a management problem and avoid drawing on the external catchment altogether; or The mine will access the unregulated river allocations it owns in the Rixs Creek catchment; or The mine will purchase additional units on the open market; or The mine will approach other Water Allocation Licence holders for a term transfer. <p>If additional water is required, where the above options do not suit, the mine will establish a pump and pipeline on the Hunter River to access the 258 unit general security allocation it currently owns (subject to separate approval).</p>	When the mine requires access to off-site water
15.5.6	Sediment and Erosion	Progressive installation of surface drainage and catchment dams will be carried out to direct surface runoff to sediment settling structures before the water is released from site.	Duration of the Project
Groundwater			
16.5.1	Groundwater	Site Specific Trigger Values will be developed through statistical analysis of monitoring data. These trigger values will determine whether mining related impacts on groundwater are occurring, and if so, the appropriate management response.	Duration of the Project
16.5.2	Groundwater	The existing groundwater monitoring management plan will be updated to include an annual review of monitoring data by a hydrogeologist in order to assess the impacts of the Project on the groundwater environment, and to compare observed impacts with those predicted from groundwater impact modelling.	Commencement of the Project
16.5.2	Groundwater	The existing groundwater monitoring management plan will be updated to include a modelling post-audit carried out after approximately two years following Project initiation and then at five year intervals after this. Modelling post-audits should also be conducted any time where inflows or impacts vary significantly from predictions. Following any review or post-audit, the	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		Project model will be recalibrated and additional impact predictions carried out in relation to the Project.	
Aboriginal and Cultural Heritage			
17.5.1	Aboriginal Heritage	<p>An Aboriginal Cultural Heritage Management Plan for the Project will be prepared in consultation with Registered Aboriginal Parties, OEH and DP&E. The Aboriginal Cultural Heritage Management Plan will provide:</p> <ul style="list-style-type: none"> • Details regarding the salvage and collection of artefacts that will be impacted during the Project; • Instructions on how collected artefacts will be recorded and managed (including by whom). • Details of an archaeological excavation program to examine potential for subsurface deposits adjacent to artefact scatter sites AHIMS #37-6-0235 (adjacent to Dead Mans Gully), Rixs Creek AS15 (adjacent to Rixs Creek) and Rixs Creek AS16 (adjacent to Rixs Creek); • Details regarding the measures that will be implemented to protect sites that won't be impacted by the Project, including measures for the annual monitoring of these sites; • Procedures for the recording of previously unrecorded sites or human remains, if these are uncovered during the Project; and • Measures for cultural awareness inductions for staff, managing access to non-salvaged sites and for the continual update and review of the Aboriginal Cultural Heritage Management Plan. 	Commencement of the Project
17.5.2	Historic Heritage	<p>A Historic Heritage Management Plan will be prepared for the Project and will include the following as a minimum:</p> <ul style="list-style-type: none"> • A list and map indicating the locations of historical heritage items identified within the Project area; • Significance assessment and Statement of Significance for each historical heritage item; • Detailed management and mitigation measures for impacted historical heritage items, including: <ul style="list-style-type: none"> - Monitoring, archival recording and surface collection procedures; and - Unexpected finds procedures, including a specific procedure for human remains. 	Commencement of the Project
Traffic and Transport			
18.6	Operational Road Traffic Impacts	<p>A Traffic Management Plan will be prepared. This plan will include:</p> <ul style="list-style-type: none"> • Maps and plans showing traffic routes, light and heavy vehicle (e.g. for equipment delivery) parking, laydown areas; • Road Safety Aspects – any project specific signage and controls; • Details of emergency access and egress; 	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		<ul style="list-style-type: none"> Internal haul roads; and Details regarding inductions for staff when travelling on the local road network. 	
18.6	Operational Rail Traffic Impacts	Forecast tonnages will be provided to ARTC for rail transport planning purposes.	Commencement of the Project
18.6	Traffic impacts generated during construction of the cut and cover tunnel	<p>A Construction Traffic Management Plan will be put in place to manage the traffic generated during construction of the cut and cover tunnel. It will be prepared in consultation with RMS and in accordance with the <i>RMS Traffic Control at Worksites Manual</i> and <i>AS1742.3 Manual of Uniform Traffic Control Devices</i> (2002). As a minimum, the following will be included:</p> <ul style="list-style-type: none"> Relevant Road Occupancy Licences will be obtained prior to works in the road corridor; Dilapidation surveys of the New England Highway in proximity to the construction site will be undertaken. These will note the existing condition of the road to allow post construction surveys to identify impacts (if any) that have occurred to the New England Highway as a result of construction works and therefore identify required remediation works; An audit of the condition of construction vehicle routes will be undertaken prior to the commencement of work, to ensure that construction traffic does not result in a degradation of the road surface to the detriment of all road users; An 80km/hr speed zone will be implemented for the duration of works along the construction zone to protect the safety of workers and road users. The proposed bi-directional side-track will be designed for 80km/hr speeds and will serve to minimise the impacts of the works on passing traffic, which will use the existing carriageway until the side-track is built, and remain on the side-track until works on the existing carriageway are complete; Slower 40km/hr speed zones will be implemented for short periods for tasks such as installing safety barriers and carrying out traffic switches. It may be necessary for traffic to operate in one lane while traffic switches are being carried out. On these occasions, traffic will be controlled via portable traffic lights or traffic controllers at either end of the work site; and Where practicable, works having impact to traffic on the New England Highway will be undertaken outside peak times. 	Prior to Construction
Social			
19.8	Social	A dedicated enquiry and complaints hotline would be operated by the Mine for the duration of the Project. Complaints received will be managed through a complaints register which details complaints, follow up actions and closure out procedures. Complaints will be detailed in Annual Environmental Reports.	Duration of Project

