

Part G – Environmental Management and Monitoring

This chapter describes the commitments made by The Bloomfield Group through the life of the Project to manage potential impacts identified with the EIS. Commitments include management, mitigation and monitoring measures.

28.0 Environmental Management

28.1 Environmental Management and Monitoring Program

28.1.1 Objectives

The Mine currently operates an Environmental Management and Monitoring Program to meet the various regulatory requirements of the existing Mine consent and EPL 3391. This Environmental Management and Monitoring Program would continue to be operated during the Project and would be updated to include the relevant management measures recommended in this EIS.

The Proponent has identified and commits to the measures outlined in **Section 29.0** of this EIS for all activities associated with the Project. The aim of the Environmental Management and Monitoring Program is to ensure that potential environmental, social and economic impacts resulting from the Project, as identified in this EIS, are managed and monitored to a satisfactory level.

28.1.2 Tunnel Construction Environment Management Plan

The CEMP for the construction of the cut and cover tunnel would include project specific requirements in relation to the management of a variety of environmental aspects including:

- Land management and site clearing;
- Surface water quality monitoring;
- Groundwater monitoring;
- Flora and fauna;
- Air quality;
- Noise including blasting;
- Sedimentation and erosion control;
- Visual amenity;
- Cultural heritage;
- Traffic management;
- Social;
- Waste;
- Hazards and risks; and
- GHG emissions and energy efficiency.

The CEMP would be implemented by the contractor with the CEMP to be implemented and enforced by the appropriate contractor staff member with ultimate responsibility lying with the Construction project Manager.

28.1.3 Operation Environment Management System

The Mine currently operates under the EMS discussed in **Section 8.0**. Management plans that form the basis of the EMS have been developed to identify, analyse, evaluate and manage all significant potential and actual risks and impacts of activities and operations on the environment and the community. The EMS would continue to be adopted for the Project but would be updated and augmented where required to incorporate additional environmental management requirements. EMS management plans are summarised in **Table 28-1**.

Table 28-1 Rix's Creek Mine Environmental Management System

Rix's Creek Existing Environmental Management Plans	
Title	Purpose
Airborne Dust Management Plan	To define the methods of prevention and minimisation of the impact of airborne dust.
Site Water Management Plan	To ensure that the quality of water leaving the Rix's Creek Mine site meets the appropriate quality standard.
Explosives Management Plan	To provide for the safe storage and use of explosives on site.
Landscape Management Plan	To establish a framework for all rehabilitation and mine closure related issues. The Plan is made up of three separate management plans including the Rehabilitation Management Plan, Final Void Management Plan and Mine Closure Plan.
Rehabilitation Management Plan	To facilitate the preparation, management and sign-off of rehabilitated lands.
Final Void Management Plan	To specify design criteria and interactions between creeks and final voids and measures to monitor and mitigate potential impacts associated with final voids.
Mine Closure Plan	To provide objectives and criteria for Mine closure, provide options for future use of the site after closure and propose measures to manage the environmental impacts of Mine closure.

28.1.4 Emergency Response

In the event of an emergency at the Mine, the site Emergency Management System is implemented. The Emergency Management System includes general emergency procedures and specifies the response to incidents related to dangerous goods and dangerous substances as required under the *Coal Mine Health and Safety Act 2002*, the *Coal Mine Health and Safety Regulation 2006*, the *Work Health and Safety Regulation 2011*, the *Explosives Act 2003* and the *Explosives Regulation 2013*.

The system is based on relevant Australian and International Standards, Codes of Practice and Guidelines including *Managing Work Environment Facilities Code of Practice* and *MDG1032 Guidelines for the Prevention, Early Detection and Suppression of Fires* and is integrated with The Bloomfield Group Health & Safety Management System which operates in conjunction with other appropriate Bloomfield Group Management Systems.

In addition to site specific emergency management procedures, in the event that an emergency warrants it, external assistance would be sought from the relevant emergency services.

28.1.5 Environmental Reporting

In order to meet its regulatory obligations, The Bloomfield Group mine sites are required to submit a range of reports to various State and federal government departments. There is also a requirement to report specific information to the public, which is undertaken through the Bloomfield website.

Reporting is undertaken according to The Bloomfield Group's Environmental Reporting Procedure. The Environmental Reporting Procedure outlines the regulatory reporting that The Bloomfield Group operations are required to undertake throughout the calendar year in order to meet the requirements of Environmental Protection Licences, development consents and mining lease conditions as shown in **Table 28-2**.

Table 28-2 Reporting Requirements

Report Name	Content Summary	Recipient	Format	Required by
Annual Environmental Management Report (AEMR)	Summary of mining operations, environmental management and rehabilitation for year from 31 st March through to 1 st April	NSW Trade & Investment, Division of Resources and Energy, NSW Planning and Environment	Paper and electronic copy	<i>Mining Act 1992</i> , <i>Environmental Planning and Assessment Act 1979</i>

Report Name	Content Summary	Recipient	Format	Required by
EPL Annual Return	Authorised discharge events, plus unauthorised pollution events, and supporting monitoring data	EPA	Paper copy	<i>Protection of the Environment Operations Act 1997</i>
National Greenhouse & Energy Reporting	Report on greenhouse gas emissions, energy production and energy consumption	Department of Environment, Clean Energy Regulator	Clean Energy Regulator website	<i>National Greenhouse and Energy Reporting Act 2007</i>
National Pollutant Inventory	Emissions of pollutants above threshold levels to ground, air and water for financial year	Department of Environment, NSW EPA	Paper copy	<i>Protection of the Environment Operations (General) Amendment (NPI) Regulation 2002</i>
Environmental Incident Emergency Response Management System	Outlines procedures for environmental incidents	Public	The Bloomfield Group website	<i>Protection of the Environment Operations (General) Amendment Regulation 2012</i>
Monitoring data on website	Result of environmental monitoring program	Public	The Bloomfield Group website	<i>Protection of the Environment Operations Act 1997</i>
Environmental Checklists	Internal quarterly report documenting completion of quarterly environmental checklists	Managing Director - The Bloomfield Group	Electronic summary report	EMS

If the Project is approved, the Environmental Reporting Procedure would be updated to satisfy the requirements of any new or updated EPL, development consent and mining lease conditions. The Environmental Reporting Procedure would continue to be reviewed and updated regularly in response to changes in regulatory reporting requirements.

