



Attachment 4

Summary of
Mitigation Measures

Narrabri Underground Mine Stage 3 Extension Project

Environmental Impact Statement

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A4 SUMMARY OF MITIGATION MEASURES

In accordance with the Secretary's Environmental Assessment Requirements (SEARs), this section provides a consolidated summary of Narrabri Coal Operations Pty Ltd's (NCOPL's) commitments in relation to mitigation and monitoring activities for the Narrabri Underground Mine Stage 3 Extension Project (the Project).

References to Sections 1 to 9 in this Attachment are references to Sections in the Main Report of the EIS. References to Appendices A to P in this Attachment are references to Appendices of the EIS. Internal references within this Attachment are prefixed with "A4".

A4.1 PROJECT ENVIRONMENTAL MANAGEMENT

Section 6 of the Environmental Impact Statement (EIS) outlines proposed environmental mitigation, adaptive management, monitoring and offset measures for the Project.

These include measures relating to subsidence, groundwater, surface water, land resources and agriculture, terrestrial ecology, noise, air quality, visual character, Aboriginal cultural heritage, road transport, economic effects, social impact, greenhouse gas emissions and hazards.

Attachment 5 of this EIS describes the approach to rehabilitation, and how surface disturbance areas (including those disturbed by Project subsidence impacts) will be rehabilitated and remediated for the Project. The Biodiversity Offset Strategy for the Project is described in Section 6 of the EIS.

The Narrabri Mine operates in accordance with its Environmental Management Strategy (NCOPL, 2015) (or its latest approved version), which comprises a number of monitoring and management plans for underground and surface operations. These existing monitoring and management plans will be reviewed accordingly to address the Project activities.

Subsidence performance measures and mining constraints will be detailed in Extraction Plans for the Project, along with monitoring, mitigation, adaptive management and contingency measures.

Table A4-1 presents a proposed list of management plans for the Project. Management plans relating to potential impacts associated with underground operations will be included as part of Extraction Plans for the Project, and will be progressively updated as mining progresses.

It is recognised that changes to the Project environmental mitigation, adaptive management, monitoring and reporting proposed in the EIS may be considered necessary during further consultation with government agencies in the assessment and approval process of the Project, as well as incorporating adaptive management for the Extraction Plans for the Project.

Project environmental mitigation, adaptive management, monitoring and reporting will be conducted in accordance with the finalised Development Consent conditions and associated licences and approvals, with the final monitoring details (locations, parameters and frequencies) to be provided in the relevant management plans and monitoring programs for the Project.

A4.2 KEY SPECIFIC ENVIRONMENTAL MITIGATION MEASURES

The following key Project design measures and constraints have been incorporated by NCOPL for the Project:

- avoiding surface development of rocky outcrops with bat habitat (including Bulga Hill) reported to be used by cave-dwelling bats;
- a setback of the Project mine plan to reduce potential impacts to Bulga Hill;
- co-locating multiple surface infrastructure components within the same surface development area (e.g. access tracks will generally include roadways, pipelines, pumps, sediment controls, goaf drainage infrastructure and other ancillary infrastructure) to minimise the overall surface development area;
- adopting the most direct access route for light vehicle tracks, access tracks and service corridors, except where the components have been moved to accommodate topography, or to avoid or minimise impacts on biodiversity or heritage values;

Table A4-1
Summary of Project Management, Mitigation, Monitoring and Reporting

Proposed Management, Monitoring and Reporting	Key EIS Sections and Appendices
Mining Area – Plan to be Incorporated into Extraction Plans	
▪ Water Management Plan	Sections 6.4 and 6.5 and Appendices B and C
▪ Land Management Plan	Section 6.6.4 and Appendix G
▪ Landscape Management Plan	Appendix G
▪ Biodiversity Management Plan	Section 6.7.4
▪ Aboriginal Cultural Heritage Management Plan (ACHMP)	Section 6.11.4 and Appendix E
▪ Public Safety Management Plan	Sections 6.3
▪ Built Features Management Plan (BFMP)	Section 6.3.4 and Appendix A
▪ Subsidence Monitoring Program	Sections 6.3.4 and 6.3.5 and Appendix A
▪ Rehabilitation Management Plan	Section 6.6.4
▪ Mine Closure Plan	Attachment 5
Operations	
▪ Noise Management Plan	Section 6.8.4 and Appendix H
▪ Air Quality Management Plan	Section 6.9.5 and Appendix I
▪ Water Management Plan <ul style="list-style-type: none"> – Surface Water Monitoring Program – Site Water Balance – Surface and Groundwater Response Plan – Erosion and Sediment Control Plan – Permeate Discharge and Transfer Control and Monitoring Plan 	Sections 6.4 and 6.5 and Appendices B and C
▪ Landscape Management Plan	Appendix G
▪ Mining Operations Plan (MOP)	Attachment 5
▪ Mine Closure Plan (as part of the Landscape Management Plan)	Attachment 5
▪ Waste Management Plan	Section 2.12
▪ Greenhouse Gas Minimisation Plan	Section 6.17.4 and Appendix I
▪ Energy Savings Action Plan	Section 6.17.4 and Appendix I
▪ ACHMP	Section 6.11.4 and Appendix E
▪ Biodiversity Offset Strategy	Section 6.7.6 and Appendix D
Reporting Requirements	
▪ Annual Review	Section 5.3.6
▪ Greenhouse Gas Reporting	Section 6.17
▪ Community Consultative Committee (CCC)	Section 5.3
▪ Complaints Register	Section 5.3

- adopting underground in seam pre-drainage, rather than surface to in-seam pre-drainage where feasible, to minimise the overall surface development area;
- minimising impacts on woodland, which includes habitat for relevant threatened fauna species credit species with a high biodiversity risk rating (sensitivity to loss);
- minimising impacts near creeks and drainage features; and
- surface infrastructure has been located to avoid or minimise impacts on known Aboriginal heritage values.

In addition, key environmental mitigation measures and commitments to be implemented for the Project include:

- management of potential Project subsidence impacts and associated consequences to natural and built features, which will be included in Extraction Plans for the Project; and
- implementation of biodiversity offsets for threatened species and communities.

The key environmental management measures and commitments are described in the sections below, with reference to the relevant sections of this EIS, where further detail is available.

A4.2.1 Subsidence

A specific setback has been incorporated into the Project longwall layout design to reduce potential subsidence impacts on Bulga Hill, a known topographical feature located within Mining Lease Application (MLA) 2, in consideration of previous mining experience and potential biodiversity outcomes. Impacts to Bulga Hill are predicted to be negligible, incorporating this setback (Appendix A).

Extraction Plans

Consistent with the existing Narrabri Mine operations, NCOPL will prepare and submit an Extraction Plan for the Project for approval by the Department of Planning, Industry and Environment (DPIE). This is an approval required by standard conditions of development consents for underground coal mines in NSW.