Ref#	Factor	Management and Mitigation Measures	Timing
		Ongoing monitoring, management and mitigation activities in relation to community concerns will continue.	
19.8	Social	Sponsorship and funding through the Bloomfield Foundation (and other programs) will continue.	Duration of Project
19.8	Social	Information will continue to be disseminated to the community through the implementation of community information sessions, feedback through social, online and print media and by including targeted information in community information sheets about activities to be undertaken (in relation to issues such as noise mitigation, dust mitigation, water monitoring, etc.).	Duration of Project
19.8	Social	In addition to the community hotline, consultation with immediate neighbours and stakeholders will continue through face to face consultation, to monitor and assess any issues of concern to these stakeholders.	Duration of Project
19.8	Social	The Community Consultative Committee (CCC) will continue over the life span of the project, and the minutes of the CCC will be made available to interested community members on a dedicated website. Regular evaluation of the CCC process will be undertaken (including membership) to ensure that the committee membership is balanced and the committee is achieving its objectives.	Duration of Project
19.8	Social	Contributions to local infrastructure support through a Voluntary Planning Agreement will continue to be negotiated between The Bloomfield Group and Singleton Council. As the Mine is located in proximity to Singleton Heights, The Bloomfield Group will continue to support Council in the provision of community services to that location in accordance with Singleton Council's "2013 Community Strategic Plan" where applicable.	Duration of Project
19.8	Social	Should there be a requirement to employ staff over and above the dedicated Bloomfield Group workforce, preference will be shown to members of the local community where feasible.	Duration of Project
Economic			
20.5	Economic Impact	The Bloomfield Group would continue to operate its current community contributions programs in consultation with relevant organisations at the discretion of The Bloomfield Group.	Duration of Project
Landscape Character and Visual Amenity			
21.5.1	Visual Impact	Progressive rehabilitation of modified and unmodified landforms on the site will continue to be implemented over the life of the Project and be undertaken in accordance with the existing Mining Operations: Landscape Management Plan. Rehabilitation will include extensive planting of grasses, shrubs and tree species endemic to the locality on all newly formed landforms to reduce contrast with natural landforms.	Duration of Project

Ref#	Factor	Management and Mitigation Measures	Timing
21.5.2	Visual Impact	Localised vegetation screens using endemic species will be established in certain locations. In particular, vegetation screening will be provided along the length of the New England Highway within the Mining Lease especially along the western side of the New England Highway. Where new screen planting is proposed, it will be placed on the upper half of a bund to obstruct views to stockpiles.	Duration of Project
21.5.3	Visual Impact	A Visual and Landscape Management Plan will be prepared including measures to address: <ul style="list-style-type: none"> • Design and location of new lighting to avoid direct line of sight from areas surrounding the site where practicable; • Location of operational mobile lighting to minimise light spill where reasonable and feasible; • Retention of existing tree cover and safeguarding to the fullest extent where reasonable and feasible, particularly in the vicinity of the tunnel construction and when undertaking works in close proximity to the screening vegetation; and • Landscaping works, including shrub and tree planting to screen infrastructure. Planting will be progressive through the life of the Project and maintained to optimise visual screening. 	Commencement of the Project
	Visual Impact	Progressive rehabilitation and tree planting will be carried out in accordance with a Rehabilitation Management Plan.	Duration of Project
Hazards and Risks			
22.5	Dangerous Goods	The storage of dangerous goods will be managed in accordance with: <ul style="list-style-type: none"> • Australian Standard AS 2187.1 Explosives – Storage, Transport and Use; • Australian Standard AS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquid; and • Manufacturers instructions. 	Duration of Project
22.5	Bushfire	Dedicated employee smoking areas will be located away from potential bushfire fuel sources.	Duration of Project
22.5	Bushfire	A monitoring program will be conducted to monitor fuel load during the fire season.	Duration of Project
22.5	Bushfire	Fuel reduction activities will be undertaken to limit the speed and spread of potential unscheduled fires. This will include thinning or removal of undergrowth.	Duration of Project
22.5	Bushfire	Hazard reduction burning will not be undertaken during periods of declared total fire bans.	Duration of Project
22.5	Bushfire	Fire trail and access roads to, from and within the Mine landholdings will continue to be maintained to a level suitable to provide access for Rural Fire Service tankers.	Duration of Project
22.5	Bushfire	The responsibilities for fire management will continue to be those outlined in the Mine Emergency and Management Plan.	Duration of Project
22.5	Bushfire	In the instance of a bushfire event, the existing Emergency Response Procedures for the Mine will be implemented.	Bushfire event