28.1.6 Environmental Audit

In accordance with the existing Mine consent, an independent comprehensive environmental audit is carried out of the Mine every fifth year and submitted to the Secretary of DP&E who provides a copy to Singleton Council.

If the Project is approved, an independent environmental audit would be required as part of the conditions of consent. The audit would be carried out within one year of the commencement of the project and every 3 years thereafter. It would be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary of the DP&E and in consultation with relevant agencies. The audit would assess the environmental performance of the Project and assess whether it is complying with the requirements in its consent and EPL or Mining Lease (including any assessment, plan or program required under these approvals); review the adequacy of strategies, plans or programs required under the abovementioned approvals; and recommend appropriate measures or actions to improve the environmental performance of the Project, and/or any assessment, plan or program required.

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29.0 Summary of Mitigation Measures

DGRs

Consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS

29.1 Mitigation Measures

Management and mitigation measures outlined in this section would be implemented throughout the detailed planning, construction and operational phases of the Project, should it proceed. These safeguards would minimise any potential adverse impacts arising from the Project on the surrounding environment. The management and mitigation measures recommended for the Project are summarised in **Table 29-1**.

Table 29-1 Summary of Management and Mitigation 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
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 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.	Where noise levels 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

Ref#	Factor	Management and Mitigation Measures	Timing
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
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 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 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

Ref#	Factor	Management and Mitigation Measures	Timing
13.5	Potential impacts to biodiversity	Upper Hunter Strategic Assessment ecosystem credits to be purchased.	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.	The felling of trees will be undertaken between the months of March and August. If tree felling is required outside of this period, careful 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
14.7	Soils Management	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: - 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 in 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	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		- 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.	
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.	
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.	
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	Within five days after a

Ref#	Factor	Management and Mitigation Measures	Timing
		selected water quality objectives after a runoff event.	runoff event
15.5.3	Surface Water Runoff	Where TSS exceeds the water quality objective, water in basins must be either: - 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
15.5.4	Water Quality	A water management system will be implemented which includes: - 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	Where the Mine requires access to off-site water the following options may be taken: - 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. 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).	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

Ref#	Factor	Management and Mitigation Measures	Timing
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 Project model will be recalibrated and additional impact predictions carried out in relation to the Project.	Commencement of the Project
Aboriginal and Cultural Heritage			
17.5.1	Aboriginal Heritage	An Aboriginal Cultural Heritage Management Plan for the Project will be prepared in consultation with RAPs, OEH and DP&E. The Aboriginal Cultural Heritage Management Plan will provide: - 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	A Historic Heritage Management Plan will be prepared for the Project and will include the following as a minimum: - 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: • 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	A Traffic Management Plan will be prepared. This plan will include: - 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; - Internal haul roads; and - Details regarding inductions for staff when travelling on the local road network.	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
18.6	Operational Rail Traffic Impacts	Provide forecast tonnages to ARTC for rail transport planning purposes.	Commencement of the Project
18.6	Operational Rail Traffic Impacts	Continue consulting with the Integra Coal Operations Mine regarding access to the Integra Mine rail loop.	Commencement of the Project
18.6	Traffic impacts generated during construction of the cut and cover tunnel	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: - 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. Ongoing monitoring, management and mitigation activities in relation to community concerns will continue.	Duration of Project
19.8	Social	Sponsorship and funding through the Bloomfield Foundation (and other programs) will continue.	Duration of Project

Ref#	Factor	Management and Mitigation Measures	Timing
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 Councils "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
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: - Design and location of new lighting to avoid direct line of sight from areas surrounding the site where practicable;	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		- 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.	
	Visual Impact	Progressive rehabilitation and tree planting 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: - 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 - Manufactures instructions.	Duration of Project
22.5	Bushfire	Dedicated 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
22.5	Contamination	Any spillages or other activities 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

Ref#	Factor	Management and Mitigation Measures	Timing
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	A Greenhouse Gas and Energy Efficiency Management Plan will be implemented for the Project. The plan will include the following as a minimum: - 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	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: - 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: • purchase and use of products that generate minimal waste (including packaging) and pollution; • 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);	Commencement of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		- 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 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.	Duration of the Project
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	Duration of the Project

Ref#	Factor	Management and Mitigation Measures	Timing
		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.	
25.6.1	Overburden Emplacement Areas	Overburden emplacement areas will be designed so that: - 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 Rehabilitation Management Plan 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
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: - 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

Ref#	Factor	Management and Mitigation Measures	Timing
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; resspreading 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: - 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
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: - 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

30.0 Monitoring and Management

30.1 Construction Phase – Cut and Cover Tunnel

Monitoring activities associated with the construction of the cut and cover tunnel would include weekly inspections of environmental controls and construction activities to monitor compliance against the CEMP.

In addition, given its location in the New England Highway road reserve, the construction works would also be subject to informal and formal inspections by RMS staff.

30.2 Operation Phase

Environmental monitoring and management for the Project would be undertaken in accordance with the existing suite of Mine environment management plans, as updated to include the Project, and to be modified in accordance with a Project Approval:

The existing Mine operational Environmental Management System structure is detailed in **Figure 8-2**.

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