Extraction Plans are prepared for a series of panels that are a subset of the approved mine layout. There is a process to review the adequacy and effectiveness of an Extraction Plan during the preparation of a new Extraction Plan for subsequent panels.

Subject to the final conditions of consent, Extraction Plans prepared for the Project will include:

- a summary of relevant background or baseline data;
- a review of predictions of the potential subsidence effects, subsidence impacts and environmental consequences, incorporating any relevant information obtained since the EIS (such as monitoring results obtained during mining);
- a monitoring program to provide data to assist with the management of the risks associated with subsidence, validate subsidence predictions and analyse the relationship between subsidence effects and impacts and any resulting environmental consequences;
- a plan to manage and remediate subsidence impacts and/or environmental consequences (e.g. remediation of observed cracking);
- trigger action response plans to identify risks and outline specific follow-up actions to avoid exceedances of agreed performance measures;
- contingency plans that provide for adaptive management where monitoring indicates that there has been an exceedance of agreed performance measures; and
- reporting and review mechanisms.

Natural Features

Surface Cracking

The following surface cracking mitigation measures will be adopted:

- regularly inspect the surface during subsidence development above a given panel and map crack locations and their geometry (widths, lengths, depth, shape);
- repair large surface cracks (i.e. greater than approximately 50 millimetres wide) after subsidence development for a given longwall; and

- should monitoring indicate the need, implement adaptive management in subsequent mining areas such as leaving a barrier pillar, increasing setback distances from a sensitive area or limiting mining to first workings.

Surface crack repair works such as ripping or tynning followed by re-seeding or filling cracks with free-draining, durable gravel into large, deep cracks will be undertaken as required.

Non-conventional monitoring techniques such as drone surveys for large crack location detection above the woodland areas is also proposed (Appendix A).

Sub-surface Cracking

The following sub-surface cracking monitoring measures will be undertaken for the Project (Appendix A):

- monitoring of rainfall deficit and underground water takes, and changes to ventilation (i.e. to assist to detect connective cracking);
- repair surface cracks after active subsidence; and
- installation of further borehole extensometers and piezometers to confirm and monitor height of fracturing.

Steep Slopes

To minimise hazards associated with potential rock falls from steep slopes, the following mitigation measures are proposed (Appendix A):

- surface slope and cliff face displacement monitoring (in addition to general subsidence monitoring);
- infilling of surface cracking to prevent excessive ingress of run-off into the slopes (Section 6.6.4);
- areas that may be significantly impacted by erosion after mining repaired and protected with mitigation works (e.g. regrading, installation of new contour banks and revegetation of exposed areas); and
- ongoing review of any significant changes to surface slopes after each longwall is extracted.

Dwellings and Other Infrastructure

Potential subsidence impacts on dwellings will be managed with the implementation of suitable management strategies, prior to and after mining impact.

A BFMP will be prepared as a component of the Extraction Plans for the Project longwalls and will consider potential impacts to built features (including the dwellings outlined above). The BFMP will be developed in consultation with infrastructure owners.

All dwellings potentially impacted by the Project will be made “always safe” by vacating before mine subsidence effects and until necessary remediation for re-occupation is completed.

Several other infrastructure items may be impacted by subsidence effects. A summary of mitigation and management measures for these items is provided in Table A4-2.

Subsidence Monitoring

An additional crossline above Longwalls 203 to 209 will be installed above the start and finishing ends of the panels to monitor subsidence impacts (Appendix A).

Additional survey monitoring lines will be installed above Longwalls 206 to 209 to monitor subsidence impacts in the Pilliga East State Forest (Appendix A).

Visual inspections and mapping of surface impacts will be undertaken before and after each panel is extracted.

In addition, the additional subsidence monitoring of Longwalls 203 to 205 will be implemented to confirm that the setback from the Bulga Hill is acceptable.

In addition, consistent with the recommendations of Ditton Geotechnical Services (Appendix A) an additional borehole extensometer and vibrating wire piezometers (VWPs) will be installed to monitor subsidence effects.

Aerial techniques and remote sensing will be adopted *in lieu* of traditional ground-based surveys (Appendix A), where relevant.

Table A4-2
Summary of Proposed Mitigation and Management Measures for Infrastructure Items

Infrastructure Item	Proposed Mitigation and Management Measures
Fences	Temporary fencing may be installed around cracking areas and/or relocation of livestock during remediation of surface cracking and damaged fences. Fences impacted by subsidence effects will be repaired, as required.
Water Storage Tanks	Remediation and/or replacement of water storage tanks will be undertaken, as required.
State Survey Marks	NCOPL will manage the impacts of mine subsidence on survey marks in consultation with NSW Spatial Services, including lodging relevant applications under the <i>NSW Surveying and Spatial Information Regulation 2017</i> as required by the <i>Surveyor-General's Direction No. 11 Preservation of Survey Infrastructure</i> .
Domestic Power Supply and Telecommunications Lines	Management plans will be developed for the domestic power and telecommunications lines with the objective of having the infrastructure in an 'always safe' condition.
Groundwater Bores	Groundwater bores blocked due to subsidence will be reinstated, if required.
Farm Dams	Monitoring and mitigation measures for each farm dam will be developed as part of the Extraction Plan process. Where deemed necessary, stored water levels in farm dams will be lowered prior to active subsidence. Farm dams will also be visually monitored during active subsidence at the dam, such that any impacts can be identified and remediated accordingly (including replacement of the dam, if necessary) in consultation with the landholder.
Rural Access Roads	Rural access roads will be regularly inspected during period of active subsidence. Repairs to the road surface will be undertaken as required to allow safe passage for vehicles.
Sheds	Remediation and/or maintenance of sheds will be undertaken, as required.

Source: After Appendix A.

A4.2.2 Groundwater

Groundwater Licensing

Project groundwater licensing requirements are described in Section 6.4.4.

NCOPL will obtain and hold the volumetric licences required for the Project in accordance with the requirements of the *NSW Aquifer Interference Policy* (Department of Primary Industries [DPI] – Office of Water, 2012) and the relevant Water Sharing Plans (Attachment 7).

Groundwater Monitoring

The Narrabri Mine has an extensive groundwater monitoring program in place that incorporates the collection of water quality and water level data from a large network of groundwater monitoring bores. The existing groundwater monitoring network is described in Appendix B and the Water Management Plan (NCOPL, 2017a) (or the latest approved version).

The recommendations of the Groundwater Assessment (Appendix B), in regard to the continuation of groundwater monitoring, will be adopted for the Project.

In addition, consistent with the recommendations made by Australasian Groundwater and Environmental Consultants (AGE), NCOPL will establish additional groundwater monitoring locations in the vicinity of Pine, Kurrajong and Tulla Mullen Creeks (or tributaries) (Section A4.3). Monitoring locations will be confirmed in consultation with relevant regulatory agencies and landowners).