Ref#	Factor	Management and Mitigation Measures	Timing
22.5	Contamination	Any spillages will be reported in accordance with the Environmental Incident Emergency Response plan and corrective actions undertaken as appropriate.	Reportable event
22.5	Spontaneous Combustion	The Spontaneous Combustion Management Plan will be updated to reflect the operation of the Project.	Commencement of the Project
22.5	Spontaneous Combustion	Regular visual inspections of stockpiles will be undertaken for the presence of spontaneous combustion. Inspections will involve observing stockpiles for any visible signs of smoke or other obvious signs of heat production.	Duration of Project
22.5	Spontaneous Combustion	Future revisions of the Mine Operations Plan will be undertaken as required providing an opportunity to review spontaneous combustion procedures if necessary.	Duration of Project
22.5	Mine Subsidence	Regular visual inspections of the area subject to historical underground mining will be undertaken.	Duration of Project
22.5	Mine Subsidence	In the event of subsidence being identified, the area will be flagged off with No-Go flagging and appropriate measures undertaken to make the areas safe i.e. backfilling of sink holes and surface cracks.	When subsidence is identified
Greenhouse Gas			
23.6	Greenhouse Gas	<p>A Greenhouse Gas and Energy Efficiency Management Plan will be implemented for the Project. The plan will include the following as a minimum:</p> <ul style="list-style-type: none"> • Provision for the monitoring of fuel consumption; • Provision for the monitoring of total site electricity consumption; • Requirements for the maintenance of plant and machinery to ensure efficient operation; • Assessment of the potential use of alternative fuels where economically and practically feasible; • Ongoing scheduled and preventative maintenance to ensure that diesel and electricity powered plants operate efficiently; • The development of targets for GHG emissions and energy use, as well as monitoring and reporting against these; and • Establishment of an energy awareness program for staff and contractors. 	Commencement of the Project
Waste Management			
24.5	Waste Management	<p>The Waste Management Procedure will be reviewed and updated prior to the operation of the Project to make sure it meets current industry standards and legislative requirements in order to:</p> <ul style="list-style-type: none"> • Avoid or minimise waste generation where practicable, followed by reuse and recycling where reasonable and feasible. Waste avoidance and reuse strategies employed by the Mine will include: <ul style="list-style-type: none"> - purchase and use of products that generate minimal waste (including packaging) and pollution; 	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		<ul style="list-style-type: none"> - purchase and use of materials that may be less toxic or hazardous, or that can be reused, recycled or more readily disposed of; and - consideration of opportunities for material reuse when purchasing resources from suppliers and during equipment procurement. • Confirm that waste that cannot be reused or recycled will be disposed of at an appropriate licensed facility by waste contractors; • Avoid unnecessary resource consumption by making realistic and accurate predictions on the required quantities of resources such as construction materials; • Separate wastes generated by the proposed development prior to disposal by licensed contractors; • To where practicable, mulch green wastes onsite and reuse for landscaping in the absence of a more beneficial use being identified (such as harvestable timber or fence posts); • Store hazardous wastes in secure areas on site within areas that have adequate bunding and containment measures to minimise the potential for spillages and leakages; • Store waste oil and other flammable waste streams at locations away from any likely ignition sources; and • Track wastes and confirm that these are being transported and disposed of in accordance with the Protection of the Environment (Waste) Regulation 2005 and the POEO Act. 	
24.5	Waste Management	The Waste Management Procedure will be included in the CEMP for the construction of the cut and cover tunnel as well as for the operation of the Mine.	Commencement of the Project
Rehabilitation			
25.6.1	Infrastructure Areas	During the decommissioning phase should contaminated, carbonaceous or material unsuitable for rehabilitation be identified, it will be stripped and buried either in the final stages of capping of the tailings storage facility or disposed of and covered in the floor of the final void. Where possible, the material will be considered for reprocessing before the CHPP is decommissioned.	Following the closure of the Mine
25.6.1	Infrastructure Areas	Surface water management structures (contour banks, drains and settlement ponds) will be constructed, where required.	Duration of the Project
25.6.1	Infrastructure Areas	A light vehicle access road is to be maintained to enable inspections of the site following closure of the Mine.	Following the closure of the Mine
25.6.1	Infrastructure Areas	The proposed and existing cut and cover tunnels under the New England Highway will be partially filled, allowing post mining access under the highway for cattle.	Following the closure of the Mine
25.6.1	Water Management Areas	Water run-off from the rehabilitated landform will be directed into ephemeral channels that flow into the existing drainage pattern around the mine. Temporary sediment controls such as	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		the use of gabions, geotextiles, hay bales, sediment control fencing techniques, and other techniques used during Mine life, may be integrated with vegetation and permanent engineering strategies to achieve stability in relevant areas.	
25.6.1	Water Management Areas	Where appropriate the water storage dams will be incorporated into the landscape with a view to supplying watering points for cattle. These dams will be revegetated with plant species (e.g. grass species and emergent reeds) suitable to ensure stability of the dam wall and batters, whilst also providing potential localised habitat for native fauna. This will be further enhanced by the incorporation at a landscape level of large woody debris and or localised rock stockpiles. The drainage pattern of the final landform will be designed to integrate with the surrounding catchments and will be revegetated to achieve long term stability and erosion control.	Duration of the Project and following the closure of the Mine
25.6.1	Tailings Emplacement Area	Pit 1 tailings emplacement (tailings emplacement #4) is the only active tailings emplacement planned during the life of the Project. Even though co disposal will be the preferred disposal technique, this area will be maintained for the purpose of backup for tailings management. The tailings emplacement areas will be left for an appropriate period following last disposal for drying prior to rehabilitation. Post drying the tailings emplacement areas will be revegetated with a species mix aligned to the surrounding plant community i.e. grassland and trees over grass.	Duration of the Project
25.6.1	Overburden Emplacement Areas	Overburden emplacement areas will be designed so that: <ul style="list-style-type: none"> • Overburden emplacement capacity is aligned to the final landform design where possible; • The visual impacts of the existing area adjacent to the New England Highway are reduced; • Hazards that the site may pose to unauthorised people who access the area are considered (safety considerations are included); • Runoff water quality is similar to undisturbed lands and will not degrade receiving streams; • The rehabilitated overburden emplacement area landform will support vegetation species and composition diversity aligned to plant diversity in adjacent unmined lands; • Land will support its designated post-mining uses; and • The rehabilitated overburden emplacement area landform will be compatible with the surrounding countryside. 	Duration of the Project
25.6.1	Rehabilitated Lands	A Mining Operation Plan will substitute for the Rehabilitation Management Plan and will be developed and implemented for the ongoing management of rehabilitation activities at the Mine including aims, objectives and methodologies.	Duration of the Project
25.6.1	Rehabilitated Lands	The mined lands will be rehabilitated back to pasture and areas of trees over grass. The proposed final landform will be consistent with the surrounding natural landscape.	Following the closure of the Mine