Groundwater Levels

Groundwater monitoring will be undertaken in accordance with the Water Management Plan (NCOPL, 2017a) (or its latest approved version) and Extraction Plans for the Project. The current monitoring regime involves monthly measurement of water levels in piezometers, and continuous automated monitoring of water levels from the network of VWPs.

Ongoing monitoring will enable natural groundwater level fluctuations (such as responses to rainfall) to be distinguished from potential groundwater level impacts due to drawdown and depressurisation resulting from the Project. Ongoing monitoring will also be used to assess the extent and rate of drawdown and depressurisation against model predictions.

Reporting of the water level results from the monitoring network will be included in the Annual Review. The reporting will include comparison to climate trends and surface water monitoring results to identify changes in the surface water and groundwater interactions. The Annual Review will also identify if any additional monitoring sites are required, or if optimisation of the existing monitoring sites should be undertaken.

Groundwater Quality

Groundwater quality sampling will continue to be conducted to monitor groundwater quality during operations and post-mining in accordance with the Water Management Plan (NCOPL, 2017a) (or its latest approved version) and Extraction Plans for the Project. The current monitoring regime includes monthly sampling of piezometers (electrical conductivity [EC] and pH), as well as annual sampling for a broader suite of parameters. Monthly sampling and analysis of water from the box cut sump will continue for the Project.

Similar to the water level monitoring, reporting of the water quality results from the monitoring network will be included in the Annual Review. The Annual Review will consider if any additional monitoring sites are required, or if optimisation of the existing monitoring sites, frequency of sampling and analytical suite will be undertaken.

Groundwater Inflow

NCOPL will implement continuous monitoring of Total Dissolved Solids (TDS), pH and temperature of groundwater inflows (e.g. via monitoring at the box cut sump). In addition, the current monthly analysis of water from the box cut sump will continue for the Project.

Numerical Model Review

The numerical model developed and used for the Groundwater Assessment (Appendix B) will be used as a management tool for the periodic review and validation of predicted groundwater impacts through the life of the Project.

The validity of the groundwater model predictions will be assessed from time to time, and if the data indicates significant deviation from the model predictions, an updated groundwater simulation model will be developed. The results of the groundwater monitoring program will assist to refine any future numerical models.

Revised outputs from the numerical model will be reported periodically over the life of the Project and incorporated into reviews of the site water balance.

Make Good Provisions

NCOPL has committed to 'make good' provisions for affected groundwater users. Appropriate make good provisions for a Project-related drawdown greater than 2 m at a groundwater bore may include:

- deepening the affected groundwater bore (including lowering pump set and/or provision of new pump set and power supply if required);
- construction of a new groundwater bore (including provision of a new pump set and power supply if required); and/or
- provision of an alternative water supply of suitable quality and quantity.

These contingency measures will be assessed on a case-by-case basis (i.e. including an assessment of the bore details and viability of any proposed measures), and implemented in consultation with the affected landholder and relevant regulators prior to drawdown exceeding the AIP minimal harm criterion.

A4.2.3 Surface Water

Surface Water Licensing

WRM Water and Environment (WRM) (Appendix C) concluded that the existing surface water Water Access Licences (WALs) held by NCOPL will be adequate for the Project.

Further details regarding Project licensing requirements are provided in Section 6.5.4 and Attachment 7.

Subsidence Remediation

Despite the minor nature of potential reduction in catchment flows due to mine subsidence, the existing stream impact management measures (outlined in the Extraction Plan Water Management Plan [NCOPL, 2017b] [or its latest approved version]) will continue to be implemented for the Project.

In addition, subsidence remediation of ponding areas will include:

- Ponding areas located in areas with no significant vegetation and the water quality of the ponded water is non-saline to be allowed to self-correct.
- Ponding areas located in areas with significant vegetation to be assessed and remedial measures (e.g. drainage) developed and implemented in consultation with a suitably qualified specialist (e.g. geomorphologist).

Water Management Plan

Site Water Balance

Review and progressive refinement of the site water balance will continue annually over the life of the Project to record the status of inflows, storage and consumption (e.g. usage, return water from co-disposal areas, dust suppression and filtered water releases or beneficial reuse) and to optimise water management performance.

Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan will be reviewed and updated for the Project to identify measures to minimise soil erosion and transport of sediment off-site.

Surface Water Monitoring Program

The existing surface water monitoring network will continue to be implemented for the Project. The network will include the installation of two additional monitoring sites recommended by WRM (2020) within MLAs 1 and 2 (Section A4.3), locations will be confirmed in consultation with relevant government agencies and landowners.

The suite of monitoring parameters will remain as per the approved Water Management Plan (NCOPL, 2017a) (or its latest approved version) with the addition of the following parameters to monitor the potential impacts of the Project waste materials (Appendix N):

- total alkalinity;
- acidity;
- sulphate;
- arsenic;
- cobalt;
- molybdenum;
- antimony; and
- selenium.

The frequency of monitoring will remain as per the approved Water Management Plan (or its latest approved version) (Appendix C).

Surface and Groundwater Response Plan

The Surface and Groundwater Response Plan and Trigger Action Response Plans (TARPs) (NCOPL, 2017b) will be reviewed and updated for the Project. The Surface and Ground Water Response Plan will describe any additional measures and procedures that will be implemented over the life of the Project to respond to any potential exceedances of surface water-related criteria and contingent mitigation, compensation, and/or offset options if downstream private surface water users or riparian vegetation are adversely affected by the Project.

Permeate Discharge and Transfer Control and Monitoring Plan

Consistent with Schedule 4 Condition 13(d) of Project Approval 08_0144, a Permeate Discharge and Transfer Control and Monitoring Plan will be prepared to monitor potential Namoi River water quality impacts prior to commencing controlled releases to the Namoi River. In addition, NCOPL will investigate options for the beneficial re-use of excess filtered water or underground injection of excess mine water.

A4.2.4 Land Resources and Agriculture

In addition to Project design measures, a summary of the mitigation and management measures for subsidence, surface development, soil resources, silviculture and land contamination can be found in Table A4-3.

Mitigation and Remediation of Subsidence Impacts on Agricultural Land

Temporary remedial actions to mitigate potential subsidence impacts are outlined in Table A4-3.

The subsidence mitigation and remediation measures will be outlined in further detail in the Land Management Plan component of future Extraction Plans. This will include a program to monitor the success of subsidence remediation.

Soil Resource Management Measures

Existing soil resource management practices at the Narrabri Mine will continue under the Project.

General soil resource management practices involve stripping and stockpiling of soil resources prior to disturbance (Table A4-3).

Further details on soil resource management will be provided in the MOP (or equivalent documentation).

Land Contamination

In accordance with the recommendations by Ground Doctor (Appendix M), appropriate controls will be implemented during any works involving the disturbance of areas associated with above ground fuel tanks, chemical storage, sheep/cattle yards and pest treatment areas, machinery sheds and storage sheds.