Ref#	Factor	Management and Mitigation Measures	Timing
25.6.1	Final Void	The low wall slopes of the final void landform will be designed with an overall slope of around 18 degrees. Design alternatives for the final void will continually be evaluated and will be prepared as part of the closure planning process.	Duration of the Project
25.6.1	Unmined Land	The buffer lands are to be managed to enhance landuse values during and after the life of the Project. The management of these lands will require: <ul style="list-style-type: none"> • Corridor management in context of grazing and biodiversity; • Fencing and access control; • Weed and vertebrate pest species management and control; • Track construction and maintenance; • Strategic grazing and stock control; and • Bushfire management. 	Duration of the Project
25.6.2	Growing Media Development	Sodic soils to be used as a growing media will be treated with ameliorants including gypsum at a rate of up to 200kg/ha with these materials being incorporated into the top 30cm of the profile. Sodic subsoils where exposed, will be managed with appropriate erosion and sediment control structures in place (contour banks, sediment retention ponds, rock armouring etc.). Topsoil will be used as a first priority, but where topsoil is not been available in sufficient volumes, biosolids and biosolids/mulch mix may be used to improve soil structure and act as a source of nutrients.	Duration of the Project
25.6.2	Ecosystem and Landuse Establishment	Land use disturbance will be minimised by clearing the smallest practical area of land at any one time and leaving it exposed for the shortest possible time. The proposed use of felled vegetation may include the collection of timber for fencing; incorporating ground cover, understorey species and saplings into stripped topsoil; respreading large woody debris onto re-contoured land; and installation of stag trees as potential habitat and refuge for avian and arboreal fauna.	Duration of the Project
25.6.2	Ecosystem and Landuse Establishment	All noxious weeds are to be managed and controlled as per the requirements of the Noxious Weeds Act 1993. A feral animal management and control program will be conducted annually across the Mine. All work will be implemented in close liaison with the staff of the Local Land Services and in close communication with adjoining land users to ensure a coordinated approach to pest management.	Duration of the Project
25.6.2	Ecosystem and Landuse Sustainability	Maintenance works will be implemented for pasture growth including: <ul style="list-style-type: none"> • Soil sampling for the purpose of defining fertiliser and seeding regimes; • Application of defined fertiliser – in terms of rates and mix; and • Over sowing of pasture with legumes. 	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
25.6.3	Monitoring Program	All rehabilitated areas will be inspected to identify any areas requiring maintenance or further treatment. Remedial works will then be scheduled to address these areas as set out in the Rehabilitation Strategy.	Duration of the Project
25.6.3	Monitoring Program	Where appropriate, the rehabilitation procedures will be amended to improve the standard of rehabilitation. Parameters that will be assessed as part of the monitoring program will include: <ul style="list-style-type: none">• Landform;• Drainage;• Surface preparation;• Vegetation establishment and development;• Carrying capacity and stocking rates via pasture productivity assessment;• Weeds and feral animals;• Nutrient cycling;• Soils/surface condition;• Land and soil capability; and• Erosion and stability.	Duration of the Project