If mine planning and design of the Project results in a need to disturb any waste burial areas, a *Stage 2 – Detailed Investigation* will be conducted prior to disturbance to confirm the presence and extent of any contamination requiring remediation. Any significant contamination will be remediated prior to disturbance.

General measures to reduce the potential for land contamination associated with leaks or spills are outlined in Table A4-3.

A4.2.5 Terrestrial Ecology

Measures to mitigate impacts from the Project are outlined in Table A4-4.

The Extraction Plans prepared for the Project will include a Biodiversity Management Plan that will provide a detailed plan to monitor and mitigate any potential impacts to biodiversity due to subsidence.

NSW Biodiversity Offset

NCOPL will address NSW offset requirements by one, or a combination of the following options, consistent with the NSW Biodiversity Offsets Scheme:

1. the retirement of biodiversity credits (either like-for-like or in accordance with the variation rules);
2. the funding of a biodiversity conservation action;
3. undertaking ecological mine rehabilitation; or
4. payment into the Biodiversity Conservation Fund.

Biodiversity credits could be retired by:

- Purchasing credits from the Biodiversity Credit Market and retiring credits.
- Establishing an offset area (Biodiversity Stewardship Site) and retiring the credits generated. The Biodiversity Stewardship Site will then be managed by NCOPL.
- Retiring like-for-like biodiversity credits or credits under the variation rules (i.e. rules that allow credits of a vegetation type/species to be offset with a different vegetation type/species) for relevant threatened species and communities.
- Undertaking ecological mine rehabilitation of the impacted site in accordance with the *Ancillary Rules: Use of Mine Site Ecological Rehabilitation as an Offset* (DPIE, 2019).
- Payment of an amount into the NSW Biodiversity Conservation Fund instead of, or combined with, retiring credits, with the cost of the payment determined in accordance with the BAM Credit Calculator (Appendix D).

Table A4-3
Summary of Land Resources Mitigation and Management Measures

Potential Impact	Mitigation and Management Measures
Subsidence	<ul style="list-style-type: none"> relocation of stock outside of the areas directly above active underground mining; installation of fencing to limit access by livestock or unauthorised personnel to areas of active subsidence; where necessary, ripping, tyning and/or infilling of surface cracks; during period of active subsidence, high levels of ground cover vegetation maintained and cultivation avoided to improve surface soil stability and minimise erosion risk; and continuation of land management practices (e.g. weed control) to minimise potential impacts to agricultural productivity.
Surface Development	<ul style="list-style-type: none"> surface development areas rehabilitated to pre-mining land use; and topsoil resources and management in accordance with Soil Management Designs (2019), GT Environmental (2020) and as outlined below.
Soil Resource Management	<ul style="list-style-type: none"> identify and quantify potential topsoil resources for rehabilitation; optimise the recovery of useable topsoil and subsoil during stripping operations; manage topsoil and subsoil reserves to not degrade the resource when stockpiled; establish effective soil amelioration procedures to maximise the availability of soil reserves for future rehabilitation works; and consider the need to provide soil conditions that minimise the risk of soil loss via wind and water erosion during and after rehabilitation.
Silviculture Production	<ul style="list-style-type: none"> silviculture management plan for the broader State Forest area would be developed by Forestry NSW in consultation with NCOPL so that there is limited impact on silvicultural production or impact on milling operations.
Land Contamination	<ul style="list-style-type: none"> on-site storage facilities will be designed and constructed to relevant standards and legislation, and will include bunding and locked values as appropriate; spill management equipment (i.e. spill kits) will be kept on-site; a Pollution Incident Response Management Plan and Spill Response Procedure will be developed and implemented as required by NCOPL; and regular inspections and maintenance will be conducted of relevant storage areas.

Table A4-4
Measures to Mitigate and Manage Potential Impacts

Potential Impact	Mitigation Measures	Techniques	Timing/Frequency
Clearing of Native Vegetation and Habitat	Biodiversity Measure 1 - Vegetation Clearance Protocol	The purpose and requirements of the Vegetation Clearance Protocol are described in Appendix D.	Prior to/during native vegetation clearance.
	Biodiversity Measure 2 - Rehabilitation and Revegetation	Surface disturbance areas associated with the Surface Development Footprint will be progressively rehabilitated and revegetated.	Over the life of the mine.
		A propagation and translocation program will be implemented for the Coolabah Bertya. This will involve collection of vegetative material from the local population (either above-ground parts and/or soil seed bank) and use of that material to re-establish individual plants in rehabilitation areas.	Surface facilities used for the Project will be progressively closed and rehabilitated once mine safety pre-conditioning activity has been undertaken, unless required for future access.
	Biodiversity Measure 3 - Salvage and Relocation of Habitat Resources	Key habitat features will be salvaged during vegetation clearance activities and stockpiled for relocation to rehabilitation areas.	During and following vegetation clearance.
		Vegetative material from the local population of Coolabah Bertya will be re-used for the Coolabah Bertya propagation and translocation program.	
	Biodiversity Measure 4 - Nest Box Program	The existing nest box installation program will be expanded for the Project with a further 100 salvaged hollows (see above) or nest boxes of varying sizes to provide nesting habitat for the Glossy Black-Cockatoo, Eastern Pygmy-possum, Squirrel Glider and Corben's Long-eared Bat.	During and following vegetation clearance.
	Biodiversity Measure 5 - Site Induction/Access	Access to active operational/construction areas will only be allowed for authorised personnel and machinery.	Over the life of the mine.
Potential Impacts to Streams	Biodiversity Measure 6 - Sediment and Erosion Controls	The potential for localised Project-related channel erosion on Kurrajong Creek and other ephemeral creek lines will be managed using appropriate sediment and erosion controls.	Over the life of the mine.
	Biodiversity Measure 7 - Creek Line Monitoring Program	The <i>Narrabri Mine Land Management Plan</i> (Eco Logical Australia Pty Ltd [ELA], 2019a) (or its latest approved version) provides a monitoring program for creek lines for the purpose of monitoring changes to creek condition and triggering management actions, if required (e.g. stabilising damaged and eroded banks).	Over the life of the mine.
	Biodiversity Measure 8 - Construction of Drainage Line Crossings	Construction of drainage line crossings will be undertaken in accordance with the policy and guideline document of the NSW DPI - Fisheries <i>Why do fish need to cross the road?</i> (Fairfull and Witheridge, 2003).	Construction.

Table A4-4 (Continued)
Measures to Mitigate and Manage Potential Impacts

Potential Impact	Mitigation Measures	Techniques	Timing/Frequency
Inadvertent Impacts on Adjacent Habitat or Native Vegetation	Biodiversity Measure 9 - Fencing and Managing Poplar Box Woodland Endangered Ecological Community (EEC)	NCOPL will erect a livestock proof fence around a 30 m buffer from the Poplar Box Woodland EEC within Mining Lease (ML) 1609, MLA 1 and MLA 2. The areas will be signed 'Environmental Protection Area' or similar. Weed management measures will be undertaken within the fenced area.	Over the life of the mine.
Indirect Impacts on Native Vegetation and Habitat	Biodiversity Measure 10 - Weed Management	During introduction to site, all vehicles and mechanical equipment that will be working within native vegetation areas will be subject to a clean down to minimise seed transport off-site.	Over the life of the mine.
		Identification of weeds requiring control.	
		Mechanical removal of identified weeds and/or the application of approved herbicides.	
		Follow-up site inspections to determine the effectiveness of the eradication programs.	
	Biodiversity Measure 11 - Animal Pest Management	Qualified and experienced animal pest management contractors will manage animal pest species in ML 1609, MLA 1 and MLA 2 to reduce the likelihood of populations increasing due to the Project.	Over the life of the mine.
	Biodiversity Measure 12 - Bushfire Prevention and Control Measures	The Narrabri Mine maintains a Bushfire Prevention Standard (NCOPL, 2016) and Fire Danger TARPs (NCOPL, 2019a) to provide bushfire prevention and control measures for the Narrabri Mine.	Over the life of the mine.
	Biodiversity Measure 13 - Remediation of surface cracks considered too large to naturally close	Remediation of mine subsidence effects (e.g. surface cracking and minor erosion). A preliminary assessment will be undertaken to minimise impact of remediation actions. Prior to any remediation of surface cracks, NCOPL will undertake a review of environmental impacts that may result from the remediation at the specific location and consider whether remediation of surface cracks is environmentally beneficial or if alternative methods of remediating the crack are warranted (e.g. without machinery). The review will consider, among other factors, the known locations of threatened flora species.	Over the life of the mine.
	Biodiversity Measure 14 – Vehicle Speed Limits	During operations, a speed limit of 40 kilometres per hour (km/hr) will be applied to surface roadways required as part of the Project (excluding the Mine Access Road).	Over the life of the mine.

The funding of a biodiversity conservation action is only available for select species and is currently not available for those relevant to the Project.

Commonwealth Biodiversity Offset

In March 2020, the Australian Government entered into a new bilateral assessment agreement with NSW: Amending Agreement No. 1, endorsing the NSW Biodiversity Offsets Scheme, which includes the Biodiversity Assessment Method (BAM) (Office of Environment and Heritage, 2017), the offset rules, the *Biodiversity Conservation Regulation 2017*, and payments to the Biodiversity Conservation Trust.

NCOPL will undertake like-for-like biodiversity offset measures for relevant EPBC Act listed threatened species and ecological communities as required by the EPBC Act. These biodiversity credits or other offset measures will be associated with the following EPBC Act listed threatened species and communities:

- Poplar Box Grassy Woodland on Alluvial Plains;
- Coolabah Bertya;
- Spiny Peppercreess;
- *Tylophora linearis*;
- Painted Honeyeater;
- Koala;
- Corben's Long-eared Bat;
- Large-eared Pied Bat; and
- Pilliga Mouse.

A4.2.6 Operational and Construction Noise

Noise mitigation and management measures for the Narrabri Mine are described in the Noise Management Plan (NCOPL, 2018) (or its latest approved version) and will continue to be implemented for the Project. This plan will be reviewed and updated to address the Project where appropriate.

Operational Noise

In addition to the existing management measures outlined in the Noise Management Plan (NCOPL, 2018), additional management measures will be applied to mitigate potential noise impacts for the Project.

As part of the iterative noise modelling approach, the following additional feasible mitigation measures were identified and will be undertaken for the Project:

- Additional Project upcast ventilation facilities required to meet a specification of 116 dBA.
- Product and ROM stockpile dozers and reject emplacement area dozer's limited to a sound power level of 116 dBA or less.
- North-west directivity applied for Project ventilation complexes to minimise noise impacts.

An additional noise monitoring site will be installed to the south of the Project area (Section A4.3). The location will be confirmed in consultation with relevant government agencies and landowners.

Construction Noise

Development activities for the Project will be temporary in nature, and general construction noise management measures will be implemented to minimise noise levels at the nearest private receptors, where applicable.

A4.2.7 Air Quality

Key dust mitigation measures that will be implemented for the Project include:

- application of water to stabilise the surface of the ROM and product coal stockpiles;
- water sprays during loading of the ROM and product coal stockpiles;
- conveyors will be enclosed where practical;
- enclosure of the coal handling and preparation plant; and
- application of water and regular maintenance of unsealed rejects haul route.

Management options are implemented by NCOPL to mitigate brine storage odour, as required, including (Appendix I):

- minimising the anaerobic zones in the dam through circulation of water via pumps; and
- limiting algal growth to limit food sources for odour-generating bacteria through dosing of algaecide.

Jacobs (2020) concluded that the existing monitoring regime for the Narrabri Mine is appropriate and no additional monitoring is required for the Project.

A4.2.8 Visual and Landscape Character

The existing amenity bund adjacent to the Pit Top Area will continue to be maintained for the life of the Project.

Surface infrastructure will be progressively decommissioned and rehabilitated and returned to land compatible with the surrounding land uses (e.g. agriculture or native vegetation) (Attachment 5).

If gas flaring is required for the Project, the flares will be constructed via the enclosed flare method (EPA, 2015) and internally insulated to reduce luminosity.

Measures to mitigate potential impacts from night-lighting (including sky glow) could include one or more of the following, where practicable and without compromising operational safety:

- All external lighting associated with the Project will comply with Australian Standards (AS) 4282:2019 – *Control of the Obtrusive Effects of Outdoor Lighting* (e.g. upward light spill will be minimised through adequate aiming of lights and the use of shielded fittings where practicable).
- Night-lighting will be restricted to the minimum required for operations and safety requirements so as to avoid over-lighting.
- Appropriate positioning and orientation of lights.

A4.2.9 Aboriginal Cultural Heritage

The mitigation and management measures detailed below have been developed in consultation with the Registered Aboriginal Parties (RAPs), in consideration of the cultural archaeological significance of Aboriginal heritage sites identified within the Project area.

Aboriginal Cultural Heritage Management Plan

The existing Narrabri Mine ACHMP (NCOPL, 2019b) will be updated to incorporate the recommended management strategies outlined in Appendix E.

The Narrabri Mine ACHMP will remain in place for the life of the Project and define the tasks, scope and conduct of all Aboriginal cultural heritage management activities. The revised Narrabri Mine ACHMP will be developed in consultation with the RAPs.

Surface Development Footprint

The current Surface Development Footprint will avoid all known Aboriginal cultural heritage sites. Therefore, it is anticipated that none of the known Aboriginal cultural heritage sites will be directly impacted by the Project (Appendix E).