8.0 Conclusion and Next Steps

During public exhibition of the EIS for the Project, 140 submissions were made, including eight from Government agencies, one from Singleton Council, 16 from special interest groups or organisations, and 115 from individual community members. Of the 115 community submissions received, more than two thirds (79) were in support of the Project, and less than one third (36) raised objections to the Project.

This Response to Submissions Report has provided additional information to address the issues raised in the submissions relating to the groundwater modelling, water licensing, air quality assessment, remapping of vegetation communities, recalculation of biodiversity offset credits, potential flooding impacts, noise impacts, and economic assessment.

The DP&E will now assess the Project in consultation with other relevant agencies, and the assessment process will include review of the EIS and this Response to Submissions Report. The DP&E will then prepare a draft assessment report for consideration by the Minister for Planning or his delegate. The Minister for Planning has delegated his role in the determination of coal mine projects to a PAC. Therefore, the Project will be referred to the PAC, and the PAC will review the assessment and provide a determination on the Project.

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9.0 References

Attalla M. I., Day S. J., Lange T., Lilley W. and Morgan S. (2008) "NO_x emissions from blasting operations in open-cut coal mining", Atmospheric Environment, Vol 42.

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Rix's Creek (2015) "Coal Mine Particulate Matter Control Best Practice Final Licence Variation Notice – Exposed Area Assessment", prepared by Rix's Creek, March 2015.

Todoroski Air Sciences (2015) "Air Quality and Greenhouse Gas Assessment Rix's Creek Continuation of Mining Project", prepared by Todoroski Air Sciences for Rix's Creek Mine, August 2015.

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Appendix A

Agency & Council
Submissions

Appendix A Agency & Council Submissions

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Appendix B

Special Interest Group &
Community Submissions

Appendix B Special Interest Group & Community Submissions

Special Interest Group Submissions

Community Submissions

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Appendix C

Groundwater Specialist Response

Appendix C Groundwater Specialist Response

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Appendix D

Air Quality Specialist
Response

Appendix D Air Quality Specialist Response

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Appendix E

Ecology Specialist Response

Appendix E Ecology Specialist Response

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Appendix F

Flooding Specialist Response

Appendix F Flooding Specialist Response

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Appendix G

Noise Specialist
Response

Appendix G Noise Specialist Response

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Appendix H

ARTC Consultation

Appendix H ARTC Consultation

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Appendix I

Surface Water Specialist Response

Appendix I Surface Water Specialist Response

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Appendix J

Economic Specialist Response

Appendix J Economic Specialist Response



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