On this basis, the Narrabri Mine ACHMP will be updated to include the following measures (or protocols) to manage the potential impacts of surface disturbance:

- NCOPL will maintain a record of known Aboriginal cultural heritage sites and mark these sites on relevant Project documentation and plans.
- NCOPL will continue to implement a protocol for surface disturbance works to reduce the risk of accidental damage to known Aboriginal cultural heritage sites (i.e. demarcation of Aboriginal cultural heritage sites located in proximity to, but outside of, proposed disturbance areas).
- Where practicable, known Aboriginal cultural heritage sites will be avoided during Project construction and operational works associated with components with flexible design.
- The location of known Aboriginal cultural heritage sites will be considered during final detailed engineering designs of surface infrastructure.
- Surface impacts will be avoided at the two grinding groove sites (Mayfield GG1 and Longsight GG1).
- The precise location of surface infrastructure may change during detailed mine planning. Where changes to current design of the proposed Surface Development Footprint mean that avoidance of known Aboriginal cultural heritage sites is not practicable, the site(s) will be subject to salvage of a representative collection of visible surface artefacts in consultation with the Aboriginal community, and an assessment undertaken whether the site is likely to hold *in situ* subsurface archaeological deposits that warrant excavation.

- The protocol for the management of previously unidentified Aboriginal cultural heritage sites and/or human remains within the Narrabri Mine ACHMP will be implemented.
- Protocols will be developed that prescribe the involvement of RAPs in cultural heritage works conducted under the Narrabri Mine ACHMP.
- A communication protocol will be developed that describes clear methods of communication, including expectations of suitable notification and response times between the proponent and the RAPs.

Potential Impacts from Subsidence

The following measures will be undertaken to manage potential impacts to Aboriginal cultural heritage sites from subsidence throughout the life of the Project:

- Where subsidence-related impacts such as surface cracking are identified within the boundary of an existing site of moderate (or high) scientific significance, or where remediation works are required to address subsidence impacts, the site will be inspected by a qualified archaeologist to determine the nature and extent of impacts, and whether mitigation is required or feasible.
- Mitigation measures may include further monitoring, surface collection or open area salvage excavation (if feasible). Any proposed mitigation measures will be outlined in the revised Narrabri Mine ACHMP.

General Mitigation Measures

In addition to the above, NCOPL will implement the following general measures that have been formulated in consultation with the RAPs (Appendix E):

- NCOPL seeks to minimise the risk of inadvertent damage to Aboriginal cultural heritage sites by promoting an awareness of heritage conservation via the induction process.
- A comprehensive Aboriginal Cultural Heritage Sites Database, which contains all relevant information of Aboriginal cultural heritage sites located at the Narrabri Mine and in the Project area, will be established and maintained for the life of the Project.

- NCOPL will maintain ongoing consultation with the Aboriginal community over the life of the Project, including appropriate Aboriginal representation during archaeological fieldwork.
- NCOPL will provide opportunities for Aboriginal community members to access known Aboriginal cultural heritage sites located on Whitehaven-owned land in accordance with relevant work health and safety requirements.
- Should any skeletal remains be identified during the course of the Project, work in that location will cease immediately and the find will be notified to the relevant authorities (including the NSW Police). Subject to the NSW Police requiring no further involvement, the management of any Aboriginal skeletal remains will be determined in consultation with Heritage NSW within the Department of Premier and Cabinet and the RAPs.

A4.2.10 Transport Noise

Noise at the Narrabri Mine is mitigated in accordance with the Noise Management Plan (NCOPL, 2018). Road noise mitigation measures at the Narrabri Mine include (NCOPL, 2018):

- the site access road is sealed and regularly maintained;
- all unsealed access roads will be regularly maintained to limit body noise from empty trucks, signposted and speed limited (40 km/hr) to minimise transport noise; and
- the rail track within the rail loop is inspected monthly to monitor rail condition and highlight issues requiring rectification.

A4.2.11 Social and Community Infrastructure

NCOPL will continue to work with local government and the community to minimise potential social impacts of the Project and maximise potential opportunities.

A number of mitigation and management strategies have been identified and will be implemented by NCOPL, including:

- developing a strategy to ensure appropriate engagement is undertaken as part of the Project EIS exhibition period;

- continuing to provide updated information on the Narrabri Mine website and through local media regarding future works;
- continuing to liaise with nearby landholders to inform them of the EIS exhibition process, facilitate access to documents (if requested) and provide relevant information about construction activities;
- developing a database for recording and management of interactions with the community, including neighbouring landholders;
- developing a strategy to facilitate appropriate, transparent and ongoing engagement occurs with residents of the area of social influence (e.g. via community events);
- regularly engaging with business, community and government stakeholders;
- identifying opportunities and initiatives to improve community cohesion, resilience and local economic development;
- promoting activities undertaken at the Narrabri Mine that are of interest to the general community;
- developing a policy for hiring and procurement decisions that prioritises local residents (or encourages applicants to move to the local area), locally-owned businesses and Aboriginal-owned businesses;
- requiring contractors to employ a proportion of local staff where possible;
- promoting employment opportunities for people without any qualifications or training;
- developing an engagement program with women and Aboriginal people (including current NCOPL staff) to understand potential barriers to recruitment;
- developing an ongoing program to promote positions available, targeting women and Aboriginal people;
- offering training that will support Aboriginal people to gain employment, and a training and mentoring program to encourage their progression (once employed);
- working with stakeholders to encourage local settlement of non-local workers (e.g. by promoting local lifestyles and opportunities), as well as providing prospective new employees with information to encourage relocation;
- undertaking ongoing engagement with key business associations to identify opportunities to strengthen local business participation in the Project supply chain;
- review of complaints handling processes at the Narrabri Mine;
- continuing existing Narrabri Mine CCC procedures;
- identifying strategies to improve diversity of the Narrabri Mine CCC to include Aboriginal people, women and community members with deep connections to the community who are unrelated to the Narrabri Mine;
- continuing a program of ongoing community investments via Voluntary Planning Agreements (VPAs), sponsorships and donations to support local services and groups; and
- evaluating past spending to ensure investments align with community need.

A4.2.12 Greenhouse Gas Emissions

The Project will use various mitigation measures to minimise the overall generation of greenhouse gas emissions to the greatest extent practicable.

NCOPL has a number of processes by which the greenhouse gas emissions from the Narrabri Mine are mitigated, including the Greenhouse Gas Minimisation Plan (SLR Consulting Australia Pty Ltd [SLR], 2012) and Energy Savings Action Plan (Advitech, 2014) (or the latest approved versions). These plans set out a range of measures for the management and mitigation of greenhouse gas emissions and opportunities for energy savings.

The mitigation measures to reduce the level of future greenhouse gas emissions from the Narrabri Mine include (SLR, 2012):

- regular maintenance of plant and equipment to minimise fuel consumption and associated emissions;
- continuing to select plant and equipment that are energy efficient; and
- training relevant staff on continuous improvement strategies regarding efficient use of plant and equipment including maintaining equipment to retain high levels of energy efficiency.

In addition, NCOPL will monitor gas volumes and composition and continue to investigate developments in flaring technology to determine whether flaring is a viable option to abate greenhouse gas emissions associated with Project fugitive emissions. Depending on the outcomes of the above, NCOPL will flare gas for the Project and, if so, this will reduce direct emissions as it will convert methane to carbon dioxide as part of the combustion process.

The Greenhouse Gas Minimisation Plan (SLR, 2012) and Energy Savings Action Plan (Advitech, 2014) will be updated to incorporate the Project.

A4.2.13 Hazards and Risk

NCOPL has a safety management system to manage risks to health and safety in accordance with the requirements of the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and the *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014*. NCOPL will continue to meet these obligations for the Project.

In addition, a number of hazard controls, including mitigation and management measures, will be described in management plans for the Project, for example:

- Water Management Plan.
- Pollution Incident Response Management Plan.
- Bushfire Management Strategy (within the Rehabilitation Management Plan) (generally in accordance with the Planning for *Bush Fire Protection 2019* [NSW Rural Fire Service, 2019]).

The following hazard control and/or mitigation measures will be adopted by NCOPL to reduce the likelihood and/or consequences of potentially hazardous incidents associated with the Project:

- **Maintenance** – Maintenance of all mobile and fixed plant equipment consistent with the maintenance schemes established by NCOPL, and based on legislation obligations and the original equipment manufacturer requirements.
- **Staff Training** – Only those personnel authorised to undertake skilled or potentially hazardous work will be permitted to do so.

- **Engineering Structures** – Mining and civil engineering structures will be constructed in accordance with applicable codes, guidelines and Australian Standards. Where applicable, NCOPL will obtain the necessary licences and permits for engineering structures.
- **Contractor Management** – All contractors engaged by NCOPL will be required to operate in accordance with the site processes, relevant Australian Standards and NSW legislation.
- **Surface Water Management** – As reported in Appendix C, water management structures will be constructed to generally separate runoff from undisturbed areas and disturbed areas.
- **Coal Stockpile Management** – Coal stockpiles will be managed to reduce the potential for spontaneous combustion.
- **Storage Facilities** – Storage and usage procedures for potentially hazardous materials (e.g. fuels, oils, greases) will be developed in accordance with Australian Standards and relevant legislation.
- **Emergency Response** – Fire-fighting and spill management equipment will be kept on-site in appropriate locations. Emergency response training, procedures, manuals and systems will continue to be implemented.

Bushfire Hazards

Bushfire risk management measures currently employed at the Narrabri Mine as part of the existing Bushfire Management Strategy will continue for the Project. These are described in the Bushfire Management Strategy in the Narrabri Mine Rehabilitation Management Plan (ELA, 2017) (or its latest approved version). Existing specific mitigation and management measures to reduce bushfire risk that will continue to be implemented for the Project include:

- Fixed plant and building required to meet the Building Code of Australia and comply with AS 2419.
- Self-bunded fuel and storage areas located and constructed in accordance with AS 1940-2017, fitted with fire extinguishers.
- Maintenance of a non-smoking site.
- Clear access is maintained around all mining-related activities.

- Implementation of fire breaks as a component of planned infrastructure corridors (i.e. including services and gas drainage).
- Availability of appropriate firefighting equipment.

In addition, if required for the Project, any flares constructed will be via the enclosed flare method, which is described as (EPA, 2015):

An enclosed flare surrounds the burner head with a refractory shell that is internally insulated. The shell helps to reduce noise, luminosity and heat radiation. Enclosed flares allow better combustion by maintaining temperature, air flow and more stable combustion conditions, maximising the conversion of methane to carbon.

A4.3 ENVIRONMENTAL MONITORING

An environmental monitoring program will be developed for the Project. Table A4-5 provides an overview of the program and Figure A4-1 shows the indicative locations of the current and additional monitoring locations for the Project, noting that the locations of the additional monitoring sites will be determined in consultation with relevant authorities and landholders.

Monitoring results, as well as monitoring site locations, parameters and frequencies will be reviewed annually through the annual review process, in consultation with relevant authorities and the CCC. If changes are proposed, these will be incorporated into the relevant management plan.

A4.4 ADAPTIVE MANAGEMENT

A4.4.1 Subsidence

Adaptive management strategies for the Project will include (Appendix A):

- Ongoing review of predicted subsidence impacts against observed impacts.
- Early warning monitoring campaigns to confirm appropriate setback distances from defined subsidence control zones (i.e. Bulga Hill).

- Evaluation of monitoring results against performance measures with adjustment of the management and control measures, if necessary.
- Crack mapping to improve predictions for cracking areas above future longwalls.

Where relevant, performance measures, monitoring locations/methods, trigger action response plans and contingency plans will be developed in consultation with relevant government agencies.

A4.4.2 Groundwater

Monitoring locations, methods, trigger levels and contingencies relating to groundwater will be detailed in an update of the Water Management Plan and Extraction Plans for the Project. In the event that groundwater monitoring identifies an exceedance of an established trigger, NCOPL will implement a response plan in accordance with the Water Management Plan.

In the event that water levels deviate significantly from those predicted by the groundwater model, a suitably qualified hydrogeologist will determine the reason for this deviation. The review will consider the impact of mining, and other factors that could result in declining water levels including climatic conditions, rainfall recharge and pumping from privately-owned bores and/or nearby operations.

A4.4.3 Surface Water

The existing TARP for the Narrabri Mine (NCOPL, 2017b) will be updated to incorporate the Project.

In addition, the Surface and Groundwater Response Plan will be reviewed and updated for the Project.

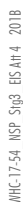
The Surface and Ground Water Response Plan will describe any additional measures and procedures that will be implemented over the life of the Project to respond to any potential exceedances of surface water-related criteria and contingent mitigation, compensation, and/or offset options if downstream private surface water users or riparian vegetation are adversely affected by the Project.

Table A4-5
Overview of the Project Environmental Monitoring Program

Monitoring Focus	EIS Section	Current and Proposed Monitoring Sites	Proposed Frequency
Meteorology	Section 6.2	<ul style="list-style-type: none"> Continued operation of existing meteorological station. 	<ul style="list-style-type: none"> Continuous.
Groundwater	Section 6.4	<ul style="list-style-type: none"> Continued operation of extensive groundwater monitoring network, including the 63 monitoring bores and a number of VWPs operated by NCOPL. Additional sites located in the vicinity of Pine, Kurrajong and Tulla Mullen Creeks (or tributaries). 	<ul style="list-style-type: none"> Monitoring bores - monthly. VWPs - continuous.
Surface Water	Section 6.5	<ul style="list-style-type: none"> Continued operation of 15 receiving surface water quality monitoring sites (PCUS, PC, PC1, PC3US, KC1TOP, KC1US, KC1DS, KC2US, KC2DS, KCUS, KCDS, UT1DS, UT2DS, NRUS, NRDS). Continued operation of on-site water storage monitoring at 18 storages (Storages A1, A2, A3, SB1, SB2, SB3, B1, B2, C, D, SD1, SD2, SD3, SD4, SD5¹, SD6, SD7² and SD8). Two additional receiving water monitoring sites located within MLAs 1 and 2. Additional on-site water storage monitoring at Southern Mine Water Storage. 	<ul style="list-style-type: none"> During runoff events, in accordance with Environment Protection Licence (EPL) 12789 and the Water Management Plan (NCOPL, 2017a) (or their latest approved versions). NRUS and NRDS will be monitoring daily during discharge to Namoi River. Monthly During runoff events. Monthly.
Noise	Section 6.8	<ul style="list-style-type: none"> Continued implementation of three real-time monitors. Continued attended monitoring at five locations (N3, N5, N6, N8 and N9). Additional noise monitor south of the Project. 	<ul style="list-style-type: none"> Continuous. Quarterly. Quarterly.
Blasting	Section 6.8	<ul style="list-style-type: none"> Blast monitoring undertaken, if required. 	<ul style="list-style-type: none"> As required.
Air Quality	Section 6.9	<ul style="list-style-type: none"> Continued operation of eleven dust deposition gauges. Continued operation of two high volume air samplers. 	<ul style="list-style-type: none"> Monthly. Every six days.

¹ SD5 is a decommissioned sediment dam that is no longer part of the Narrabri Mine water management system.

² SD7 has not been constructed.



* Does not include on-site water storage monitoring locations.

A4.4.4 Terrestrial Ecology

Monitoring of potential subsidence impacts on threatened ecological communities, threatened fauna habitat and threatened flora will occur in accordance with the Biodiversity Management Plan prepared under the Extraction Plan process. In the event that significant environmental consequences are observed as a result of subsidence, NCOPL will implement remediation measures and/or additional compensatory measures in accordance with approved contingency plans.

A4.4.5 Noise

Operational Noise

NCOPL will continue to conduct Narrabri Mine operational noise monitoring in accordance with the Noise Management Plan (NCOPL, 2018) (as amended for the Project).

Project noise adaptive management measures will include:

- response to community issues or complaints including discussions with relevant landowners;
- refinement of on-site noise mitigation measures and mine operating procedures, where practicable;
- use of real-time noise monitoring as a management tool; and
- if necessary (i.e. as informed by operational noise monitoring results), implementation of feasible and reasonable mitigation at relevant private receivers, in accordance with the Voluntary Land Acquisition and Mitigation Policy.

Transport Noise

Project road and rail transport noise adaptive management measures will include response to any community issues of concern or complaints, including discussions with relevant landowners and liaison with rail operators regarding train operating procedures.

A4.4.6 Social and Community Infrastructure

A number of adaptive management strategies have been identified and will be implemented by NCOPL, including:

- collecting, monitoring and reporting mitigation performance data throughout the Project life;
- monitoring of social indicators, which may change how Project impacts and benefits are experienced;
- reviewing and reporting results of monitoring to the CCC quarterly and in the Annual Review; and
- identifying and implementing required changes to mitigation and enhancement strategies.

A4.4.7 Greenhouse Gas Emissions

NCOPL will continue the ongoing management of its contribution to Australian greenhouse gas emissions inventories through participation in the Commonwealth Government's National Greenhouse and Energy Report Scheme, as well as any other government initiatives implemented to manage emissions at the national level.

A4.4.8 Other Aspects

Throughout the life of the Project, NCOPL will review and regularly report its environmental performance and local community feedback received on the Project. NCOPL will investigate and respond to any community issues of concern or complaints.

Environmental management plans prepared for the Project will include:

- contingency plans to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; and
- programs to investigate and implement ways to improve the environmental performance of the Project over time.

A4.5 REPORTING

The following subsections describe the expected reporting requirements for the Project (based on requirements at the time of preparation of this EIS). NCOPL will adjust its reporting should requirements change in the future.

A4.5.1 Incident Reporting

Consistent with the reporting requirements of the *Standard Conditions for State Significant Development Mining Projects August 2018* (NSW Government, 2018), NCOPL will notify the DPIE immediately after becoming aware of the incident.

NCOPL will also notify the EPA and any other relevant government agencies of incidents causing or threatening material harm to the environment immediately after becoming aware of the incident, in accordance with Part 5.7 of the *Protection of the Environment Operations Act 1997* (PoEO Act) and consistent with any requirements of an EPL for the Project.

A4.5.2 Annual Review

NCOPL will continue to produce an Annual Review to describe the environmental performance of the Project for a 12-month reporting period. Copies of the Annual Review will be made available on the Whitehaven website, consistent with the reporting requirements of the *Standard Conditions for State Significant Development Mining Projects August 2018* (NSW Government, 2018).

Environmental monitoring results will be compared against relevant statutory requirements, the requirements of any plan or program required under the Development Consent, monitoring results of previous years and relevant predictions of this EIS.

Biodiversity management, proposed development and rehabilitation, as well as environmental performance improvement measures proposed for the next 12-month period will also be discussed in the Annual Review.

A4.5.3 Development Consent Requirements

NCOPL will provide regular reporting of environmental performance of the Project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of the Development Consent and associated licences and approvals.

A4.5.4 Community Consultative Committee

NCOPL will continue to operate a CCC in accordance with the conditions of the Development Consent and consistent with the *Community Consultative Committee Guideline: State Significant Projects January 2019* (NSW Government, 2019) (or its latest equivalent version).

A4.5.5 Independent Environmental Auditing

Consistent with the reporting requirements of the *Standard Conditions for State Significant Development Mining Projects August 2018* (NSW Government, 2018), NCOPL will continue to commission an independent environmental audit of the Project within one year of the commencement of any Development Consent, and every three years after or at an alternative interval, as required by any Development Consent for the Project.

Upon completion of the independent environmental audit, NCOPL will submit a copy of the independent environmental audit and its responses to the DPIE.

A4.5.6 Other Reporting

Annual Return

A summary of the results of any monitoring required by an EPL, granted under the PoEO Act, for the Project (including a register of any complaints) and a Statement of Compliance will be provided in Annual Returns and submitted to the EPA.

EPBC Act Approval – Annual Reporting

NCOPL will prepare annual reports assessing compliance with relevant conditions of a Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* approval for the Project, as required.

Greenhouse Gas Reporting

NCOPL will continue to report relevant energy use and greenhouse gas emissions associated with its activities for the Project.

Community Complaints Register

A community complaints register will continue to be maintained for the Project. Complaints and subsequent actions undertaken will be reported in the Annual Review and on the Whitehaven website.

A4.6 REFERENCES

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